

# **Sudan Health Status Report**

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## Acronyms

AfDB	African Development Bank
ARI	acute respiratory infection
BCG	Bacille Camille-Guérin
CHW	Community Health Worker
DAH	development assistance for health
DHS	Demographic and Health Survey
DOTS	directly observed treatment – short-course
DPT	diphtheria, pertussis and tetanus
EC	European Commission
EPI	Expanded Program on Immunization
EU	European Union
FAO	Food and Agriculture Organization
FEWS	Famine Early Warning System
FGC	female genital cutting
FMOH	Federal Ministry of Health
GAVI	Global Alliance for Vaccines and Immunization
GDP	gross domestic product
GFATM	Global Fund to fight AIDS, Tuberculosis and Malaria
HIPC	highly-indebted poor country
HIV/AIDS	human immunodeficiency virus/acquired immune deficiency syndrome
HNP	health, nutrition, and population
ICRC	International Committee of the Red Cross
IDA	International Development Association
IDP	internally displaced person
IGAD	Inter-Governmental Authority on Development
IMF	International Monetary Fund
IOM	International Organization for Migration
I-PRSP	Interim Poverty Reduction Strategy Paper
IPT	intermittent preventive treatment
ITN	insecticide-treated net
MDG	Millennium Development Goal
MTEF	Medium Term Expenditure Framework
MICS	Multiple Indicator Cluster Survey
MUAC	mid-upper arm circumference
NIDs	National Immunization Days
OLS	Operation Lifeline Sudan
OPV	oral poliomyelitis vaccine
PAPCHILD	Pan Arab Project for Child Development
PHC	primary health care
PRSC	Poverty Reduction Support Credit
PRSP	Poverty Reduction Strategy Paper
SMS	Safe Motherhood Survey
SP	sulphadoxine-pyrimethamine
SPLM	Sudan People's Liberation Movement
STI	sexually transmitted infection
TB	tuberculosis
TBA	traditional birth attendant
TFR	total fertility rate
TSS	Transitional Support Strategy
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund

UNICEF	United Nations Children's Fund
US	United States
USAID	United States Agency for International Development
VAT	value added tax
VCT	voluntary counseling and testing
WDI	World Development Indicators
WFP	World Food Programme
WHO	World Health Organization

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## EXECUTIVE SUMMARY

Decades of civil war have had a severe impact on Sudan's economic and social development. Improvement in the health, nutrition, and population (HNP) situation in Sudan will be key part of Sudan's development strategy in the coming years. This report is an element in the World Bank's re-engagement strategy for Sudan, intended to improve the Bank's knowledge base and fuel policy dialogue with the Government and other partners, in particular in support of a Poverty Reduction Strategy and a post-peace reconstruction program in the areas affected by the war.

### 1. Objectives and Sources

The report's objectives are to: i) describe the key HNP issues in Sudan and how they are currently being addressed; ii) contribute to the identification of strategies for accelerating progress towards the HNP-related Millennium Development Goals (MDGs); iii) identify needs for future analytical work; and iv) explore options for World Bank involvement in the sector the short to medium term.

The report draws on diverse sources of information, including field visits and interviews, as well as reports and studies by government and other authorities, donors, UN agencies, NGOs, and academics. Population-representative data on HNP issues from most of the country are available for the first time from several recent household surveys. The report draws heavily from these surveys, and includes primary data analysis of certain issues, in particular relating to poverty and health. Sources of information cover either government-held areas of northern Sudan or areas not held by the government in southern Sudan. *Use of the labels "northern Sudan" and "southern Sudan," as well as any other labels and boundaries, do not imply acceptance or endorsement of any political position but simply reflect how the data were collected and organized.*

### 2. Context

Sudan's geography and ecology is an important structural factor shaping the health, nutrition, and population situation. Sudan's vast distances and poor infrastructure affect coverage of health services as well as increase costs. For example, up to 60% of spending on humanitarian health programs in southern Sudan is devoted to air transport of supplies and personnel. Climatic factors can contribute to humanitarian emergencies related to drought and flooding, and ecological factors expose much of the population to major infectious and parasitic diseases.

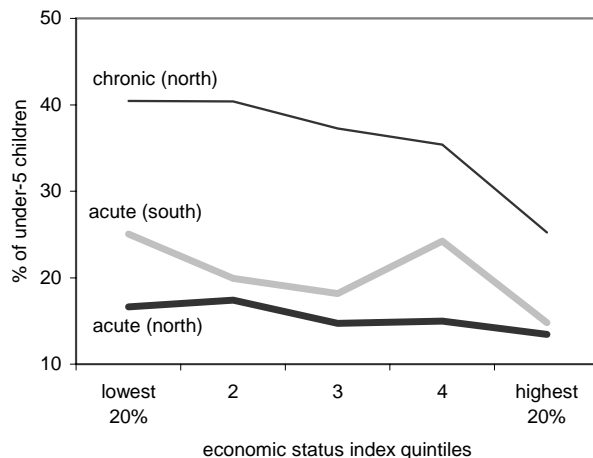
Poverty in Sudan is deep and widespread. Although data is not available for poverty measurement, child mortality and malnutrition are considered to reflect underlying household economic conditions. Not only does Sudan experience high rates of mortality and malnutrition, but survey data show that these are quite evenly distributed over most of the socio-economic spectrum.<sup>1</sup> In northern Sudan, although under-5 mortality (at 53 per 1,000) among the top third of households as ranked by economic status is

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<sup>1</sup> As measured by a proxy indicator of household economic status.

considerably less than among the lower two-thirds, there is hardly a difference between the lowest and middle economic groups (at 118 and 199 per 1,000 respectively). Similarly, Figure 1 shows that although the highest economic status quintile experiences lower child malnutrition, the differences between the first four quintiles are much smaller. In other words, a very large proportion of the population experiences similarly high rates of child mortality and malnutrition, reflecting widespread poverty.

Figure 1. Prevalence of child malnutrition, Sudan, 1999-2000



In addition, economic disparities between urban and rural areas, as well as regional differences, are pervasive.

In southern Sudan, after years of war, the level of economic and social under-development is such that health system improvements need to occur in parallel with investments in other basic infrastructure and services, such as roads and education. For example, only a few hospitals have reliable power supply in non-government areas of southern Sudan, and these rely on generators.

In a country with such high levels of child malnutrition and where famine has occurred several times in last two decades, food security is a major preoccupation in both northern and southern Sudan. At any given time in southern Sudan, large populations are at risk of food insecurity, necessitating an ongoing food relief operation.

Chronic conflict in Sudan has had enormous effects on the health and nutrition of affected populations. Almost all health services in war-affected areas are provided through humanitarian assistance, which is estimated to reach only 60% of the population. As under-served populations become accessible, primary health care services will need to be extended. Post-conflict assistance in the health sector will confront the challenges of coordination and weak local capacity.

Considerable rural-urban migration in recent decades, including internally-displaced persons (IDPs) from war-affected areas, has increased urban poverty. Khartoum, where

population growth is over 4% per year (compared to around 2.5% in northern Sudan overall) has become a magnet for people seeking security and better economic opportunities. It is estimated that there are up to 4 million IDPs in Sudan, around 2 million in Khartoum alone, along with 500,000 Sudanese refugees in neighboring countries. A recent survey of IDPs in northern Sudan indicates that up to two-thirds intend to return home once peace comes, although lack of economic opportunities and social services will be significant barriers.

### 3. Millennium Development Goals

The Millennium Development Goals (MDGs) and indicators provide a useful shorthand to assess the overall HNP situation in Sudan. In general, in northern Sudan MDG indicators are comparable to or better than Sub-Saharan Africa averages. For example, under-5 mortality in northern Sudan is estimated at 105 per 1,000, compared to the Sub-Saharan Africa average of 162. In northern Sudan, 57% of births are delivered by a skilled attendant, compared to an average of 44% in Sub-Saharan Africa. Similarly, 70% of households have access to safe water, compared to the Sub-Saharan Africa average of 55%. However, in southern Sudan, MDG indicators are far lower. Only 6% of births are delivered by trained personnel, and only 39% of households have access to an improved water source.

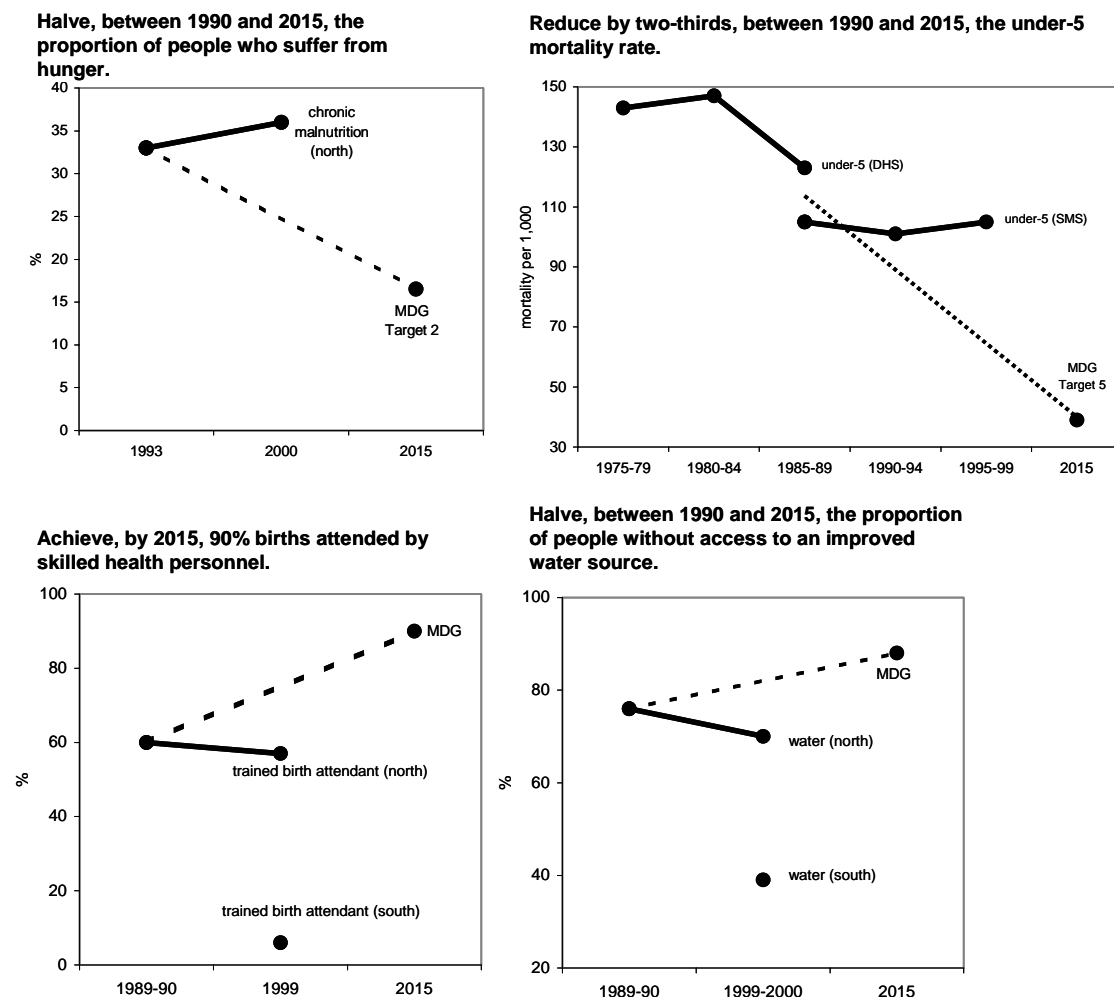
Trend data is available for northern Sudan, and shows, however, that there has been little evident improvement in the MDG indicators over the 1990s. Figure 2 illustrates trends in selected MDG indicators in northern Sudan. One target is to halve between 1990 and 2015 the proportion of people suffering from hunger, but the prevalence of chronic child malnutrition rose from 33% in 1993 to 36% in 2000. Another target is to reduce under-5 mortality by two-thirds between 1990 and 2015, but, according to direct estimates from survey data, under-5 mortality changed little during the 1990s, declining from less than 110 per 1,000 in 1990 to 105 in 2000. Delivery care by trained health personnel remained stable during the decade, at around 60% of births. Access to an improved water source also stagnated at around 60% of households in northern Sudan. Of course, in southern Sudan, where indicator levels are much lower, it is unlikely that any progress was made during this past decade of war. In all of Sudan, it is clear that significant effort will be required to make progress towards the MDG targets.

The MDG indicators reveal considerable disparities between urban and rural areas in northern Sudan. For example, in 2000, measles immunization coverage of one-year-old children was 70% in urban areas but less than 50% in rural areas. Similarly access to an improved water source was around 80% in urban areas, compared to around 60% in rural areas. However, the urban/rural gap in a number of indicators, in particular those which reflect underlying economic conditions, narrowed during the 1990s, indicating increasing urban poverty. During the 1980s, under-5 mortality in urban areas was 117 per 1,000, compared to 144 in rural areas. However, in the 1990s, with under-5 mortality estimated at 101 in urban areas and 105 in rural areas, the difference was much smaller, reflecting much slower improvement in urban areas. A similar pattern is seen in the prevalence of

chronic child malnutrition, which increased in urban areas from 23% in 1993 to 33% in 2000, but remained stable in rural areas at 39%.

Large regional disparities are evident in the MDG indicators, following a center-periphery pattern whereby the north-central states are better-off than other regions, in particular western and southern parts of the country. For example, measles immunization coverage in rural areas of Northern and Al-Gazira States was estimated at 60% in 2000, compared to 31% in rural areas of Red Sea State and only around 15% in rural areas of Western and Southern Darfur. Similarly, in southern Sudan, although overall average coverage is lower than in the north (34% compared to 58% in northern Sudan), regional differences are significant. In 1999, coverage was estimated at between 50 and 60% in Eastern and Western Equatoria, but between 20 and 30% in other regions.

Figure 2. Trends in selected MDG indicators, northern Sudan



The MDG and other health indicators also show significant associations between poverty and ill health. Under-5 mortality and malnutrition, which are much lower at the highest economic levels, are discussed above. Other indicators, which may tend to reflect

availability and utilization of services more than underlying economic conditions, show significant differences throughout the socio-economic scale.

#### **4. Major Public Health Issues**

As in many other developing countries, Sudan has not yet gone through the demographic and epidemiological transitions and its epidemiological profile is still largely dominated by communicable diseases, most of which are common diseases that can be prevented and/or treated at relatively low cost and using relatively simple strategies. However, certain problems, in particular malnutrition and tropical diseases, are of a magnitude, often reaching crisis proportions, rarely seen in more stable situations.

Infectious childhood diseases (measles, diarrhea, acute respiratory infections (ARI), and vaccine-preventable diseases), along with malaria – and often in combination with malnutrition – cause a large burden of morbidity and mortality. For example, ARI and diarrhea account for respectively 24% and 14% of hospital admissions of under-5 children in northern Sudan, while in southern Sudan they are associated with respectively 13% and 11% of all health facility visits.

Malnutrition is at chronically high levels throughout Sudan, in both urban and rural areas, and is a major cause of death in humanitarian crisis situations. Chronic malnutrition among under-5 children in northern Sudan is estimated at 36%, while the prevalence of acute malnutrition in southern Sudan is as high as 15 to 20%.

Maternal health is a significant concern in Sudan, as high fertility, female genital cutting (FGC), sexual violence, malaria, and poor coverage of skilled delivery care in many areas, increase the risks of maternal morbidity and mortality. The maternal mortality ratio in the 1980s in northern Sudan is estimated at 509 per 100,000 live births, and is undoubtedly higher in southern Sudan. Coverage of skilled delivery care in northern Sudan is 57% in northern Sudan, but only 6% in southern Sudan.

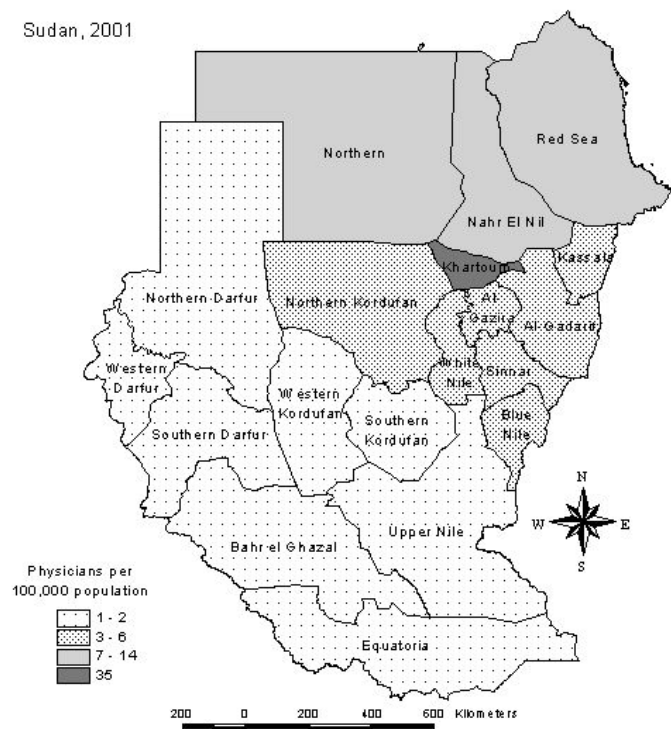
Malaria is endemic to much of Sudan and epidemic in other areas, causing a major burden among both adults and children. Between 20 and 40% of outpatient consultations in both northern and southern Sudan are related to the disease. In northern Sudan, 16% of mortality in hospitals are attributed to malaria, with children under 3 at most risk. Maternal malaria is an important contributor to maternal mortality, perinatal mortality, and low birthweight.

The estimated prevalence of HIV/AIDS in Sudan is 2.6%, indicating that the epidemic has become generalized in many parts of the country. The migration and social dislocation caused by conflict are obvious risk factors for further spread of the disease, and very high prevalence has been found among some higher risk groups.

Sudan is also distinguished by its exposure to a host of other “classic” tropical diseases, many of which have largely been controlled in other countries. An example is

visceral leishmaniasis (kala-azar), a disease spread by sandflies which is fatal if untreated, and which caused the deaths of tens of thousands in the Upper Nile region of southern Sudan in the 1980s and 1990s. Others include guinea worm, schistosomiasis, onchocerciasis, meningococcal meningitis, and trachoma.

Figure 3. Physicians per 100,000 population, Sudan, 2001



Physical and psychological disabilities are prevalent, often resulting from the longer-term sequelae of infectious diseases and maternal morbidity, as well as from the effects of war and displacement. In northern Sudan, survey data indicates that 0.3% of children aged 5 to 17 have a physical disability, while 0.7% are reported to have mental disability. In southern Sudan, survey data shows high rates of reported disability among under-5s – 9% with a physical disability and 1% with a mental disability – likely related to the effects of war and famine. Chronic diseases of lifestyle and aging are starting to be faced by the urban elite. For example, arthritis and hypertension each account for 3% of reported morbidity in Khartoum State.

## 5. Health System Organization and Financing

### *In northern Sudan*

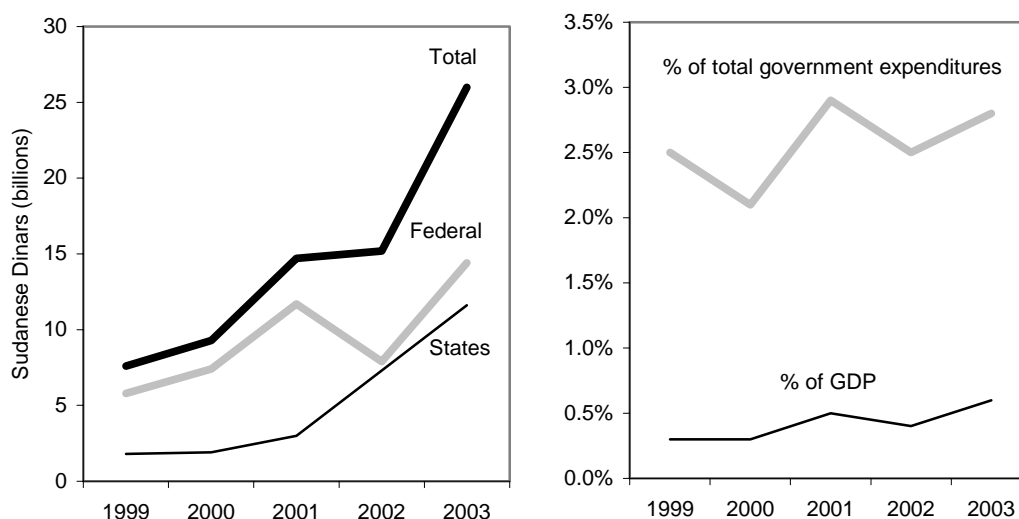
The Government health system in Sudan was challenged over the 1990s by a combination of decentralization of responsibilities and funding cuts. Under the federal system in place since the mid-1990s, responsibility for management and financing of most of the health system has been devolved to the States and localities. On the one hand, all but the most well-off States and localities do not have sufficient financial

resources, as well as managerial capacity, to fully take up their new responsibilities. On the other hand, government austerity measures have limited transfers of financial resources from the center to the States. These factors led to deterioration of the primary health care system, in particular in rural and peripheral areas. One estimate is that less than half of primary health care units are staffed with community health workers.

Another result of these factors is significant regional disparities in health services, which follow the center-periphery pattern shown by the MDG indicators. Figure 3, for example, shows that physicians are concentrated in Khartoum and the better-off north-central States. In Khartoum, there are 35 physicians per 100,000 population, while in Darfur and most of Kordofan, there are 1 or 2. Such disparities in services are mirrored by weak planning and managerial capacities at the State and locality levels.

Recently, increased government revenues (largely due to oil revenues) have allowed an increase in public expenditures on the health sector. Figure 4 shows that combined Federal and State spending on the government health system doubled between 1999 and 2002, and is budgeted to increase a further 70% in 2003. However, it is also shown that as a proportion of total government spending, public health expenditures have remained relatively constant at between 2 and 3%. Similarly, government spending on health has remained at less than 1% of GDP. Both in absolute and relative terms – at perhaps US\$4 per capita and under or around 1% of GDP – government health spending in Sudan ranks among the lowest in the world.

Figure 4. Central and State government expenditures on health, Sudan, 1999-2003



(Figures are actual spending in 1999-2002 and budgeted for 2003.)

However, total health expenditures seem to be considerably higher. Along with decentralization, reforms in the mid-1990s included a national health insurance scheme, institution of user fees at public facilities, and encouragement of private sector provision. Out-of-pocket payments for health services are therefore considerable, including significant expenditures by the well-off for care abroad. Although no data are available

on household health spending, it is estimated that total out-of-pocket expenditures are as large or larger than total government health spending (that is, 1% or more of GDP). In addition, the national health insurance scheme similarly spends around 1% of GDP, so that total health expenditures in northern Sudan are likely in the range of 4 or 5% of GDP, or US\$15 to 20 per capita. This level would be consistent with the lower range of total spending in countries in Sub-Saharan Africa.

Health spending in northern Sudan, however, seems to be highly skewed towards the better-off. Out-of-pocket payments, of course, benefit the better-off more than the poor, while the insurance system covers only 8% of the population, mostly government employees. At the same time, much government spending is focused on hospitals, which tend to be used less by the poor.

Indeed, recent increases in government health spending seem to have been devoted to a considerable extent to the development of referral level facilities, leading to an unbalanced health system favoring hospitals and higher-level health cadres. While the total number of primary health care facilities decreased slightly from 6,413 in 1994 to 6,184 in 2000, the number of general or rural hospitals increased from 162 to 200 and the number of tertiary-level hospitals increased from 78 to 109. Similarly, the number of medical schools has exploded in recent years, now totaling 24 public faculties and 5 private.

This increase in the number of medical schools, which now produce approximately 1,400 physicians per year, came in response to markets for doctors in better-off urban areas of Sudan, but especially abroad, in particular the Gulf countries. Of 16,000 physicians registered in northern Sudan, only around 5,000 are working in the country. Both markets will soon be saturated. At the same time, doctors are reluctant to work in rural and peripheral areas, contributing to the regional disparities shown in Figure 3. Although the government has been working on its human resource challenges, in particular by elevating the status and responsibilities of nurses, considerable work remains in strategy development. For this, better understanding of market and individual incentives is essential.

Development of the private sector in recent years, encouraged by the government, both supplied a market for (and is probably increasingly being driven by) the enormous production of doctors. Private health services, concentrated mainly in urban and better-off rural areas of northern Sudan, are perceived to be of better quality than government services, and tend to be accessed more by the better-off. In Khartoum, an increasing number of hospitals and clinics are run by the private sector, leaving lower-level primary care facilities to the public sector. There are 39 private hospitals, compared to 39 government facilities, and 450 private clinics, compared to 118 government health centers. NGOs are also playing an important role filling some of the gaps in coverage of the government system and serving populations which are not attractive markets for private providers, such as IDPs. In Khartoum, for example, the number of NGO health centers (114) is comparable to the number of government centers (118).

### *In southern Sudan*

The health system in non-government areas of southern Sudan has been characterized as among the least developed in the world. There are only 94 health centers and 17 hospitals to serve a population of at least 6 or 8 million. Only 60% of the population is within reach of any type of health services. International NGOs and UN agencies account for the bulk of health service provision, focusing on meeting basic needs through humanitarian programs. Referral-level care is extremely limited. Private sector provision is insignificant.

Local health service administration in southern Sudan is embryonic, with a Health Secretariat in place but limited in its capacities due to financial and human resource constraints. At present, its budget is largely made up of small grants from some vertical disease programs. Most coordination functions still reside with the humanitarian Operation Lifeline Sudan (OLS), of which UNICEF is the lead agency.

Lack of road infrastructure and insecurity mean that most health service supplies and personnel need to be transported by air. At the same time, a severe lack of skilled human resources requires a heavy reliance on expatriate staff. Thus, although humanitarian programs in health and nutrition account for around US\$50 million annually, up to 80% is spent outside the country on transport costs and expatriate staff, leaving estimated health spending reaching the Sudanese at perhaps US\$1 to 2 per capita. Local financing of health services takes the form of community support for community health workers and other in-kind contributions, which in dollar terms are insignificant, even though important to the communities themselves.

Lack of human resources is currently a significant problem and represents an enormous constraint to future development of health services in southern Sudan. Most southern Sudanese health staff were trained before the war in the 1970s and early 1980s, while younger candidates for existing NGO training programs are not numerous due to the extremely limited primary and secondary school system.

## **6. Health System Performance**

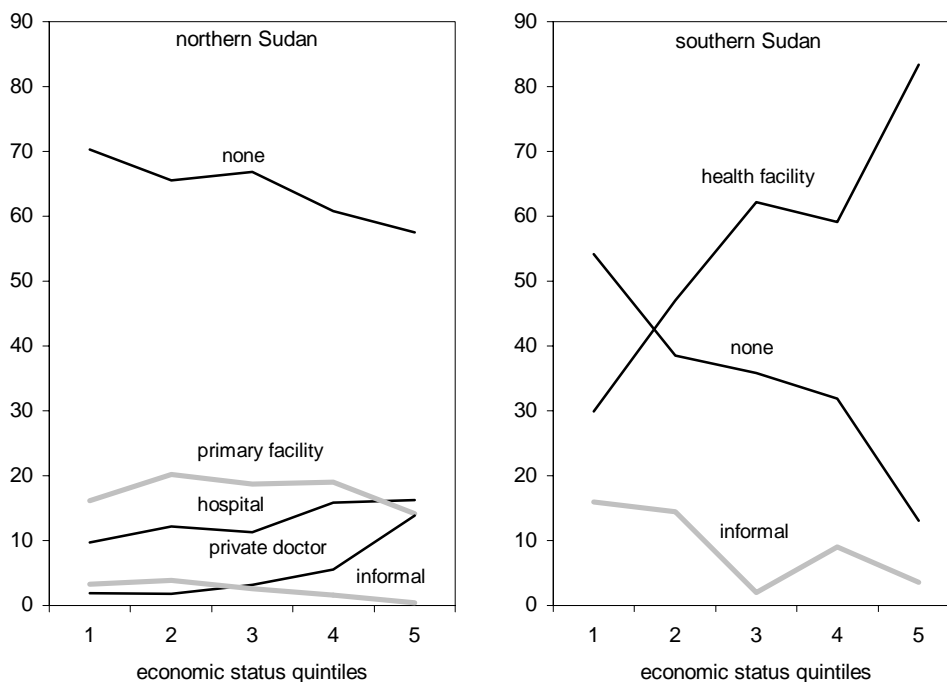
### *Availability, Utilization, and Quality of Services*

Coverage of basic services in many areas is low, sometimes extremely low. As noted above, measles immunization coverage in 1999-2000 was 58% in northern Sudan and 34% in southern Sudan. Coverage of skilled delivery care is 57% in northern Sudan and 6% in southern Sudan. Overall averages mask large urban/rural and regional disparities in service availability and utilization. For example, a 2000 survey in northern Sudan found that 61% of under-5 children with reported fever in urban areas were treated with anti-malarial medication, compared to 42% in rural areas. Coverage of skilled delivery

care in the Upper Nile region of southern Sudan is 0%, compared to 14% in the Equatoria region, 33% in Western Darfur State, and 70% in Al-Gazira State.

There is also evidence that the poor have less access to services. Figure 5 illustrates household survey data on care-seeking behavior for children with ARI symptoms. In northern Sudan, households with higher economic status are more likely to obtain treatment with a private doctor or hospital, while poorer households are more likely to go to informal providers (traditional healers and drug sellers) or not seek treatment at all. The stark differences observed in southern Sudan are likely due to geographic access as much as to household economic status. The better-off are more likely to seek treatment at a health facility, while the poorer are more likely to go to traditional healers or not seek treatment.

Figure 5. Treatment-seeking behavior for children with ARI symptoms by economic status quintile, Sudan, 1999-2000



Although more information is required on the types and quality of services actually provided by health services at different levels of care in Sudan, there is some evidence of gaps in quality. For example, a 1997 assessment of 60 health facilities in three States in northern Sudan found that only 21% of children with diarrhea were correctly managed.

### ***Key Public Health Programs***

A number of key public health programs are important to health system performance. For the most part, key vertical programs in both northern and southern Sudan currently have limited coverage, awaiting Global Fund financing before scaling-up.

- immunization: Coverage is low in many areas, in particular in southern Sudan, and is greatly dependent on externally-financed campaigns.
- malaria control: Programs in northern Sudan have traditionally emphasized vector control and are now focusing resources on larger urban areas. Malaria programs in peripheral areas of northern Sudan and in southern Sudan are limited to sporadic preventive interventions, such as ITN distribution, as well as routine curative care at health facilities.
- Tuberculosis control: The national TB program in northern Sudan has had success in recent years in expanding coverage of DOTS, although only 40% of estimated cases are detected. In southern Sudan, tuberculosis programs are presently limited, covering perhaps 25% of the population.
- HIV/AIDS: The importance of HIV/AIDS has been recognized by the political leadership in both northern and southern Sudan. Programs, however, are still in their planning and pilot stages.
- maternal health: As noted previously, coverage of skilled delivery care in northern Sudan is relatively high, due to a long-standing emphasis on training village midwives, but extremely low in southern Sudan. The effectiveness of delivery care in preventing maternal mortality depends to a great extent on the availability of referral to emergency obstetric care. Little information is available on this in northern Sudan, although it is known that such services are in place in many areas. In southern Sudan, it is known that such referral is impossible in most cases.

## 7. Future Policies and Plans

The government's health sector plan in the 1990s was constrained by lack of resources and weak implementation capacity. However, although each raises challenges, as described above, a number of reforms made during the decade hold promise for the future, including development of the secondary and tertiary referral system, decentralization, cost sharing, health insurance, and private sector development. The government's draft documents on future policy prioritize expansion of basic health services and control of priority diseases, while putting more emphasis on human resources, financing, and disparities. However, more work on strategies and plans to achieve the stated goals, particularly with regard to pro-poor policies, is required.

The envisioned health policy for southern Sudan emphasizes primary health care and community involvement, and sets out standards of service coverage for an ideal system. The exact role envisioned for government over the longer term in the health system functions of provision and financing are not clear. Here again, more work is needed on strategies and plans to achieve the stated goals. At present, in southern Sudan, most health services are supported by international agencies. Although a coordination body is envisioned, more work on the transition is required. At the same time, coordination and integration of vertical programs is needed.

Planned donor assistance to the health sector in Sudan will focus on humanitarian assistance, improvement and extension of primary health care in southern Sudan, and strengthening of HIV/AIDS, malaria, and TB programs. Meeting basic needs is certainly necessary and should be a priority. However, donor plans do not yet consider hospital services or the development of higher-level health cadres, obvious needs in southern Sudan. As well, the project-based and vertical orientation of these plans has risks in terms of coordination and consistency with the longer term development and sustainability of the health system. Similarly, little attention has so far been given to overall health system development.

## **8. Options for World Bank Involvement**

The World Bank has been absent from Sudan since the early 1990s, aside from small initiatives, such as support for the MICS household survey in 2000. This Health Status Report is part of the Bank's effort to rebuild its knowledge base and develop relationships with key stakeholders in the sector. Large obstacles, in particular debt arrears, remain to a full-fledged resumption of Bank lending. However, to move forward on re-engagement during 2003-2004, the Bank's approach will focus on: (i) knowledge generation and sharing to foster national dialogue; (ii) capacity building to support policy reform; and (iii) demonstration project to help improve the delivery of basic social services.

In addition, the following factors should be considered.

- The Bank advances its pro-poor agenda not by promoting a particular health system model, but by acting as a global knowledge broker and partner.
- A two-track approach is needed in Sudan: health sector and capacity development along with meeting immediate post-conflict needs.
- Re-engagement should be done in ways which would allow the Bank to rapidly scale up activities when peace is signed, but also mitigate the risk of setbacks.
- There is a need for the Bank to develop collaborative arrangements with other partners, especially with UN agencies who have a long-standing presence in Sudan.

It is proposed to focus assistance during the present period on four areas.

### **1) Policy dialogue and coordination mechanisms**

- a) Policy dialogue: Assistance to the Federal Ministry of Health for the definition of the health-related section of the Interim Poverty Reduction Strategy Paper (I-PRSP).
- b) Coordination: A first joint review of the sector in northern Sudan, with the government taking the lead and involving all stakeholders. In southern Sudan,

assistance to the nascent administration on the design of coordination mechanisms.

## 2) Knowledge generation and sharing

Technical assistance and other support should be provided to fill remaining gaps in information and analysis on the following priority issues in both northern and southern Sudan:

- a) Health financing: We have insufficient knowledge of the overall resource envelope for the sector, intra-sectoral allocations and State expenditures on health, and user fees and out of pocket payments.
- b) Human resources: This is a key factor for future health sector development. Four aspects need to be further explored: (i) production, both in terms of quantity and quality; (ii) brain drain and conditions for the return of émigrés; (iii) retention of staff in deprived areas; and (iv) continued training needs.
- c) Private sector: Possibilities for public/private partnerships should be explored, associated with studies on the nature and quality of service effectively provided in public and private facilities.
- d) Support services: Procurement and logistic issues and strategies to both improve access and reduce costs need to be further explored. This could first be done in southern Sudan in close collaboration with UN agencies.
- e) Financial management: Financial management systems and procedures as well as capacity, particularly within the State Ministries of Health, should be assessed and a plan of action discussed. This should be linked with studies on health financing, health sector performance reviews, and capacity-building efforts.

## 3) Capacity building

- a) There is a clear need, for the northern part of Sudan, to build up capacity at both the central level and in the States in: 1) public health; 2) planning and budgeting; 3) management of health services; and 4) financial management. This should be linked with preparation of the health-related section of the I-PRSP. As well, it is proposed to support reviews of the health sector and capacity building needs in two or three stable and secure States.
- b) With regard to southern Sudan, the capacity of the embryonic health administration is extremely limited so that empowering it to be able to fill its future responsibilities should be a priority. It is proposed to directly provide external technical assistance to this nascent administration and contribute to the financing of its operating costs.

#### 4) Post conflict “quick start” and priority programs

- a) HIV/AIDS: Already at a generalized stage, the HIV/AIDS epidemic is likely to spread even more rapidly during the post-conflict period. The possibility to finance – on a grant basis – a limited number of key interventions (within and outside the health sector) should be rapidly explored. As a first step, these could include focused research on high-risk groups and behaviors in order to better target planned interventions.
- b) Malaria: In anticipation of planned Global Fund resources for malaria control in Sudan, support could be provided for knowledge-generation activities with potentially high impact on future programs. These could include prevalence studies (using the new rapid diagnostic “dipstick” tests) and research on household preventive and care-seeking behavior.
- c) Maternal health: The almost complete lack of emergency obstetric care in southern Sudan certainly contributes to extremely high maternal mortality. While basic primary health care is being improved through the support of various donors, attention should be paid to referral-level services in collaboration with other interested partners, starting with improving knowledge about existing services and needs.

## INTRODUCTION

Decades of civil war have had a severe impact on Sudan's economic and social development, but a ceasefire is now in place and there is hope of achieving a lasting peace. Peace could bring large dividends, but the challenges for Sudan and its development partners are considerable. Improvement in the health, nutrition, and population (HNP) situation in Sudan will be key part of Sudan's post-conflict development strategy in the coming years.

### **1. Purpose of the Sudan Health Status Report**

In the 1970s and 80s, following the Addis peace agreements, the World Bank was a major player in the reconstruction of Sudan. Since 1992, the World Bank has been mostly absent from Sudan, occasionally supporting small initiatives on a grant basis. More recently, as the prospects for peace have risen, the Bank has started rebuilding its knowledge base through a Country Economic Memorandum (CEM), and has participated in several donor meetings to support the peace process and prepare for post-peace reconstruction. The Bank is currently working with other donors on re-engagement strategies.

To move forward on re-engagement, the Bank has proposed a three-pronged approach for 2003 and 2004, consisting of: (i) Knowledge generation and sharing to foster national dialogue; (ii) Capacity building to support policy reform; and (iii) Demonstration project to help improve the delivery of basic social services.

The preparation of a Sudan Health Status Report is seen as a key element of this approach, a way to improve and consolidate sector knowledge, fuel the policy dialogue with the Government and other partners, and support the preparation of a Poverty Reduction Support Strategy and a post-peace reconstruction program in the areas affected by the war.

### **2. Objectives**

The objectives of the report are to:

- 1) identify the key health, nutrition, and population issues in Sudan;
- 2) analyze how the HNP sector is currently addressing these issues;
- 3) identify key strategies, reforms, and actions for accelerating progress towards the health and population-related Millennium Development Goals (MDGs);
- 4) explore options for World Bank involvement in the HNP sector in the short to medium term; and
- 5) identify needs for future analytical work.

### 3. Sources of Information

The report draws on diverse sources of information, including reports and studies from government and other authorities, donors, UN agencies, NGOs, and academics. (A Bibliography is annexed). Several studies of the health sector in Sudan done by WHO and UNICEF were particularly useful. (WHO, 2003; Richer, 2003) Also important were interviews of key policy and technical personnel, as well as field visits.

Population-representative data on HNP issues from most of the country are available for the first time from several household surveys done in 1999 and 2000.

- A UNICEF Multiple Indicator Cluster Survey (MICS) implemented in 1999 in non-government areas of southern Sudan sampled 4,278 households on the basis of a sampling frame developed from information from local authorities on population sizes and locations. Insecure and inaccessible areas were not included, so that perhaps 20% of the population were not covered. (UNICEF, 2002)
- In 1999, in government-held areas of northern Sudan, a Safe Motherhood Survey (SMS) was done by the Central Bureau of Statistics and Federal Ministry of Health (FMOH) with technical assistance from UNFPA. (Sudan and UNFPA, 2001) The survey sampled 16,907 households, and the sampling frame was based on the 1993 census, with modifications for larger urban areas to reflect new settlements and neighborhoods.
- In 2000, using a similar sampling frame, a MICS was implemented in government areas, with technical assistance from UNICEF and support from the World Bank. The sample size of 25,200 households, is enormous for such a survey and was designed to provide statistically valid estimates at the level of each of the 16 states surveyed.<sup>2</sup> (Sudan and UNICEF, 2002)
- Trends in government-held northern Sudan for some indicators are assessed with estimates from a 1989-90 Demographic and Health Survey (DHS) which sampled 5,860 women aged 15-49, and a 1992-93 Pan Arab Project on Child Development (PAPCHILD) survey which sampled 6,362 women. (Sudan and Macro International, 1991; Population Council, 1995)

Primary data analysis for this report was done on data from the 1989-90 DHS and 2000 MICS in northern Sudan, as well as the 1999 MICS in southern Sudan.<sup>3</sup>

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<sup>2</sup> The 2000 MICS in northern Sudan also surveyed households in three government-held towns in southern Sudan. Estimates from this data are not used in this report because of doubts about their representativeness. Thus, indicator estimates presented in this paper for “southern Sudan” refer to populations in non-government-held areas, which excludes these three towns. These coincide with the “Southern Sector” of Operation Lifeline Sudan.

<sup>3</sup> Many of the estimates presented are based on analysis of this data and may differ in some cases from those provided in the official survey reports. These discrepancies have been investigated and in most cases explained. Details are available from the authors.

#### 4. Validity of Information

Although much information was collected from the various sources on a variety of issues, data was not available on several important elements for the analysis. In particular, information gaps remain with regard to health financing and out-of-pocket payments, the functionality of health services, the package of services effectively delivered, and the quality of provided services.

Unfortunately, because of divisions caused by the civil war, few sources of information are representative of the entire country. For this reason, it is necessary to be consistently clear about which part of Sudan is being described by particular data sources and the estimates derived from them. For the most part, sources of information cover either government-held areas of northern Sudan or areas not held by the government in southern Sudan. For the sake of conciseness, a shorthand is used referring to the former as “northern Sudan” and to the latter as “southern Sudan.” In addition, administrative names and boundaries used in maps reflect those used by the data sources.

**Use of the labels “northern Sudan” and “southern Sudan,” as well as any other labels and boundaries, do not imply acceptance or endorsement of any political position but simply reflect how the data were collected and organized.**

**CHAPTER I**  
**HEALTH, NUTRITION, AND POPULATION SITUATION**

## A. CONTEXT AND FACTORS AFFECTING HEALTH

The health, nutrition, and population situation in Sudan is shaped by important contextual factors which at the same time present fundamental constraints to health policy, health financing and the delivery of health services .

### 1. Geography and Ecology

At 2.5 million square kilometers, Sudan is the largest country in Africa and the tenth largest in the world. Sudan's resources, geography, and climate underlie its economic and livelihoods patterns which in turn affect vulnerability to ill health and malnutrition. In particular, semi-nomadic livestock herders and subsistence farmers in many areas of Sudan are vulnerable to climatic factors. Crises can be triggered or exacerbated by drought or flooding, leading to dramatic increases in malnutrition. Every year, parts of northern and southern Sudan are vulnerable to food insecurity, while acute nutritional crises, caused by a combination of drought and conflict, have been experienced periodically. Famines in South Darfur in the late 1980s and in northern Bahr El Ghazal in 1998 are examples.

Sudan's ecology also shapes the epidemiology of disease. Many of the "classic" tropical diseases prevalent in different parts of Sudan depend on the pattern of vector habitats. Malaria, spread by mosquitoes, is the most important example, endemic in the most of the country, and with epidemic potential in more desertic areas of the north. Visceral leishmaniasis (kala-azar) in areas of east-central Sudan depends on the presence of its sandfly vector, while trypanosomiasis (sleeping sickness) in southern Sudan is spread by the tsetse fly. Other diseases whose prevalence is shaped by ecological factors include dracunculosis (guinea worm), concentrated in southern Sudan, and onchocerciasis (river blindness), present in parts of both southern and northern Sudan.

It can also be noted that Sudan's geographic location, bordering on several countries with high HIV/AIDS prevalence, increases its vulnerability to the pandemic.

Sudan is a country of vast distances with poor transport infrastructure. In most of southern Sudan and parts of northern Sudan, roads are rare and often impassable during the rainy season. Humanitarian agencies operating in southern Sudan and areas of the north rely extensively on costly air transport. This isolation of peripheral areas has numerous effects on the health system. These can include absent or distant health facilities in many places, reluctance of health personnel to work in isolated areas, difficulties and cost of supply, and restricted possibilities for referral to higher levels of care.

### 2. Economic Factors

Sudan is rich in terms of natural and human resources, but economic and social development since Independence in 1956 have been below expectations. Sudan remains

a poor country, with an estimated GDP per capita of US\$340, lower than the Sub-Saharan Africa average of US\$460. (World Bank, 2002).<sup>4</sup>

Sudan's economic growth experience has been marked by instability, with short rebounds following long periods of stagnation. After many years of mismanagement, the present Government's macro-economic reforms contributed to high economic growth in northern Sudan during the 1990s. The start up of oil production and favorable weather conditions for agricultural production also contributed to annual GDP growth averaging 3.8% annually during 1990-95 and 6.6% annually during 1996-2000. However, evidence from household surveys on changes in asset ownership and social indicators over the 1990s suggests that this growth was quite unequally distributed.

Agriculture continues to be the most important production sector, accounting for about 38% of GDP and with about 80% of the labor force is employed in agricultural and related activities. Increasingly, however, the industrial sector is becoming important for growth in urban areas. In contrast, in war affected areas, there is general dependence on subsistence agriculture.

Sudan is an heavily indebted poor country. By the end of 2001, the stock of debt amounted to over US\$20 billion, most of it in arrears. Therefore, Sudan's access to external financing is limited, and it is vital for Sudan's further social development to come to grips with the debt situation. Given the size of the debt, a comprehensive and phased approach to debt rescheduling will be essential. However, even after debt rescheduling, Sudan will still have difficulties financing all its development and reconstruction needs, so that additional resources will be needed.

During the period 1992-1996, with inflation running at three digit levels, no access to external finance, and the continuing drain of resources to finance the civil war, the government balanced the budget through drastic cuts in public expenditures. They were virtually cut in half relative to GDP, causing considerable reductions in social services and infrastructure development.

During the 1998-2000 period, total federal and state expenditures rose by about 4.2 percentage points of GDP, mainly because of oil-related revenues. The bulk of expenditure went, however, to security and defense, which accounted for 40% of the total wage bill as well as 70 percent of operations and maintenance. It is estimated that about US\$1 million a day is spent on defense and security. Among social services, expenditures increased mainly to support subsidies for urban dwellers, while less resources were made available for education and health. Government expenditures on health averaged 0.8% of GDP during 1998-2000.

The overall wealth of the country, of course, has a fundamental impact on the resources available, from both households and government, for HNP programs and services. The prospect of economic growth in Sudan in the coming years will make more

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<sup>4</sup> The following discussion of economic factors, as well as poverty, inequality, and gender, draws considerably from the World Bank's draft Country Economic Memorandum (CEM).

resources available. Macro-economic stability, renewed engagement with the international community, increased oil production, and above all, peace, should set the stage for further economic growth. However, how the new resources— for example, oil revenues – are used will be fundamental to the prospects of improving health and nutrition in Sudan.

### **3. Poverty and Inequality**

Although no recent household-level data is available to measure consumption or income in money terms, there is wide belief that: (i) income distribution and inequalities have worsened over the years (including during the 1990s); (ii) the incidence of poverty is very high even when compared to Sudan's neighbors (whose GDP per capita is typically lower) and; (iii) there are considerable variations in poverty between states and within states.

Estimates of national poverty rates show a steady increase in poverty from 50% in 1968 up to 75% in 1986. Based on recorded income, a 1992 study estimated poverty at about 86%. The incidence and depth of poverty is unquestionably well above average in southern and western Sudan, while in north-central Sudan it is less than average. In 2000, a study in West Equatoria in southern Sudan found that 85% of the population had average incomes per capita below US\$160 and that about 93% of the population lived below US\$1 per day.

Within northern Sudan, there seems to be a center-periphery disparity in the distribution of economic resources. The most well-off areas are the north-central states of Northern, Nahr-el-Nil, Khartoum, and Al-Gazira, while large parts of the rest of the country (except for larger urban areas) can be considered peripheral to significant economic activity. Regional differences are also evident within southern Sudan, where all indicators suggest that the Equatoria region is on average better-off in terms of living conditions than the other regions.

In general, urban areas are better-off than rural areas. There is anecdotal evidence that significant wealth is concentrated with an urban elite, whose need and demand for health care services, focusing on care for chronic diseases of lifestyle and aging, are considerably different than the mass of the population. At the same time, the available data indicates that there is significant inequality in urban areas and that the extent of urban poverty has likely increased considerably in tandem with migration to urban centers.

In southern Sudan in particular, but also in northern Sudan, food security is an important preoccupation. Widespread poverty and the erosion of household coping capacities due to war make wide segments of the population vulnerable to food insecurity brought on by crises such as flooding, drought, conflict, and displacement.

Regional and urban/rural disparities in economic resources have clear implications for health and nutrition outcomes as well as services. Average health and nutrition status

tends to be lower in poorer areas, while the ability of communities and local governments to finance health services also differs. As discussed in a subsequent section, this is also true at the household level, in that the poor in Sudan (like elsewhere) tend to have worse health and nutrition outcomes, as well as less access to health services, than the better-off.

#### **4. Gender**

The Gender-related Development Index, which conveys disparities between men and women in education, life expectancy, and income, ranks Sudan 116<sup>th</sup> out of 146 countries in the UNDP's 2002 *Human Development Report*. Other indicators confirm disparities related to gender. For instance, 52% of adult women in northern Sudan are literate, compared to 71% of men. Progress, however, has been made in northern Sudan in recent years in reducing the gender gap in education. In southern Sudan, 12% of adult women are literate, compared to 37% of men, and girls consistently have less access to education than boys.

The socio-economic, political, and human-rights conditions of women obviously vary considerably in Sudan. However, it is clear that gender roles and discrimination increase the vulnerability of women and girls to ill health. In addition, although sexual violence is also prevalent in peaceful areas, domestic violence, rape, and forced abductions have increased in war-affected regions. As well, as a result of the war situation, there is a considerable increase in the number of female-headed households.

Although, as discussed in a subsequent section, a number of commonly-used health indicators do not show significant differences between boys and girls, women are particularly vulnerable with regard to reproductive health. For example, a large proportion of women, specially in rural areas and southern Sudan, are not aware of and do not have access to modern family planning methods, while knowledge of HIV/AIDS is limited.

In addition, one of the main health hazards to girl children is female genital cutting (FGC), or circumcision, which is primarily but not exclusively practiced in the northern parts of the country. In northern Sudan, more than 90% of women are circumcised with 75% of women infibulated (pharonic circumcision) and about 20% excised (sunna circumcision). Circumcision often leads to lifelong suffering and infections and can have a severe impact on maternal morbidity and mortality.

#### **5. Conflict and Post-Conflict Context**

Sudan has suffered from civil conflict for much of the period since Independence in 1956, with the present civil war having started in 1983. Most fighting has occurred in southern Sudan, as well as areas of Southern Kordofan and Blue Nile states. Civil conflict has also flared in other parts of northern Sudan in recent years, in particular Darfur, Kassala, and Red Sea.

In southern Sudan, over the years, a variety of political groups and militias have formed, shifting alliances and often fighting each other. However, in recent years the most important groups have joined the umbrella of the Sudan People's Liberation Movement (SPLM), which is the counterpart to the Khartoum government in the present peace negotiations. The SPLM militarily controls most of rural southern Sudan, while the government controls several towns, including the larger centers of Juba, Malakal, and Wau.

The health, nutrition, and population effects of the war have undoubtedly been significant, with the figure of 2 million deaths often cited. Evidence from civil wars in other developing countries suggests that indirect effects, in particular child mortality that is much higher than it would have been in peacetime, can be enormous.<sup>5</sup> War can affect health and nutrition through many possible mechanisms. First, the direct effects of violence can cause death and physical and psychosocial disability. Second the indirect effects of conflict, including displacement in particular, can cause loss of livelihoods and deterioration of living and environmental conditions which severely affect food security and access to health care. Third, the economic effects of war, both on households and governments, reduces the resources available for health services, as well as for investment in their development.

The suffering caused by Sudan's civil war led to the formation of Operation Lifeline Sudan (OLS) in 1989, the result of the first formal agreement between a government and rebel group for the purpose of allowing access to humanitarian assistance. OLS is a coordination mechanism which includes various UN agencies and NGOs. A number of NGOs also operate in southern Sudan outside this mechanism. The "Northern Sector" of OLS, based in Khartoum, provides humanitarian assistance in government-held war-affected areas, while the "Southern Sector," based in Nairobi, Kenya, operates in non-government-held areas. UNICEF is the lead agency, and coordinates health services provided by the different agencies under the OLS umbrella.

Health services, not well-developed even before the war, have deteriorated over two decades of conflict so that most are now supported by international humanitarian agencies. Deterioration in the education system has led to a severe shortage of trained health personnel, and even of candidates for NGO training programs.

In July, 2002, the government and the SPLM signed a protocol in Machakos, Kenya, which set the stage for ongoing peace negotiations. A ceasefire has been in effect since October 2002 and there is optimism that the negotiations will result in a lasting settlement. Nevertheless, the potential for continued sporadic conflict, both in southern Sudan and in parts of northern Sudan, is seen to be significant, so communities may become newly vulnerable. At the same time, some populations, especially in newly accessible areas, will continue to require humanitarian assistance after a peace agreement. In other words, it is clear that although reconstruction and development assistance will

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<sup>5</sup> A recent series of retrospective mortality surveys in Eastern Democratic Republic of Congo support an estimate of about 2 million excess deaths in that region due to the direct and indirect effects of the war between 1998 and 2001. (International Rescue Committee, 2001)

become a new focus of international donors after a peace agreement, humanitarian assistance in the health and nutrition sectors will continue to be necessary.

Coordination, both between the Northern and Southern Sectors of OLS and between different humanitarian agencies, has been a challenge over the years, and this will extend to the post-conflict period. For example, there are presently 64 Sudanese and international agencies implementing health programs in southern Sudan. At present, the local health authorities have neither the human nor financial resources to take over the coordination and oversight of the numerous HNP programs implemented by NGO and UN agencies.

Experience in other situations has indeed shown that coordination, as well as weak local capacity, are the main challenges facing health sector development in post-conflict situations.

## **6. Population, Migration, and Displacement**

Estimates of the total population of Sudan in 2003, based on projections from the 1993 census, range between 33 million and 38 million. However, due to conflict, the 1993 census did not adequately cover southern Sudan, so there is uncertainty about the regional distribution of the population of the country. Indeed, this is a contentious issue which will only be resolved with a new census. For now, estimates of the population of southern Sudan range from 6 to 12 million, with the Southern Sector of OLS using for operational purposes the figure of 8 million in non-government-held areas.<sup>6</sup> The government's population estimate for the 16 states in northern Sudan is 28 million, with a further 1.5 million in government-held areas of southern Sudan.

There is more certainty about the age distribution of the population because this is estimated from survey data. In northern Sudan, data from the 1990 SMS indicates that 43% of the population are under 15 years of age, which is virtually identical to the estimate from the 1989-90 DHS, indicating that a decline in fertility experienced in previous decades had stopped during the 1990s. The total fertility rate (TFR)<sup>7</sup> in northern Sudan for the period 1985-99 is estimated at 5.9, compared to 6.1 for the period 1975-89. Based on the 1993 census, the population growth rate is estimated at 2.6% per year.

Under-five mortality in northern Sudan during 1995-99 is estimated at 104 per 1,000 using the direct method of estimation and 132 per 1,000 using the indirect method.<sup>8</sup>

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<sup>6</sup> This is derived from the number of under-5 children vaccinated by the UNICEF/WHO polio eradication campaign's National Immunization Days (NIDS), assuming that they make up 20% of the population. The resulting estimate for total population of 8 million excludes government-held areas of southern Sudan.

<sup>7</sup> The TFR can be interpreted as the number of children a woman would bear during her reproductive years (ages 15 to 49) if she were to experience the age-specific fertility rates prevailing during the time period of reference.

<sup>8</sup> The direct method is based on data on exact ages of births and deaths while the indirect method is based on the mothers' reported numbers of children born and dead. In this case, there are indications that the direct estimate was affected by reporting errors, so that the higher indirect estimate may be more plausible. (Sudan and UNFPA, 2001)

Unfortunately, there are no population-representative data on southern Sudan to allow estimation of child mortality, although surveys in specific locations during periods of crisis have found exceptionally high mortality. Life expectancy in northern Sudan is estimated (from the 1993 census) at between 54 and 58 years.

These estimates are consistent with the profile of a high fertility and high child mortality country that has not yet completed the demographic and epidemiological transitions. This, along with widespread poverty in Sudan, means that the burden of disease is dominated by the childhood “diseases of poverty” – malnutrition, diarrhea, acute respiratory infection (ARI), malaria, and vaccine-preventable diseases. In addition, maternal mortality and morbidity are significant, as are major infectious diseases affecting adults, in particular malaria and HIV/AIDS. The general implication for the HNP sector is that basic preventive and curative interventions addressing maternal and child health should be priorities.

The 1993 census in northern Sudan indicated that around 30% of the population lived in urban areas. Due to significant migration to urban areas, this is dramatically higher than the 20% estimated from the 1983 census. This migration to urban areas in northern Sudan, including large numbers of internally displaced persons (IDPs) from southern Sudan, has continued. If it did so during 1993-2003 at the same rate as 1983-1993, the urban proportion of the population in northern Sudan would now be at least 40%. The agglomeration of Khartoum dominates with up to 6 million inhabitants, while the next seven largest cities range between a quarter and a half million people.

In southern Sudan (including both government-held and SPLM-held areas) the proportion of the total population living in urban areas is likely much lower.

The increasingly high urbanization of the population in northern Sudan, combined significant urban poverty, has a general implication for the HNP sector. Although it is clear that poverty and human development needs are significant in rural and peripheral areas, a pro-poor strategy should not neglect HNP services for the poor in large urban areas, particularly in Khartoum.

Emigration of skilled professionals is also a significant issue in northern Sudan, causing a continuing brain drain.

Conflict has caused large numbers of IDPs to move to cities and other settlements. The UN estimates that there are 4 million IDPs in Sudan, including 1.8 million in Khartoum, 500,000 in other areas of northern Sudan, 300,000 in government-held areas of southern Sudan, and 1.4 million in SPLM areas of southern Sudan. As well, there are around 500,000 Sudanese refugees in neighboring countries. In many cases, particularly in Khartoum, the distinction between IDPs and urban poor has become blurred over the years.

A 2003 survey of IDPs in Khartoum, representative of a population of 350,000, found that two-thirds expressed the intention to immediately return to their areas of origin once

peace is assured. On the other hand, only one-third reported that their reasons for migration were related to insecurity, so that economic and other factors will likely be determinant to their return. (CARE and IOM, 2003) It should be noted that in other post-conflict situations, the rapidity and scale of such return movements has often surprised humanitarian agencies. In any case, the UN projects the return of 1 million IDPs and 500,000 Sudanese refugees to their areas of origin. (UN, 2003) There are presently reports that IDPs are starting to return to areas of southern Sudan, in particular the Bahr el Ghazal region, straining local resources and services.

There are several implications for the HNP sector of the existence of these large vulnerable populations. On the one hand, there is a need to develop more permanent services for peri-urban settlements of IDPs that will remain in place after a peace agreement and whose needs are indistinguishable from other urban poor. On the other hand, there will be a need to extend services to the IDPs and refugees who return to their areas of origin. In the short term, this will likely take the form of humanitarian assistance as returnees may overwhelm limited or non-existent local services, but longer-term development of health services will also be needed. Indeed, the existence of such services will also undoubtedly be a factor in their decision to return.

## **7. Administrative Context**

Sudan's governmental structure has been reorganized since the mid-1990s into a federal system with three tiers: the federal level, 26 states, and 134 localities (*Muatamadia*).<sup>9</sup> Significant responsibility for social services has been decentralized to the states and localities. In the health sector, the Federal Ministry of Health (FMOH) retains responsibility for overall policy, as well as posting and continuing education of higher-cadre health personnel, and management of several tertiary hospitals. The state level has responsibility for health centers and hospitals, while the localities are responsible lower-level primary health care services.

Unfortunately, this decentralization of responsibilities has not been accompanied by the necessary transfers of resources. In particular, states with poor tax bases do not collect revenues sufficient to fund their social service responsibilities, while transfers from the federal level have been limited. Little is known about the revenues available to localities, except that the same disparities in resources certainly contribute to disparities service availability and quality. In essence, decentralization of responsibilities without transfers to the poorer states has likely contributed to widening regional disparities in access to services and in health and nutrition outcomes.

This imbalance between responsibilities and resources in Sudan's federal system ultimately has political causes outside the purview of the HNP sector, but is a

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<sup>9</sup> A recent reorganization renamed and changed the borders of "provinces," so that they have become the 134 "localities." The level previously called "locality" is now called "administrative unit" and numbers 519. Ten of the 26 states are in southern Sudan, and their names and boundaries do not correspond with the administrative units used by the SPLM.

fundamental constraint affecting both the overall level and distribution of resources available for HNP services.

The administrative structure to be adopted after a peace agreement is as yet unclear. At present, in areas of southern Sudan controlled by the SPLM, the main administrative levels are the central, regional, and county authorities.<sup>10</sup> In the HNP sector, the SPLM Health Secretariat retains responsibility for overall policy, training of personnel, and relations with international agencies and donors. The counties have operational responsibility for primary and hospital-level services. The envisioned SPLM health policy does not consider issues of equity and regional distribution of resources, so that the same type of regional disparities seen in the north are a risk for the longer term. For now, social services are extremely dependent on outside resources and management, in particular churches, international NGOs, and UN agencies. The central Health Secretariat presently possesses few human and financial resources, while the counties for the most part have only nominal responsibility for the existing social services within their borders. Little information is available on the actual or potential revenue sources available to either the central authorities or the counties.

## **8. Summary of Main Points**

A number of important structural factors shape the HNP situation in Sudan and constrain potential policy responses. These include:

- **Geography and Ecology:** Sudan's vast distances affect coverage of health services as well as increase costs, while climatic factors can contribute to humanitarian emergencies related to drought and flooding, and ecological factors expose much of the population to major infectious diseases.
- **Economic Factors:** Sudan is a poor country, which constrains the overall resources available to the health sector, compounded by government austerity measures in recent years that cut social service expenditures. The drain caused by defense and security spending is also considerable.
- **Poverty and Inequality:** Poverty in Sudan is deep and widespread, increasing the vulnerability of wide segments of the population to ill health and malnutrition. Food security is a major preoccupation in southern Sudan as well as parts of the north. Disparities between urban and rural areas, as well as regional differences, are pervasive, so that poorer areas and populations are both more vulnerable to ill health and less able to support adequate services.
- **Gender:** Gender inequality increases the vulnerability of women and girls. Reproductive health is undermined by poor access to knowledge and by traditional attitudes and practices such as female circumcision. Deterioration of social structures under the pressures of war has increased the incidence of sexual violence.

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<sup>10</sup> Administrative units in southern Sudan have been changed recently. At present, there are three regions - Equatoria, Bahr el Ghazal, and Upper Nile - and 55 counties. Note the SPLM also controls areas in Southern Darfur (Abyei), Southern Kordofan (Nuba Mountains), and southern Blue Nile.

- Conflict and Post-Conflict Context: Chronic conflict in Sudan has had enormous effects on the health and nutrition of war-affected populations. Almost all health services in war-affected areas are provided through humanitarian assistance, which will continue to be necessary after a peace agreement. Services will need to be expanded to under-served and previously inaccessible populations. Post-conflict assistance in the health sector will confront the challenges of coordination and weak local capacity.
- Population and Migration: Sudan's demographic profile is one of high fertility and high mortality. This shapes, along with poverty, its epidemiological profile characterized by childhood diseases, malnutrition, maternal morbidity and mortality, and major infectious diseases affecting adults, in particular malaria and HIV/AIDS. Considerable rural-urban migration has occurred in recent decades, including IDPs from war-affected areas, so that urban poverty is significant. The return of IDPs to their home areas will strain local resources and will require the extension of basic health services.
- Administrative Context: Sudan has a federal system of government, with responsibility for health services decentralized to the states and localities. However, because the poorer states cannot raise sufficient resources, and transfers from the center have not been significant, this has exacerbated regional disparities. A similar decentralized structure envisioned for southern Sudan runs similar risks of regional inequity over the longer term.

## B. MILLENNIUM DEVELOPMENT GOALS

The Millennium Development Goals (MDGs) were agreed to by world leaders at the UN Millennium Summit in 2000 and reflect an understanding of development as multi-dimensional. Quantitative indicators and targets have been adopted in order to guide policy and assess progress. Five of the eight MDGs are directly related to nutrition and health, and their indicators and targets provide useful tools for assessing the HNP situation in Sudan. For the first time, population-representative data from household surveys is available from most parts of Sudan which allows estimation and analysis of these indicators.

Table 1. HNP-related MDG indicators, Sudan, most recent estimates

	north	south	Sudan	Sub-Saharan Africa	Middle East & North Africa
<b>MDG 1: Poverty and Hunger</b>					
prevalence child malnutrition (underweight) (% under 5)	35	..	..	30	17
prevalence of child malnutrition (stunting) (% under 5)	36	..	..	42	23
prevalence child malnutrition (wasting) (% under 5)	16	21	..	8	7
<b>MDG 4: Child Mortality</b>					
under-5 mortality rate (per 1,000)	105	..	..	162	54
infant mortality rate (per 1,000 live births)	68	..	..	91	43
measles immunization (% of children 12-23 months)	58	34	..	53	86
<b>MDG 5: Maternal Mortality</b>					
maternal mortality ratio (per 100,000 live births)	509	..	..	1,100	360
births attended by skilled health staff (%)	57	6	..	44	63
<b>MDG 6: HIV/AIDS, Malaria, and Other Diseases</b>					
prevalence of HIV (% adults ages 15-49)	..	..	2.6	9.2	0.3
contraceptive prevalence rate (% of women ages 15-49)	7	..	..	15	46
number of children orphaned by HIV/AIDS	..	..	62,000	11M	65,000
proportion sleeping under insecticide-treated bednets (% children under-5)	2	..	..	2	..
proportion of children with fever treated with anti-malarials (% children under-5 with fever)	50	36	..	42	..
incidence of tuberculosis (per 100,000 per year)	180	325	..	339	66
tuberculosis cases detected under DOTS (%)	58	6	..	..	..
<b>MDG 7: Environment</b>					
access to an improved water source (% of population)	70	39	..	55	90
access to improved sanitation (% of population)	64	29	..	55	83
<b>General Indicators</b>					
Population	..	..	33.3 M	673.9 M	300.6 M
total fertility rate (births per woman ages 15-49)	5.9	..	..	5.1	3.3
life expectancy at birth (years)	57.9	..	..	46.2	68.2

Sources are 1999 SMS and 2000 MICS in northern Sudan, 1999 MICS in southern Sudan, Sudan National Tuberculosis Control Program (2003), Richer (2003), UNAIDS (2002), Sudan Central Bureau of Statistics (2001), and World Bank (2002).

The level of the MDG indicators observed in Sudan, in particular in comparison to regional averages, is assessed. As well, when data are available, trends over time are discussed. Different types of disparities in the indicators are also analyzed, including urban/rural, regional, gender, and socio-economic.

## 1. MDG Indicators

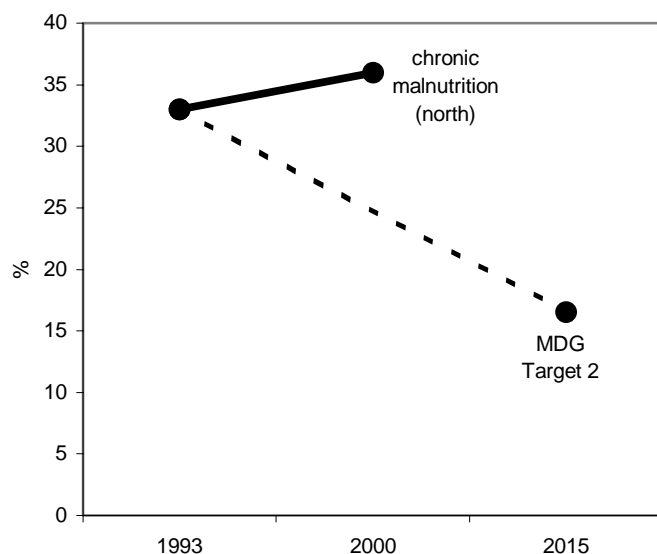
Table 1 provides estimates for the various MDG indicators in comparison with the Sub-Saharan Africa and Middle East and North Africa regional averages. As discussed above, because of the coverage of the available household survey data, for the sake of clarity, estimates are labeled to refer to either northern Sudan or to non-government-held areas of southern Sudan. (The few estimates made for the entire country are based on projections or models).

Overall, levels of the MDG indicators in northern Sudan are comparable or better to the Sub-Saharan Africa averages but not as good as the Middle East and North Africa regional averages. The available estimates for indicators in southern Sudan, however, are far lower.

## 2. Trends and Targets

A number of targets for improvement between 1990 and 2015 are set under each of the MDGs. In northern Sudan, baseline data from the 1989-90 DHS and 1993 PAPCHILD survey are available to compare with estimates from the 1999 SMS and 2000 MICS, but in southern Sudan, the 1999 MICS was the only such survey ever done, so trends there cannot be evaluated.

Figure 6. Chronic malnutrition (stunting) among under-5 children, northern Sudan, 1993-2000 (%)

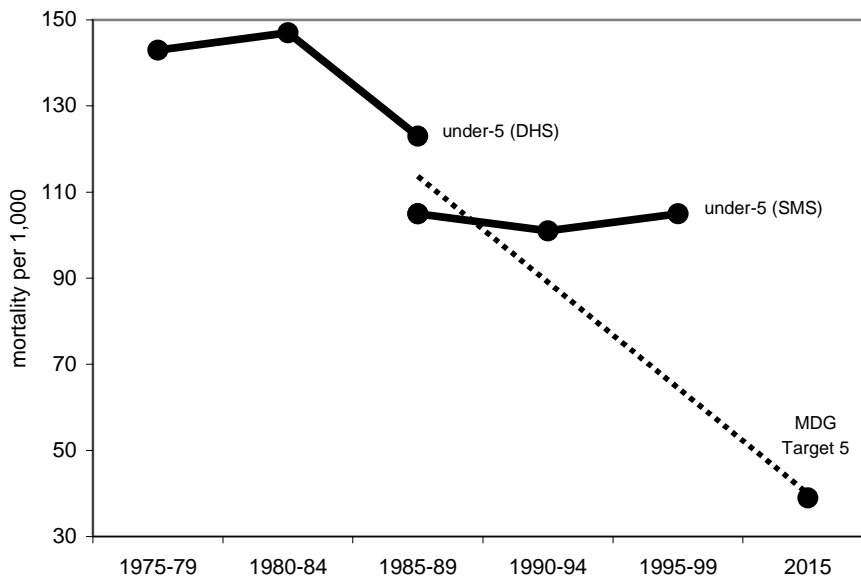


Sources are 1992-93 PAPCHILD and 2000 MICS in northern Sudan.

In general, the MDG indicators in northern Sudan have shown little improvement, and perhaps some deterioration, during the 1990s, so that reaching the various MDG targets will be a challenge. In southern Sudan, where indicator levels are much lower, it is unlikely that, given the conflict, the situation improved in any significant way during the past decade, so that reaching the 2015 MDG targets would require enormous investment.

The first MDG is to eradicate extreme poverty and hunger and a specific target is to halve between 1990 and 2015 the proportion of people suffering from hunger. Figure 6 illustrates how estimated prevalence of chronic malnutrition among under-5 children (measured by the height-for-age ratio) in northern Sudan rose from 33% in 1993 to 36% in 2000, indicating that significant progress will be required to reach the MDG target.<sup>11</sup> Similarly, the estimated prevalence of acute malnutrition (indicated by the weight-for-height ratio) increased during the same period from 13% to 16%.

Figure 7. Direct estimates of under-five mortality, northern Sudan, 1975-1999



Sources are 1989-90 DHS and 1999 SMS in northern Sudan.

The target for the fourth MDG is to reduce under-five mortality by two-thirds between 1990 and 2015. Figure 7 illustrates trends in direct estimates of under-5 mortality from survey data referring to time periods between 1975-99 and 1995-99. It indicates that after declining from over 140 per 1,000 to around 100 in the 1980s, progress was slower in the 1990s. Significant effort would be required to meet the 2015 goal of around 40 per 1,000. It should be noted that indirect estimates of under-5 mortality indicate more obvious improvement (albeit at higher levels of mortality), from 150 per 1,000 in the late 1980s to 130 per 1,000 in the mid-1990s. (Sudan and UNFPA,

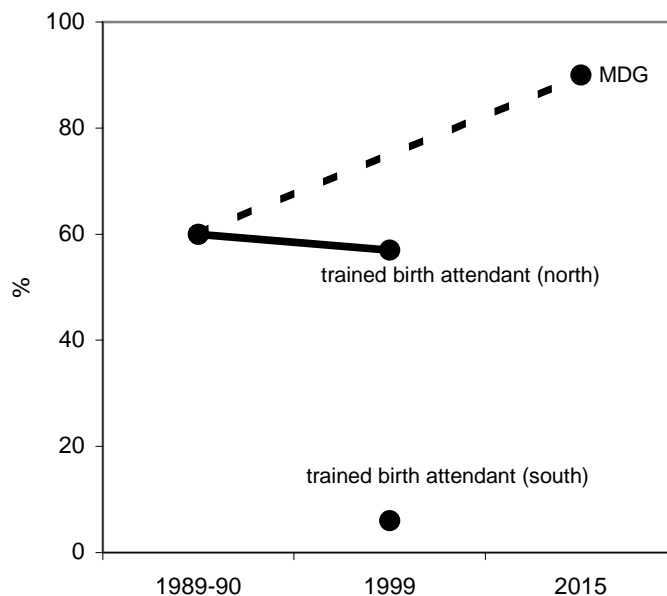
<sup>11</sup> Over 50% of the observations in 2000 dataset were missing exact age information or had other problems, so the estimate for chronic malnutrition, measured by the height-for-age ratio, should be interpreted with caution.

2001) In this case, the MDG target for 2015 would be 50 per 1,000, still a significant challenge.

Measles immunization of one-year-old children, another indicator for this MDG, seems to have remained somewhat stable during the 1990s in northern Sudan at around 60%. (Coverage in southern Sudan in 1999 is estimated at 34%.)

The target for the fifth MDG is to reduce the maternal mortality ratio by two-thirds between 1990 and 2015. Between the period around 1977 and the period around 1987, estimated maternal mortality remained unchanged in northern Sudan at about 500 per 100,000 live births. However, the methods used to estimate maternal mortality cannot provide information on trends during more recent periods. Due to this difficulty, the target for this MDG has been operationalized into the goal of achieving 90% coverage of delivery care by skilled health personnel. Skilled health staff are doctors, nurses, midwives, or health visitors. Figure 8 illustrates how this coverage remained stable in northern Sudan during the 1990s at around 60%, so that reaching the goal by 2015 will require a significant expansion of access to skilled delivery care. The graph also makes clear the extremely low level of coverage in southern Sudan (6%), so that goal of 90% is likely out of reach in that region.

Figure 8. Delivery care by trained health personnel, Sudan, 1990-1999 (% of births)



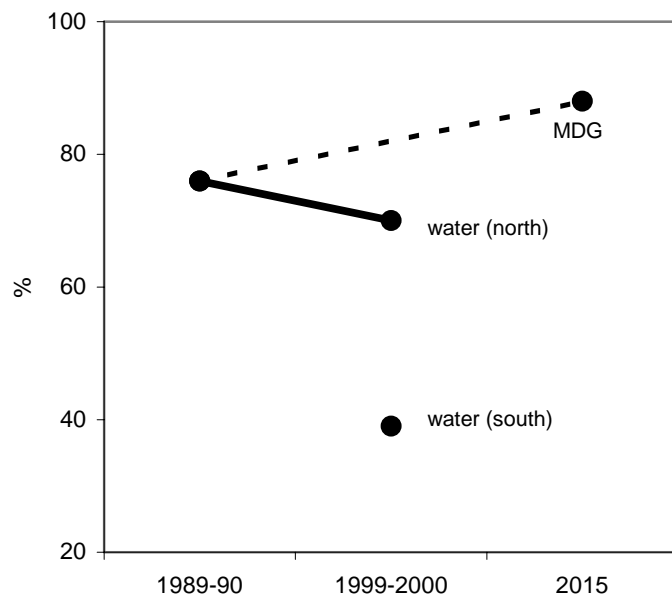
Sources are 1989-90 DHS and 1999 SMS in northern Sudan and 1999 MICS in southern Sudan.

The sixth MDG is to combat HIV/AIDS, malaria, and other diseases, in particular tuberculosis. The specific targets are to have halted and started to reverse the incidence of these diseases by 2015. With regard to HIV/AIDS, serological tests of blood collected in 1981 and 1983 in the Upper Nile region of southern Sudan found that the virus was already quite prevalence at the very beginning of the pandemic in Africa. (Arbesser and Sixl, 1988) Overall adult prevalence has been slowly growing since then so that the

present UNAIDS estimate, based on a variety of sources, is 2.6%. Prevalence among certain high-risk groups is undoubtedly higher. In any case, overall adult prevalence over 1% suggests an epidemic that has spread beyond high risk groups into the general population. (UNAIDS, 2000) Large-scale preventive programs are now in their nascent stages, so that achieving the MDG target will depend both on peace and on the effectiveness of the planned programs.

With regard to malaria, along with much of Sub-Saharan Africa, Sudan has experienced an increase in incidence of the disease in the past several decades. It is estimated that 75% of the population are at risk of endemic malaria, while the remaining 25% are at risk of epidemics. In northern Sudan, there is some evidence that focused programs in urban areas have been successful in reducing malaria prevalence, but the sustainability the vector-control interventions involved remains to be seen. At the same time, most of the rest of the country has not benefited from similar focused interventions. Large-scale malaria control programs in both northern and southern Sudan are in their planning stages, and their success in reaching the MDG target will depend on peace, available resources, and program effectiveness.

Figure 9. Access to improved water source, Sudan, 1990-2000



Sources are 1989-90 DHS and 2000 MICS in northern Sudan and 1999 MICS in southern Sudan.

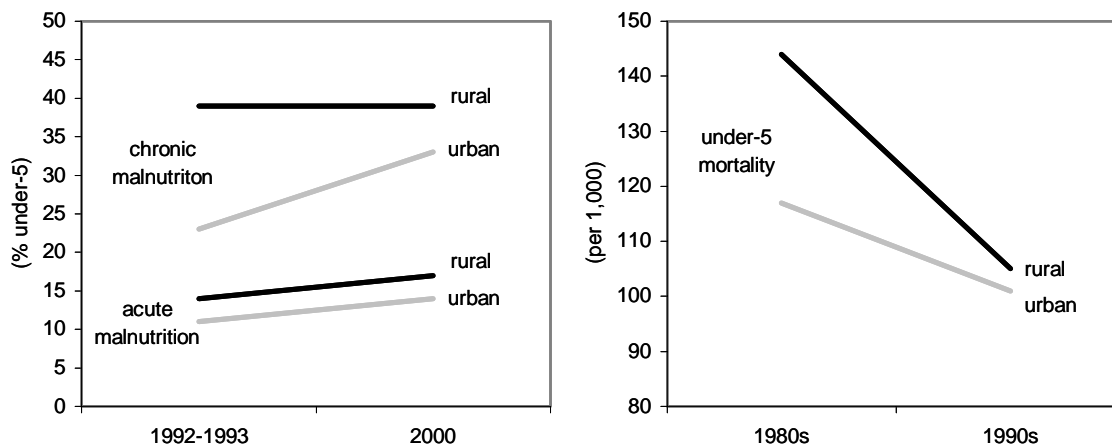
With regard to tuberculosis, in northern Sudan, the tuberculosis control program has had success in recent years in expanding case detection and treatment under the DOTS strategy. In 2002, 58% of all estimated cases were identified and 75% of these were treated under the DOTS regime. The program seems likely to reach its goals of 70% case detection and 85% treatment by 2005. In southern Sudan, however, implementation of DOTS programs is minimal, while health system capacity is such that the ambitions of a proposed large-scale program are limited to covering half the population.

The seventh MDG is to ensure environmental sustainability and a specific objective is to, between 1990 and 2015, reduce by 50% the proportion of people without access to safe water. Figure 9 shows that access to improved water sources in northern Sudan has not improved in the 1990s, so that accelerated progress would be required between now and 2015 in order to meet this objective. Meeting the goal in southern Sudan would imply bringing access up to around 75%, or close to the present situation in the north. Another indicator for this MDG, access to adequate sanitation, has also remained stable in northern Sudan, at over 60% of households in both 1990 and 2000. (This compares to access of around 30% in southern Sudan in 1999).

### 3. Urban/Rural Differences

Differences between urban and rural areas in northern Sudan in terms of the HNP-related MDG indicators are evident. With regard to the health outcomes of child malnutrition and mortality, however, the urban-rural gap has narrowed considerably in the past decade, consistent with increasing poverty and migration to the cities. Urban-rural differences are larger in terms of measles immunization and access to water and sanitation, but the same narrowing of the gap is seen with regard to coverage of skilled delivery care.

Figure 10. Child malnutrition (1993-2000) and child mortality (1980s-1990s), northern Sudan



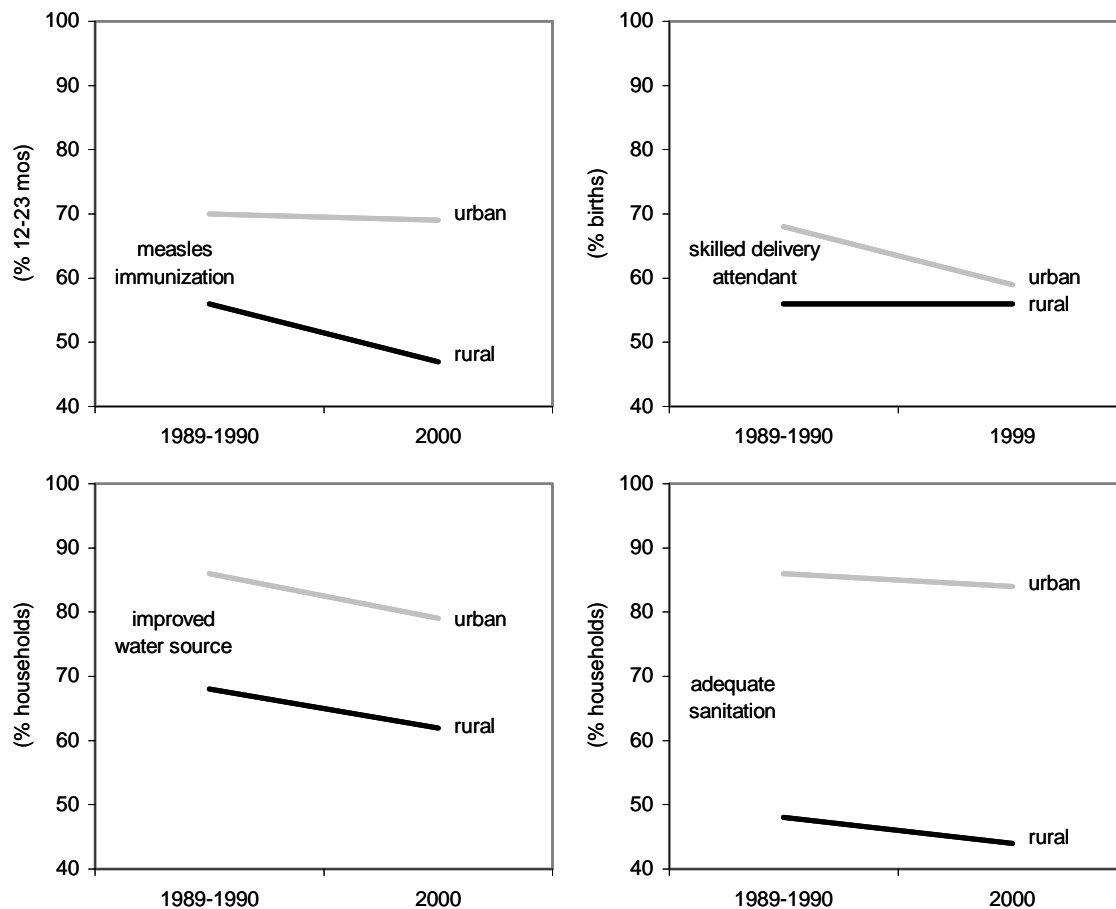
Sources are 1999 SMS and 2000 MICS in northern Sudan.

Figure 10 compares urban and rural areas of northern Sudan in terms of child mortality and malnutrition. Looking at the most recent estimates (the decade of the 1990s for mortality and the year 2000 for malnutrition), although estimated rates are higher in rural areas than in urban areas, the gaps are not exceptionally large. In urban areas, the prevalence of chronic malnutrition among under-5 children is estimated at 33%, compared to 39% in rural areas. The prevalence of acute malnutrition in urban areas is 14%, compared to 11% in rural areas. Under-5 mortality in urban areas during the 1990s is estimated at 101 per 1,000, compared to 105 in rural areas. Both chronic child malnutrition and child mortality are often interpreted as reflecting underlying

patterns of social and economic well-being. In the northern Sudan context, this suggests widespread poverty in both urban and rural areas.

Looking at the trends, differences between urban and rural areas narrowed largely due to slower improvement (in terms of mortality) and greater deterioration (in terms of chronic malnutrition) in urban areas. The estimated prevalence of chronic malnutrition among under-5 children increased from 23% to 33% in urban areas, but remained stable at 39% in rural areas. Under-5 mortality improved more slowly in urban areas, from 117 per 1,000 in the 1980s to 101 in the 1990s, compared to rural areas, where the decline was from 144 to 105. This suggests that poverty increased in urban areas in the recent decade and would be consistent with either worsening economic conditions or significant rural-urban migration, or both.

Figure 11. Measles immunization and delivery care, northern Sudan, 1990-2000



Sources are 1999 SMS and 2000 MICS in northern Sudan.

Figure 11 seems to present a somewhat different picture, comparing urban and rural areas of northern Sudan in terms of measles immunization, skilled delivery care, and access to improved water sources and adequate sanitation. Measles immunization coverage of one-year-old children in urban areas remained stable in urban areas at around 70% in both 1990 and 2000, but declined in rural areas from 56% to 47%. Coverage of

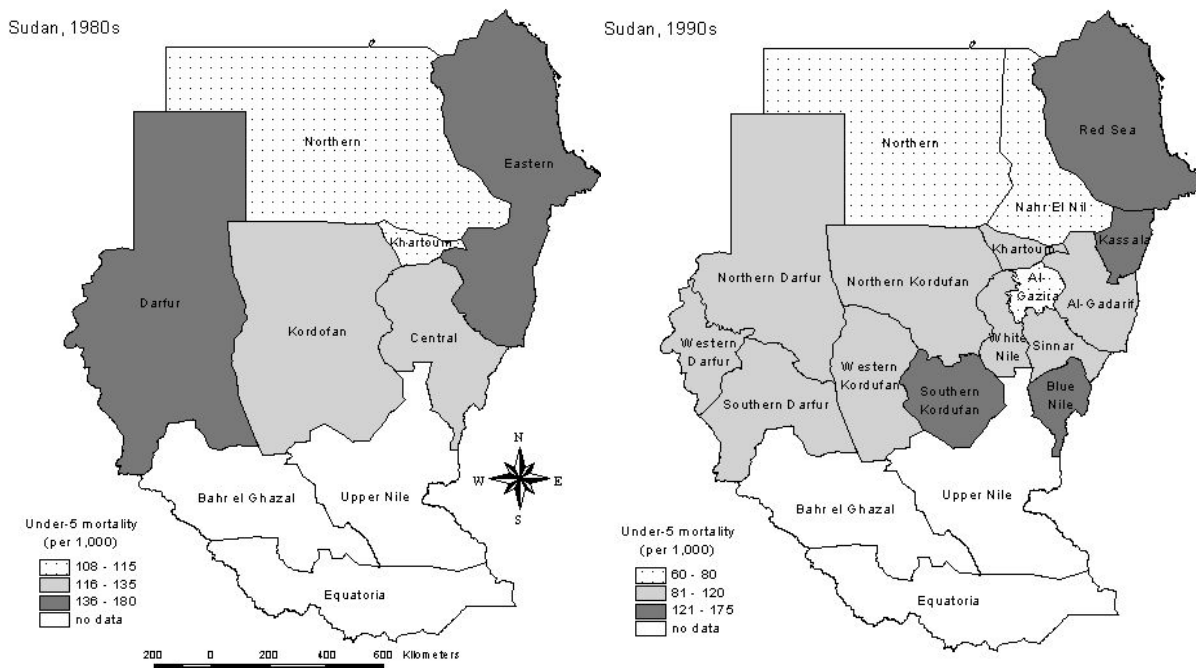
skilled delivery care, however, declined in urban areas from 68% to 59%, but remained stable in rural areas at 56%. Access to improved water sources declined at the same pace in both urban and rural areas, from respectively, 86% to 79% and 68% to 62%. Access to adequate sanitation showed a similar pattern, declining slightly in both urban and rural areas. Access in urban areas was estimated at 86% in 1990 and 84% in 2000. In rural areas, it was estimated at 48% in 1990 and 44% in 2000.

Except for coverage of delivery care, urban-rural differentials in these indicators remained large over the past decade. This would seem to be at odds with the child malnutrition and mortality trends. However, changes in measles immunization coverage likely depended more on donor-funded campaigns, than on household economic status or access to health services. Delivery care, on the other hand, is more likely to reflect access to maternal and child health services, and there we do see a deterioration in urban areas which narrowed the gap with rural areas. Similarly, access to water and sanitation may reflect community-level characteristics more than household economic status.

#### 4. Regional Disparities

Significant regional disparities in the HNP-related MDG indicators are evident. Not only is there a clear gap between indicator levels in northern and southern Sudan, but differences are also observed within these larger regions. These disparities are likely associated with regional differences both in average household socio-economic status (since, as discussed below, this affects health outcomes and utilization of services) and in availability of health services.

Figure 12. Under-5 mortality, Sudan, 1980s-1990s



Sources are 1989-90 DHS and 1999 SMS in northern Sudan (direct estimates).

Figure 12 provides an example, mapping estimated under-5 mortality during the 1980s and 1990s in northern Sudan.<sup>12</sup> Looking at the 1990s, the map indicates that child mortality is lowest in the north-central states, while peripheral areas experience higher mortality, with some, such as Red Sea, showing exceptionally high rates. This is consistent with what is known about the regional pattern of socio-economic status. It is notable that Khartoum places in the middle of the range. Looking at the map of mortality during the 1980s, Khartoum was at the lowest end of the range, and indeed its estimated under-5 mortality during that period was 108 per 1,000, the lowest of all the regions. It seems that the situation improved faster in other regions than in Khartoum, where under-5 mortality remained stable, estimated at 103 during the 1990s. This is consistent with the discussion above regarding rural-urban migration and increasing urban poverty.

Regional differences in the other MDG indicators follow the general pattern the north-central states showing the best situation, the east-central states often in the mid-ranges, and states in Darfur, Kordofan, and Red Sea, showing the poorest situation. As well, when trend data is available, Khartoum often shows deterioration or slower improvement compared to other regions. For example, coverage of trained delivery care in Khartoum declined precipitously during the 1990s, from an estimated 78% in 1990 to 52% in 1999.

In southern Sudan, available data on the MDG indicators consistently show a difference (at very low levels) between the slightly better-off Equatoria region and the other regions. For example, coverage of trained delivery care in the Equatoria region is estimated at around 10%, but is near zero in the other regions, which have been more affected by conflict in recent years and where health services are less available.

## 5. Gender Differences

Table 2 compares estimates for males and females of HNP-related MDG indicators. In northern Sudan, female life expectancy and under-5 mortality are better than male. Male children in northern Sudan also seem to be at slightly greater risk of malnutrition, especially acute malnutrition, where the difference between sexes is statistically significant. Although the indicators reflecting health services and household behaviors – measles immunization, use of bednets, and anti-malarial treatment – tend to show better averages for males than females, none of the differences are statistically significant.

However, women in Sudan are at particular risk of reproductive health problems (which are of course, not measured for men). These relate to high fertility rates (TFR of 5.9), exceptionally low use and knowledge of modern contraception (only 21% have ever used any modern method), and relatively limited knowledge of HIV/AIDS (around half of women have heard of the disease). The limited prevalence surveys done in Sudan have often found higher HIV prevalence among women than among men.

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<sup>12</sup> Different administrative boundaries were in use at the time of the 1989-90 DHS, source of the estimates for mortality during the 1980s.

From survey data, the overall sex ratio in northern Sudan is 944 females per 1,000 males, which is consistent with what is observed elsewhere. However, in southern Sudan, the random sample for the 1999 MICS had 828 females per 1,000 males overall, and only 482 women per 1,000 men among adults aged 18 and over. This indicates the absence of large numbers of men from their households, so that women-headed households, much more vulnerable to all types of insecurity, are common.

Table 2. HNP-related MDG indicators, males and females, Sudan, 1999-2000

	northern Sudan			southern Sudan		
	male	female	all	male	female	all
life expectancy (years)	53	56	54	..	..	..
under-5 mortality (per 1,000)	108	99	105	..	..	..
chronic malnutrition (% under-5)	37	34	35	..	..	..
acute malnutrition (% under-5)	17	14	16	21	20	21
measles immunization (% 12-23 mos.)	59	57	58	35	32	34
slept under bednet (% under-5)	23	23	23	40	33	37
Proportion of febrile children treated with anti-malarials (% under-5 children with fever)	52	49	50	36	36	36

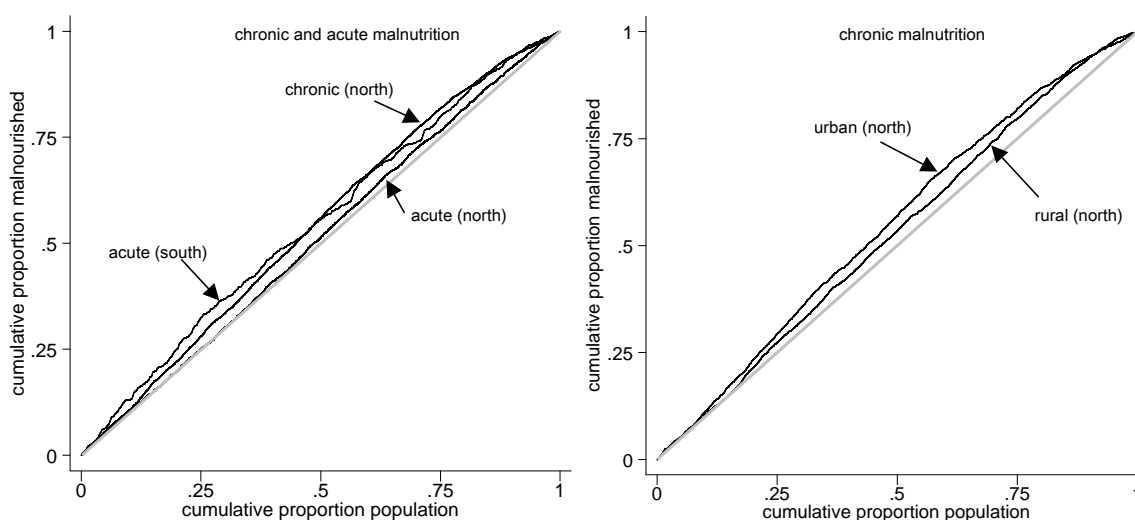
Sources are 1999 SMS and 2000 MICS in northern Sudan and 1999 MICS in southern Sudan.

Finally, a discussion of gender differences in health should note the high prevalence of female genital cutting (FGC) in northern Sudan, estimated at over 90%.

## 6. Poverty and Health

Recent household survey data from both northern and southern Sudan allow analysis of socio-economic disparities in the HNP-related MDG indicators (see Box for methodology). Several conclusions can be drawn.

Figure 13. Concentration curves measuring socio-economic inequality in under-5 malnutrition, Sudan, 1999-2000



Sources are 2000 MICS in northern Sudan and 1999 MICS in southern Sudan.

### Measuring Socio-Economic Disparities in Health

For this analysis, in the absence of conventional consumption or income indicators for household economic status, a relative index of economic status is estimated from available survey data on assets and living standards. (Filmer and Pritchett, 2001)

Concentration curves and indices are used to measure health inequalities. (Wagstaff, 2000) These are analogous to the Lorenz curves and Gini coefficients used to analyze income inequality. A concentration curve plots the cumulative share of the outcome in question against the cumulative proportion of the population possessing that outcome, with the population ranked by the economic status index. The diagonal represents perfect equality in the distribution of the outcome over all levels of economic status. Distance from the diagonal measures the extent of inequality. A concentration curve above the diagonal indicates that the outcome is concentrated among poorer people, while a curve below the diagonal indicates that it is concentrated among the better-off.

The concentration index provides a quantitative measure of this inequality and is equivalent to twice the area between the concentration curve and the diagonal. On the diagonal, the concentration index is 0. A negative concentration index indicates a curve above the diagonal, where the outcome is more concentrated among poorer people, while a positive index indicates a curve below the diagonal, where the outcome is concentrated among the better-off. A concentration index of  $-1$  would (unrealistically) indicate that the outcome is completely concentrated among the poorest, while an index of  $+1$  would represent complete concentration among the better-off.

First, health outcome indicators show a relatively even distribution over most of the socio-economic scale, suggesting widespread poverty and vulnerability to hunger and ill health in both northern and southern Sudan. The fairly even socio-economic distribution of child malnutrition, combined with its high prevalence in both urban and rural areas, likely reflect widespread vulnerability to hunger. Similarly, there seems to be little difference in under-5 mortality over all but the highest end of the socio-economic scale. This suggests that underlying social and economic conditions are similarly poor for most of the population.

Second, some indicators reflecting service availability and utilization show greater differentiation by socio-economic status. However, compared to rural areas, urban areas show less inequality, likely because of greater availability of services.

Figure 13 draws the concentration curves for child malnutrition. The first graph compares the curves for chronic and acute malnutrition in northern Sudan, and acute malnutrition in southern Sudan. All of the curves are

quite close to the diagonal, indicating relatively even distribution of malnutrition across socio-economic strata. This would be consistent with widespread poverty and vulnerability to malnutrition. The second graph shows that this is the case in both urban and rural areas of northern Sudan, although urban areas show slightly more inequality.

Table 3 lists concentration indices for the various HNP-related MDG indicators, providing quantitative measures of the extent of socio-economic disparities. These estimates confirm that socio-economic inequality in child malnutrition is not as great as what is observed with other indicators. The concentration index for chronic child malnutrition in northern Sudan, for example, is  $-0.085$ , compared to concentration indices for several other indicators of well over (in absolute terms)  $0.1$ . This suggests that, although inequality is there, especially in urban areas, it is not dramatic. Because chronic malnutrition tends to reflect underlying longer-term household resources, its high

prevalence (36% of under-5 children) and its relatively even distribution suggest widespread poverty and hunger in northern Sudan.

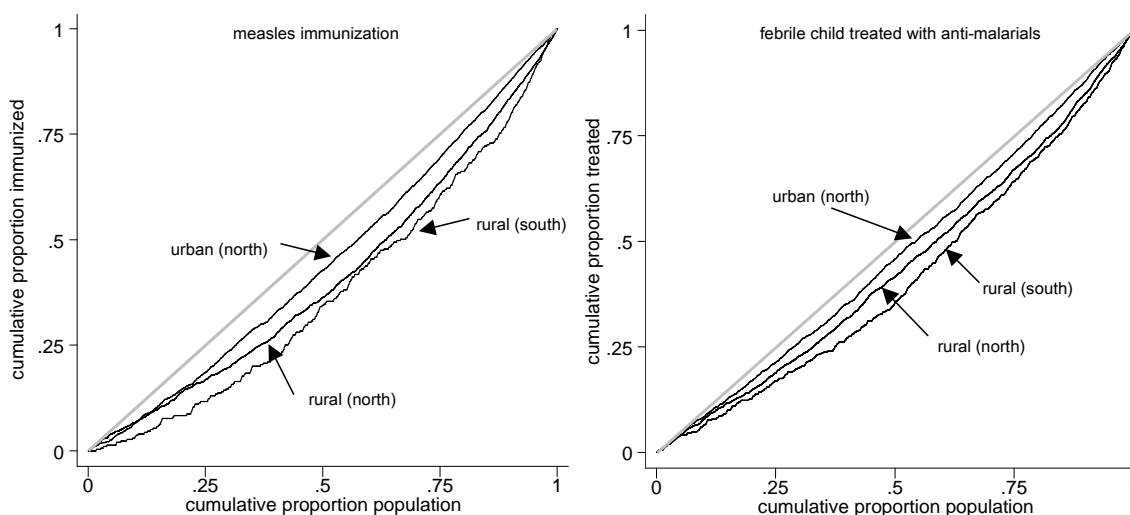
Table 3. Concentration indices measuring socio-economic inequality in HNP-related MDG indicators, Sudan, 1999-2000

	northern Sudan			southern Sudan
	urban	rural	overall	overall
chronic malnutrition (under-5s)	-0.099	-0.055	-0.085	..
Acute malnutrition (under-5s)	-0.045	0.013	-0.021	-0.095
measles immunization (12-23 mos.)	0.101	0.178	0.176	0.245
trained delivery attendant	..	..	..	0.450
Febrile child treated with anti-malarial (under-5s)	0.063	0.121	0.127	0.178
access to improved water source	0.073	0.039	0.083	0.228
access to adequate sanitation	0.109	0.237	0.225	0.556

Sources are 2000 MICS in northern Sudan and 1999 MICS in southern Sudan.

As discussed above, the gap between urban and rural areas in northern Sudan in terms of child malnutrition narrowed during the 1990s. In 2000, the prevalence of chronic malnutrition among under-5 children in urban areas was 33%, compared to 39% in rural areas. This means that the relatively equal distribution of chronic malnutrition in both urban and rural areas is at high levels of prevalence, suggesting a picture of widespread poverty and vulnerability, not just on average, but in both urban and rural areas.

Figure 14. Concentration curves measuring socio-economic inequality in measles immunization (12-23 months) and treatment of febrile children (under-5), Sudan, 1999-2000



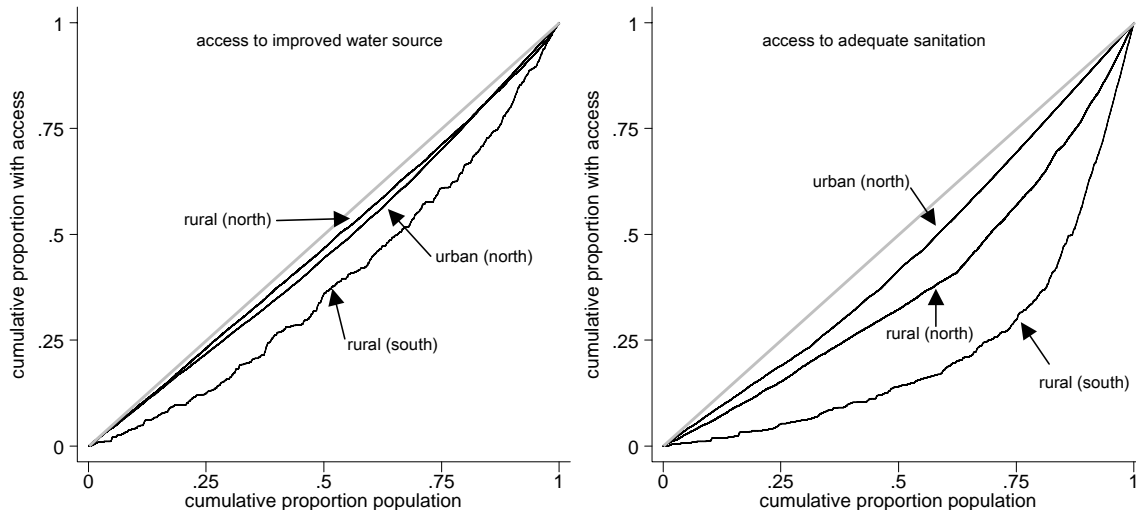
Sources are 2000 MICS in northern Sudan and 1999 MICS in southern Sudan.

In southern Sudan, data on chronic malnutrition is not available. The concentration index for acute malnutrition is -0.095. Although it shows that the poor are more likely to

be acutely malnourished, its absolute magnitude is much smaller than the indices for other indicators in southern Sudan. This indicates that acute malnutrition is more evenly distributed than other measures of social well-being, suggesting that wide segments of the population are vulnerable to acute nutritional crisis.

Another health outcome indicator, under-5 mortality, is much better at the highest levels of socio-economic status, but there is little difference between lower levels. The top third of women as ranked by economic status experienced under-5 mortality of 53 per 1,000 during the 1990s. The bottom third and the middle third experienced under-5 mortality rates of 118 and 119, respectively. (Sudan and UNFPA, 2001) Like malnutrition, under-5 mortality can be considered to reflect underlying social and economic conditions, so that its even distribution along all but the highest end of the socio-economic scale similarly suggests widespread poverty.

Figure 15. Concentration curves measuring socio-economic inequality in access to improved water sources and access to adequate sanitation, Sudan, 1999-2000



Sources are 2000 MICS in northern Sudan and 1999 MICS in southern Sudan.

Other HNP-related MDG indicators reflect availability and utilization of services, and seem to be more unevenly distributed than the malnutrition and mortality outcome indicators. Figure 14 draws concentration curves for measles immunization and anti-malarial treatment of febrile children. These curves are farther from the diagonal than the malnutrition curves, which is reflected by the magnitude of their concentration indices (Table 3). The indices for measles immunization and anti-malarial treatment are 0.176 and 0.127 in northern Sudan, and 0.245 and 0.178 in southern Sudan, indicating that access is clearly concentrated among the better-off. However, compared to rural areas, both indices seem to be more evenly distributed in urban areas, where services and drugs are likely more available.

However, disparities in another service-related indicator, delivery by trained health personnel, are not as clear, at least in the lower ranges of socio-economic status in northern Sudan. Among the top third of women as ranked by a proxy indicator of

economic status, 68% of births were delivered by a trained attendant, while among the bottom and middle thirds of women, the estimates are 53% and 55% respectively. (Sudan and UNFPA, 2001) This relatively even distribution of coverage over most of the socio-economic scale may reflect a long-standing emphasis on training of village midwives. In southern Sudan, on the other hand, the very low coverage of skilled delivery care (6%) is very concentrated among the better-off (with a concentration index of 0.450). This reflects the geographic availability of services as much as patterns of household economic status.

Figure 15 shows that access to improved water sources is quite evenly distributed in northern Sudan, but in southern Sudan is concentrated among the better-off (which again may reflect geographic availability of services). However, access to adequate sanitation shows considerable socio-economic inequality in both northern and southern Sudan, even though the distribution is less skewed in urban areas.

In sum, the MDG indicators which measure health outcomes – child malnutrition and mortality – are more concentrated among the poor, but are more evenly distributed than other indicators. Because these indicators are considered to reflect underlying household economic status, this suggests widespread poverty and vulnerability in both urban and rural areas. More inequality is observed with regard to some of the MDG indicators which reflect service availability and utilization, indicating that the poorest are disadvantaged in terms of access to services.

## **7. Summary of Main Points**

The Millennium Development Goals (MDGs) provide useful benchmarks for assessing Sudan's health, nutrition, and population situation. Patterns and trends in the MDG indicators, estimated from recent population-representative household survey data, show the following:

- **Indicator Levels:** The observed levels of the various HNP-related MDG indicators in northern Sudan are comparable to Sub-Saharan Africa averages, but are far lower in southern Sudan.
- **Trends:** There has been little evident improvement in the MDG indicators over the 1990s, so that significant effort will be needed to achieve the MDG targets in northern Sudan. In southern Sudan, basic improvement from very low levels is an essential first step to eventual progress towards the MDGs.
- **Urban/Rural Differences:** Although urban/rural differences in northern Sudan remain for some indicators, the gaps in terms of child malnutrition and mortality, as well as skilled delivery care, narrowed considerably in the 1990s as a result of increasing poverty in urban areas linked with migration and deterioration in household economic status.
- **Regional Disparities:** Large regional differences in the HNP-related MDG indicators are evident, following a center-periphery pattern whereby the north-central states are better-off than other regions, in particular western and southern

parts of the country. However, deterioration (or slower progress) in Khartoum in the past decade in terms of some indicators underlines the growing importance of urban poverty even in the more well-off regions.

- Gender Differences: Although significant differences between boys and girls in terms of the HNP-related MDG indicators are not evident, women's reproductive health is clearly at risk due to a number of factors, including lack of access to modern contraception, traditional practices such as female genital cutting (FGC), and limited knowledge of HIV/AIDS. As well, women in war-affected areas have increased vulnerability to sexual violence and sex ratio data indicate that female-headed households are very common.
- Poverty and Health: Although the poorest are more likely to experience child malnutrition and mortality, socio-economic inequalities in these indicators are not as great as they are for some other indicators. This indicates that poverty, ill health, and vulnerability to food insecurity, are widespread among the mass of the population. MDG indicators reflecting service availability and utilization show somewhat larger differences by socio-economic status, especially in rural areas, indicating that the poorest have less access to health and other social services.

## C. MAJOR PUBLIC HEALTH ISSUES

### 1. Overall Epidemiological Profile

As in many other developing countries, Sudan's epidemiological profile is still largely dominated by communicable diseases, most of which are common diseases that can be prevented and/or treated at relatively low cost and using relatively simple strategies. What makes Sudan particular is the still high burden of "tropical diseases", in particular parasitic diseases, which is a consequence of Sudan's geography and ecology and of the so far limited impact of programs and interventions. It is clear that these communicable diseases affect mainly the poor, in particular people living in rural areas.

Although little is known on the exact prevalence of non communicable diseases, it is clear that Sudan has not yet engaged in the epidemiological transition. However, one should not overlook the problems linked with non-communicable diseases as, i) malnutrition is at very high levels; ii) maternal morbidity and mortality are considerable; iii) the number of people with disabilities is likely to have significantly increased during the last decades as a direct or indirect consequence of the war; iv) mental health issues are very frequent among people affected by war and HIV/AIDS; and, v) the urban elite start facing chronic diseases of lifestyle and aging.

### 2. Communicable Diseases

Communicable diseases cause an enormous burden of morbidity and mortality in Sudan. They range from the common childhood diseases of poverty to a large number of endemic and epidemic "tropical" diseases affecting wide segments of the population.

#### 2.1 *Diarrhea, Acute Respiratory Infection, and Vaccine-Preventable Diseases*

Diarrhea, acute respiratory infection (ARI), and vaccine-preventable diseases, are among the most important causes of child morbidity and mortality in poor countries (often in combination with malnutrition), and Sudan is no different. In northern Sudan, the 2000 MICS found that 28% of under-5s had diarrhea in the previous two weeks, while 10% had a cough and 5% had the symptoms of ARI. ARI and diarrhea are reported to respectively account for 24% and 14% of hospital admissions of under-5 children, and 14% and 7% respectively of under-5 mortality in hospitals. In southern Sudan, the 1999 MICS found that 45% of children had diarrhea in the previous two weeks, while 44% reported having a cough. Diarrhea and ARI are estimated to respectively account for 13% and 11% of visits to health facilities.

Measles is a particularly feared vaccine-preventable disease due to its potential for large and fatal epidemics among children. Refugees and IDPs are particularly vulnerable to such epidemics if immunization coverage is low. Outbreaks frequently occur in southern Sudan. Reported cases in northern Sudan have however declined from around 30,000 in 1991 to around 4,000 in 2001. (Gaafar, Moshni, and Lievano, 2003)

Progress has been significant in the eradication of poliomyelitis. In 2001, the Acute Flaccid Paralysis (AFP) surveillance system in government controlled areas reported 217 AFP cases, out of which only one was classified as “compatible.” In contrast to 1999 and 2000, when 43 and 56 cases were reported respectively, no wild virus was detected in 2001. The last documented case of wild polio in the southern sector was confirmed by laboratory in April 2001.

The authors have found no data on the incidence of tetanus, diphtheria, and pertussis.

## 2.2 *Malaria*

Based on climate models, it is estimated that 75% of the population are at risk of endemic malaria, while 25% are at risk of epidemic malaria. Most of the southern part of the country is hyper-endemic zone, while parts of the north are exposed to epidemics following the rainy season. In addition, malaria is considered to have become meso-endemic in Khartoum and all major urban areas of northern Sudan in recent years.

*Plasmodium falciparum* is responsible for more than 90% of malaria cases in Sudan. However, an increase is being reported in malaria cases caused by *P. vivax* outside its classical zone, *anopheles arabiensis* being the principal vector.

Malaria causes an enormous burden of morbidity in Sudan. Reported cases (about 350,000 annually) are likely a fraction of total cases. In northern Sudan, malaria represents between 20% and 40% outpatient consultations and around 30% of inpatient admissions. In southern Sudan, the disease similarly accounts for 40% of health facility visits. However, several studies have found that, in the absence of laboratory confirmation, malaria is regularly over-diagnosed. A study in Khartoum and another in Upper Nile (in southern Sudan) each found that around a third of cases presenting with fever were actually parasite-positive. Nevertheless, this still represents a very large burden. The prevalence of fever among under-5 children is used as an indicator for malaria, although of course there are many other possible causes. In 2000 in northern Sudan, mothers reported that 21% of under-5 children had a fever in the previous two weeks, while in southern Sudan in 1999, the proportion was an incredible 61%.

Malaria causes considerable mortality in Sudan, especially among young children. In northern Sudan, 16% of hospital deaths are attributed to the disease. The case fatality rate of inpatient malaria cases is reported to be 2.5%. Studies of individual hospitals in northern Sudan have found case fatality rates of between 5% and 12%, with under-3 children four times more likely to die than others.

Maternal malaria is a serious problem in Sudan, associated with maternal anemia and mortality, and with low birthweight newborns and perinatal mortality. A study of maternal deaths in a hospital in Al-Gazira between 1985 and 1999 found that malaria was significantly associated with mortality. (Dafallah, El-Agib, and Bushra, 2003) Studies in central Sudan in 1989-90 found that maternal malaria was an important risk factor for

low birthweight and perinatal mortality. (Taha *et al.*, 1994; Taha *et al.*, 1995) In southern Sudan, intermittent preventive treatment (IPT) was available at only a few locations in 2002, while in northern Sudan IPT coverage is reportedly as low as 4% of pregnant women.

Parasite resistance to chloroquine has been documented and is estimated at 38% in parts of northern Sudan. In southern Sudan, a study in Equatoria found 94% resistance to chloroquine and 72% resistance to sulphadoxine-pyrimethamine (SP), while a study in Upper Nile showed only 12% resistance to chloroquine. In both northern and southern Sudan, chloroquine remains the first-line treatment.

### **2.3 Tuberculosis**

The exact incidence of tuberculosis (TB) for Sudan is not known (the last tuberculin survey was completed in 1986). Currently, the annual rate of infection is estimated at 188 new TB cases per 100,000 population in northern Sudan, about 60,000 cases. The disease is reported to be implicated in up to 10% of outpatient consultations and hospital admissions in northern Sudan. In southern Sudan, annual incidence is estimated at 325 per 100,000, about 25,000 cases.

### **2.4 HIV/AIDS and STIs**

The current UNAIDS estimate of adult HIV/AIDS prevalence in Sudan is 2.6%. The virus has been present in Sudan since the first stages of the pandemic, found in 1% of blood samples collected in 1981 and 1983 in the Upper Nile region of southern Sudan. (Arbesser and Sixl, 1988) The limited studies since then in different places in southern Sudan have found prevalence of between 1% and 4% among samples of the general adult population as well as among groups who could be considered representative of the general population, in particular outpatients and pregnant women. High risk groups, such as female sex workers, soldiers, and sexually-transmitted infection (STI) patients, have shown much higher prevalence in such studies, ranging from 1% to 19%. A well-documented study of a sample of 1,843 people from the general population and outpatients in four towns in the Equatoria region of southern Sudan in 1997-98 showed prevalence of between 1.0% and 3.6%. (UNDP, 1998)

In northern Sudan, studies since 1994 of pregnant women and blood donors in a limited number of locations have found HIV prevalence of between 0 and 4%. A well-documented study in 2002 by the Sudan National AIDS Control Program sampled 7,385 people among blood donors and defined risk groups in 11 states, finding an overall prevalence of 1.6%. Among sampled pregnant women and university students, prevalence was around 1%. Higher risk groups, such as prisoners, TB patients, street children and female sex workers, showed prevalence of between 2% and 4%. Interestingly, prevalence among some high-risk groups, such as truck drivers, soldiers, IDPs, and STI patients, was found to be around 1%.

The HIV/AIDS epidemic in Sudan has likely moved into the “generalized” phase, where infection in some areas has spread beyond high-risk groups. Multiple risk factors are present so that the epidemic will continue to grow. One such factor is simply the geographic situation of Sudan, bordering several high-prevalence countries. Of course the decades-long civil war increases risks associated with movement of IDPs, refugees, and soldiers, separation of families, and deterioration of community mores and social controls.

Rare use of condoms is an important risk factor. The 1999 SMS in northern Sudan found that 1.4% of women had ever used a condom, while 0% were currently using this form of contraception. Only 14% knew of condoms as a form of contraception. Among women who had heard of HIV/AIDS, 28% knew condoms are a means of protection (Table 4). The 2002 study in northern Sudan mentioned above found that 4% had ever used a condom. A 1995 study in the cities of Khartoum, El-Fasher (Northern Darfur), and Gadarif, found that 20% of men and 16% of women who reported sex outside marriage used a condom. (Ali, Cleland, and Carael, 2001) The 1997-98 study in four towns in southern Sudan mentioned above found that 15% of men and 6% of women knew where to get condoms. Among those who reported having sex with a non-regular partner, only 21% used a condom. Among women in southern Sudan who had heard of HIV/AIDS, the 1999 MICS found that only 11% knew condoms are a preventive measure.

Table 4. Knowledge of means of protection against HIV infection, Sudan, 1999-2000

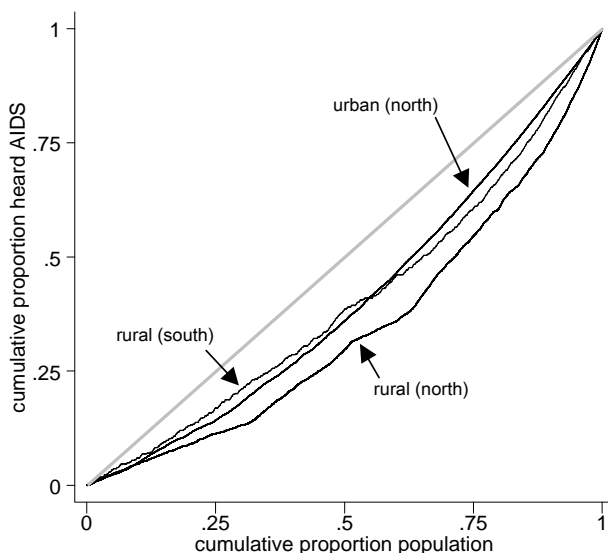
	knowledge of means of protection (% women who have heard of AIDS)		
	abstinence	monogamous relationship	condom
northern Sudan	21.1	58.6	28.4
Urban	21.8	62.3	30.8
Rural	19.8	51.3	23.8
southern Sudan	..	54.0	10.6

Sources are 2000 MICS in northern Sudan and 1999 MICS in southern Sudan.

Some traditional practices, such as levirate (wife inheritance) and scarification rituals, may increase risk. On the other hand, it is thought that strong social and religious conventions, in both northern and southern Sudan, have worked to limit risky behavior, in particular sex outside marriage. The 1995 study in three cities in northern Sudan mentioned above found that only 3% of men and less than 1% of women reported sex outside marriage. On the other hand, the 2002 study mentioned previously found that 21% reported having sex outside marriage, although the sample was made up of a high proportion of high-risk groups. Similarly, in southern Sudan, the 1997-98 study described above found that, among people who were sexually active, 10% of male and 3% of female respondents reported sex with “non-regular” partners. It seems that although traditional mores may be limiting risky sexual behavior, exceptions are not rare, so that complacency about the epidemic is no longer possible.

Knowledge of HIV/AIDS is quite low. The 1999 and 2000 MICS in northern Sudan found that around half of women had heard of the disease.<sup>13</sup> Poorer women are significantly less likely to have heard of HIV/AIDS, as shown in Figure 16. The concentration indices for HIV/AIDS in northern Sudan and southern Sudan are 0.315 and 0.190 respectively.

Figure 16. Concentration curves measuring socio-economic inequality in knowledge of HIV/AIDS (adult women), Sudan, 1999-2000



Sources are 2000 MICS in northern Sudan and 1999 MICS in southern Sudan.

STIs are an important reproductive health problem in Sudan. In northern Sudan, the 2002 HIV/AIDS study by the Sudan National AIDS Control Program described above found that 22.5% of the sample reported having an STI in the recent past. Although most of the sample were from high-risk groups, this is quite high prevalence. In southern Sudan, qualitative research has found that STIs are among the most important perceived health problems of women. STIs are a common reason for hospital attendance, even though women are often reluctant to seek care. A prevalence study among women receiving antenatal care in one location in southern Sudan found 11% prevalence of syphilis. (Palmer, 1999)

## 2.5 Other Endemic and Epidemic Diseases

Sudan's climate and natural geography, along with poverty and the effects of war, have made it vulnerable to a number of "classic" tropical diseases which have often been controlled elsewhere in the world. Several diseases are endemic and represent a huge burden in terms of morbidity and disability, while others can flare up in fatal epidemics.

<sup>13</sup> The 2002 study in northern Sudan mentioned above found that 79% of the sample had heard of the disease, although the sample is not representative of the entire population. (Sudan National AIDS Control Program, 2002)

**Guinea Worm** (dracunculosis) cases in Sudan account for more than 80% of the world's remaining cases. Guinea worm is a parasitic disease contracted by drinking contaminated water. Most cases occur in southern Sudan, although some are reported from the north of the country. The Carter Center coordinates an eradication program which started in 1995 and has had success in identifying endemic villages and distributing filter cloths. In 2002, around 30,000 cases were reported, and known endemic villages numbered 5,331.

**Schistosomiasis** (bilharziasis) is another water-borne parasitic disease endemic in certain parts of Sudan, in particular areas where irrigation canals provide a habitat for its snail vector. About 180 000 cases were reported in 2000, a figure likely not to reflect the real disease prevalence as it is estimated that about 5 million people are infected. Studies in irrigation schemes in Al-Gazira have shown prevalence of 30% to 50% in endemic villages. (Hilali *et al.*, 1995; Kheir *et al.*, 1999) Although the disease is not often fatal, one study in an endemic village estimated annual mortality of 51 per 100,000. (Kheir *et al.*, 1999) Control programs include health education, molluscicide, and mass treatment with praziquantel, but have reportedly been allowed to lapse in recent years.

**Onchocerciasis** (river blindness), a parasitic disease transmitted by blackflies, is also endemic in Sudan, mostly in the south, but with several foci in northern Sudan (Southern Darfur and Northern States). An estimated 2 million people are at risk of the disease, and the control program distributes annually about 450,000 treatments of ivermectin, a drug which effectively eliminates the parasites.

**Lymphatic Filariasis** (elephantiasis), spread by mosquitoes, is also endemic to Sudan, and a control program, which relies on mass treatment, is currently mapping the disease.

**Trachoma**, a chronic eye infection due to poor hygiene, causes blindness and is endemic in both northern and southern Sudan. Mass distribution of antibiotics and health education are the main control interventions.

**Leprosy** is another "classic" disease endemic to Sudan. One program in a part of southern Sudan treated 1,249 cases in 2001.

**Visceral leishmaniasis** (kala-azar), a parasitic disease spread by sandflies, is usually fatal without treatment. Immune system suppression, caused by HIV/AIDS or more commonly in Sudan by malnutrition, is a risk factor for the disease. Studies in the Upper Nile region found that an epidemic of the disease in the late 1980s and early 1990s likely caused the deaths of tens of thousands, depopulating entire areas. (Seaman, Mercer, and Sondorp, 1996) The disease is also a serious problem in parts of northern Sudan, in particular Al-Gadarif. A relatively costly drug is cost-effective even for humanitarian programs, given the case fatality rate of the disease. (Griekspoor, Sondorp, and Vos, 1999) Treatment programs put in place by international NGOs have treated over 5,000 cases in southern Sudan since 1999.

**Trypanosomiasis** (sleeping sickness) another fatal disease if untreated, killed thousands in the Equatoria region of southern Sudan in the mid-1990s. A number of NGO treatment programs have been put in place since that time, but a more permanent program is required to prevent resurgence.

**Meningococcal meningitis** epidemics are periodic in Sudan, which lies in the meningitis belt across Africa. In 1998-99, in northern Sudan, 33,000 cases and 2,300 deaths were reported. As the cycle of epidemics has changed, with outbreaks observed each 5 to 7 years (instead of the ten years previously observed) a new epidemic could occur in 2005-2006.

**Other diseases** which are endemic or periodically cause epidemics in Sudan include yellow fever, West Nile virus, buruli ulcer, cholera.

### 3. **Non-Communicable Diseases**

#### 3.1 *Physical and Mental Disabilities*

Little information is available on physical and mental disabilities in Sudan. War-related disabilities are undoubtedly prevalent, although their extent is unknown in comparison to disabilities due to other causes, such as congenital disorders, disease, and accidents. The legacy of war will continue to be felt in some areas where landmines are common.

The 2000 MICS in northern Sudan collected data on disabilities of children aged 5 to 17. 0.3% were reported to have a physical disability, while 0.7% were reported to have a mental disability. The most common reported cause was congenital (41%), followed by “other” (29%), polio (14%), and meningitis (7%). Possibly because of the effects of war and famine, significantly higher prevalence of disability is seen in the data 1999 MICS data on under-5 children in southern Sudan, where 9% had a physical disability and 1% had a mental disability.

Psychosocial effects of conflict, human rights violations, and displacement are widespread. The 1999 MICS in southern Sudan collected information from key informants representing groups of households. Of the 883 groups of 5 households, 33% reported having experienced abductions of children and 27% reported having experienced abductions of women. In addition, 30% reported that some of their children had been forced to become child soldiers.

Women are particularly vulnerable to chronic physical and psychological disability related to sexual violence, female circumcision, and maternal morbidity, in such as fistulae and associated social ostracism.

### 3.2 *Others*

Chronic diseases associated with old age and affluence, such as cancer and cardio-pulmonary disease, are prevalent among a small economic elite in Sudan. For example, arthritis and hypertension each account for 3% of reported morbidity in Khartoum State. It can be noted that significant private and public resources are devoted to the treatment of these diseases both in Sudan and abroad.

## 4. **Malnutrition**

Nutritional crises have been the defining characteristic of the numerous acute humanitarian emergencies experienced by Sudanese over 20 years of war. Famine in Darfur in the 1980s and Bahr el Ghazal in the 1990s were extreme examples of crises which occur on a regular basis in many parts of the country. At the moment of writing, for example, household food security in Kassala State is being undermined by floods, while in Bahr el Ghazal, pressures caused by drought, continued conflict, and returning IDPs, have reduced access to food, resulting in thousands of new cases of child malnutrition. Relief food and transport are by far the largest components of humanitarian assistance to Sudan, totaling \$126 million in 2002, or 73% of total assistance provided through UN agencies. Due to logistical and security constraints, much relief food is airdropped, at a cost of over \$1,000 per metric tonne. Humanitarian agencies and donors have built up over the years a capacity for early warning of food crises, based on a variety of methodologies, notably a rapid rural appraisal-type assessments of household food security which are widely and regularly used in southern Sudan as well as parts of northern Sudan. (Famine Early Warning System Network, 2003)

Because of the importance of food security, the SPLM leadership has indicated that it is one of the top social development priorities in southern Sudan.

International NGOs regularly do nutritional surveys in areas at risk in southern Sudan, although a more organized nutritional surveillance network requires funding. In 2001, 18 surveys were done in the Upper Nile and Bahr el Ghazal regions, showing an average prevalence of acute malnutrition among under-5 children of around 20%. In 2002, 11 surveys in various places in Upper Nile, Bahr el Ghazal and Equatoria similarly found prevalence of acute malnutrition around 20%, and in some cases over 30%. Although these are not population-representative findings, having been done in locations where malnutrition was expected to be high, an estimate acute malnutrition among the larger population of under-5s surveyed by the 1999 MICS is of similar magnitude. It should also be noted that adult malnutrition is a significant problem during nutritional crises in Sudan. (Collins, 1996) Prevalence of acute malnutrition over 15% is considered a humanitarian emergency and the response can include increased general food distribution, supplementary feeding of children, and therapeutic feeding of severely malnourished children (and sometimes adults).

As mentioned in a previous section, the prevalence of chronic malnutrition (stunting) among under-5 children in northern Sudan is estimated from the 2000 MICS to be 36%,

while acute malnutrition is estimated at 16%.<sup>14</sup> This indicates a very high underlying level of child malnutrition, independent of acute crises drawing international attention. The high levels of malnutrition in Sudan have far-ranging health effects, as malnutrition is known to be associated with at least half of all child mortality, and has a long-term impact on child development.

Micronutrient deficiencies also have serious longer-term effects and are reported to be common in Sudan. Iodine deficiency leads to reportedly high prevalence of goiter. A study among pre-school children in Blue Nile state in 1994 found 22% prevalence of goiter. (Elnou *et al.*, 2000) Survey data indicates that less than 1% of households in northern Sudan use iodized salt, while the proportion is a still low 40% in southern Sudan. Another micronutrient, vitamin A, has been associated with decreased risk of child mortality and its distribution is an important child health intervention, often done along with immunization and other contacts with the health system. Survey estimates indicate that 44% of children aged 6 to 59 months in northern Sudan had received vitamin A in the previous six months, while in southern Sudan, the proportion was only 16%.

Breastfeeding and weaning practices have an important impact on infant health and nutrition. It is recommended that infants be exclusively breastfed for their first six months, and then provided appropriate foods while breastfeeding continues up to two years or longer. The 1999 SMS in northern Sudan found that 95% of children are breastfed for at least six months, and the mean duration of breastfeeding is 26 months. However, only 8% of children are exclusively breastfed for the first six months. There is little difference between urban and rural areas in breastfeeding practices, although women of higher economic status breastfeed for a slightly shorter time. In southern Sudan, the 1999 MICS found that only 68% of children are breastfed for six months or longer. In addition, at least 70% of children under six months are not exclusively breastfed.

## **5. Child Health**

Under-five and infant mortality in northern Sudan are estimated at respectively 105 and 68 per 1,000. These are direct estimates from birth and death histories collected by the 1999 SMS, with 1995-99 as the reference period. Indirect estimates, based on responses to simple questions to mothers about the total number of children born and the total number who died, are somewhat higher. The indirect estimates for under-five and infant mortality in northern Sudan are 132 and 82 respectively, with 1995-99 as the reference period.

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<sup>14</sup> Three anthropometric indicators for child malnutrition are commonly used. The height-for-age ratio is an indicator of chronic malnutrition (stunting), the weight-for-height ratio is an indicator of acute malnutrition (wasting), and the weight-for-age ratio is considered a composite indicator for overall malnutrition (underweight). Children whose ratios are below 2 standard deviations under the median of a reference population are considered malnourished. The prevalence of underweight children in northern Sudan estimated from the 2000 MICS is 35%. It should be noted, however, that over 50% of the children surveyed had missing information on age or other problems with the data, so that the stunting (height-for-age) and underweight (weight-for-age) prevalence estimates should be interpreted with caution.

As discussed in a previous section, analysis of trends indicates that after declining in the 1970s and 1980s, child mortality in northern Sudan did not significantly improve during the 1990s. Direct estimates of under-5 mortality remained at around 100 per 1,000 during the 1990s, while indirect estimates show some decline at a higher level of mortality, from 150 per 1,000 in the late 1980s to 130 in the mid-1990s.

Unfortunately, there are no population-representative data to estimate child mortality in southern Sudan. However, retrospective mortality surveys in specific locations have found very high mortality rates during periods of crisis. A nadir was during the 1998 famine in Bahr el Ghazal, when retrospective mortality surveys in three locations found that during a two-month period, under-five mortality was between 17 and 45 per 10,000 per day. (Creusvaux et al., 1999) (If sustained over a year – which they were not – such rates would result in 65% to 100% mortality). Recent surveys in various locations in Upper Nile have found a wide range of under-5 mortality rates – between 0.7 and 25 per 10,000 per day (which would hypothetically translate into between 26 and 923 per 1,000 per year). (Action against Hunger, 2003)

As discussed above, the major causes of child morbidity and mortality among the poor in Sudan (as elsewhere) are malaria, measles, diarrhea, ARI, and malnutrition.

## **6. Maternal Health**

Maternal mortality in northern Sudan is estimated at 509 per 100,000 live births, with the reference period around 1987. This is little changed from estimated maternal mortality around 1977 of 537 per 100,000 live births. Unfortunately, maternal mortality estimates from southern Sudan are not available, although the virtual absence of emergency obstetric care indicates that mortality is likely very high. Examination of health center records in one location in southern Sudan in 1997 indicated a maternal mortality ratio of 845 per 100,000 live births. (Palmer, 1999)

Women who are referred to (or choose to deliver in) a hospital still suffer great risk of mortality. A study of over 44,000 births in a second-level referral (teaching) hospital in Al-Gazira State between 1985 and 1999 found that maternal mortality was 1,966 per 100,000 live births. (Dafallah, El-Agib, and Bushra, 2003) Sepsis was the cause of death in one third of cases, while hemorrhage associated with malaria accounted for another third. Although the maternal mortality ratio showed a decline each year, from 2,661 per 100,000 during the period 1985-1989 to 1,363 in 1995-1999, its magnitude points to enormous gaps in maternal and obstetric care.

Complications during pregnancy and delivery are associated with maternal mortality and longer-term morbidity. In northern Sudan, 43% of pregnant women have a complication during pregnancy, with the most common being malaria (35%) and urinary tract infection (19%). Reported delivery complications are prolonged labor (20%), high fever (14%), heavy bleeding (3%) and eclampsia (1%).

Of course, each pregnancy increases a woman's risk of mortality. The estimated total fertility rate (TFR) in northern Sudan is 5.9, unchanged from the late 1980s. Fertility is somewhat higher in rural areas than in urban areas. In southern Sudan, no population-representative data is available, but TFR is similarly estimated to be between 5 and 6. (Purdin, 2000)

The use of modern contraceptives is rare in northern Sudan, with 18% of women reporting having ever used a modern method, mostly the pill. This is unchanged from 1990. There does not seem to be significant unmet need for contraception in that over 80% of women who are not using contraception do not have an intention to use it in the future. In southern Sudan, qualitative assessments have found that unmet demand for contraception ranges from between 20% and 60% of interviewed women. (Palmer, 1999)

A possible consequence of lack of access to contraception, unsafe abortion is a significant cause of maternal mortality. In northern Sudan, surveyed women report that 0.3% of pregnancies resulted in induced abortion, while 10.5% resulted in spontaneous abortion. Abortion is illegal in northern Sudan except in order to save the mother's life or in cases of rape or incest. (Purdin, 2000) In southern Sudan, several qualitative studies have found that unsafe abortion may be a significant problem. One anthropologist spent 18 months among a community in southern Sudan and found that the traditional stricture against sexual intercourse during breastfeeding was being ignored under pressures related to the war. Women's response to the resulting unwanted pregnancies was increasingly to turn to unsafe abortion. The author observed that, among a population of 23,000, seven women died as a result of unsafe abortions during an eight-month period. (Jok, 1999) Another study found that the war, through undermining traditional and social norms, had led to increased incidence of sexual violence. (Palmer, 1999)

Table 5. Female genital cutting (FGC), northern Sudan, 1990 - 2000 (% of ever-married women)

	1989-90	2000
FGC prevalence	89	91
urban	93	92
rural	87	89
among those circumcised:		
pharonic	82	76
intermediate	3	2
sunna	15	22
approve FGC	79	69
urban	72	62
rural	82	77

Sources are 1989-90 DHS and 2000 MICS in northern Sudan.

The high prevalence of female genital cutting (FGC) in northern Sudan increases risks of morbidity and mortality for women. Bleeding and infection are immediate consequences of the practice, while longer-term morbidity can include urinary and sexual dysfunction, menstrual disorders, and infertility. During childbirth, the risks of

hemorrhage, infection, and prolonged and obstructed labor are increased, which in turn greatly increase the risk of maternal mortality. Such trauma during childbirth can result in the development of fistulae which can lead to infection and often social ostracism.

FGC prevalence in northern Sudan is 91% of ever-married women, a proportion which has not changed in the past decade, although there is some movement towards the less disfiguring form (sunna). (Table 5) Prevalence is perhaps slightly higher in urban areas, although the practice is quite equally distributed over different socio-economic strata. Women seem to be more likely than men to favor continuation of the practice, citing the need to maintain social custom and improve marriage prospects. (Islam and Uddin, 2001) FGC is not common in southern Sudan; a recent survey in Juba, a large government-held town in the south, found that 7% of ever-married women were circumcised. (Islam and Uddin, 2001) However, it is reported that some migrants from southern Sudan to cities in the north are adopting the practice.

## 7. Summary of Main Points

Like in other poor countries which experience high fertility and mortality and which have not yet gone through the demographic and epidemiological transitions, maternal and child health problems are very important in Sudan.

- Infectious childhood diseases (measles, diarrhea, ARI, and vaccine-preventable diseases), along with malaria – and often in combination with malnutrition – cause a large burden of morbidity and mortality.
- Malnutrition is at chronically high levels throughout Sudan, in both urban and rural areas, and is a major cause of death in humanitarian crisis situations. Nutrition and food security are therefore priority preoccupations for policymakers.
- Maternal health is a significant concern in Sudan, as high fertility, female circumcision, sexual violence, and poor coverage of skilled delivery care in many areas, increase the risks of maternal morbidity and mortality.
- Malaria is endemic to much of Sudan and epidemic in other areas, causing a major burden among both adults and children, although children under 3 are at most risk of death from the disease.

Although these maternal and child health issues may be common to other poor countries, certain problems, in particular malnutrition and malaria, are of a magnitude, often reaching crisis proportions, rarely seen in more stable situations.

Sudan is also distinguished by its exposure to a host of other endemic and epidemic infectious diseases, many of which have largely been controlled in other countries.

- A long list of endemic diseases causes a large burden of morbidity and longer-term disability, and includes tuberculosis, guinea worm, schistosomiasis, oncocerciasis, lymphatic filariasis, trachoma, and leprosy.

- A number of other infectious diseases are endemic but also periodically flare into often deadly epidemics. These include visceral leishmaniasis, sleeping sickness, meningococcal meningitis, yellow fever, West Nile virus, and cholera. Measles and malaria also cause serious epidemics, particularly fatal to children.

The estimated prevalence of HIV/AIDS in Sudan is 2.6%, indicating that the epidemic has become generalized in many parts of the country. The migration and social dislocation caused by conflict are obvious risk factors for further spread of the disease.

Physical and psychological disabilities are prevalent, often resulting from the longer-term sequelae of infectious diseases and maternal morbidity, as well as from the effects of war and displacement.

Chronic diseases of lifestyle and aging are not absent from Sudan, and cause the expenditure of considerable financial resources for treatment, both in Sudan and abroad.

**CHAPTER II**  
**CURRENT RESPONSE TO HEALTH ISSUES**

## A. HEALTH SECTOR ORGANIZATION AND FINANCING

### 1. Administrative Structure

A decentralization process since the mid-1990s has devolved much responsibility for government health system financing and management to the States and localities. The Federal Ministry of Health (FMOH) is joined by 26 State Ministries of Health (16 of which are in the geographic north of the country). The FMOH is responsible for national policies and legislation, overall supervision and evaluation of the health system, international relations, management of skilled cadres, and quarantine and control of epidemics. The State Ministries are responsible for administration and financing of the health system in each state, and management of higher-level facilities (health centers and hospitals). Within each State there are a number of localities (134 in total) where Health Area Systems are responsible for management of lower-level facilities. Local councils are also responsible for water and sanitation services. In addition to the Ministry of Health structure, some hospitals are managed by the Ministry of Higher Education and the military. Outside the governmental system are privately-run clinics and hospitals.

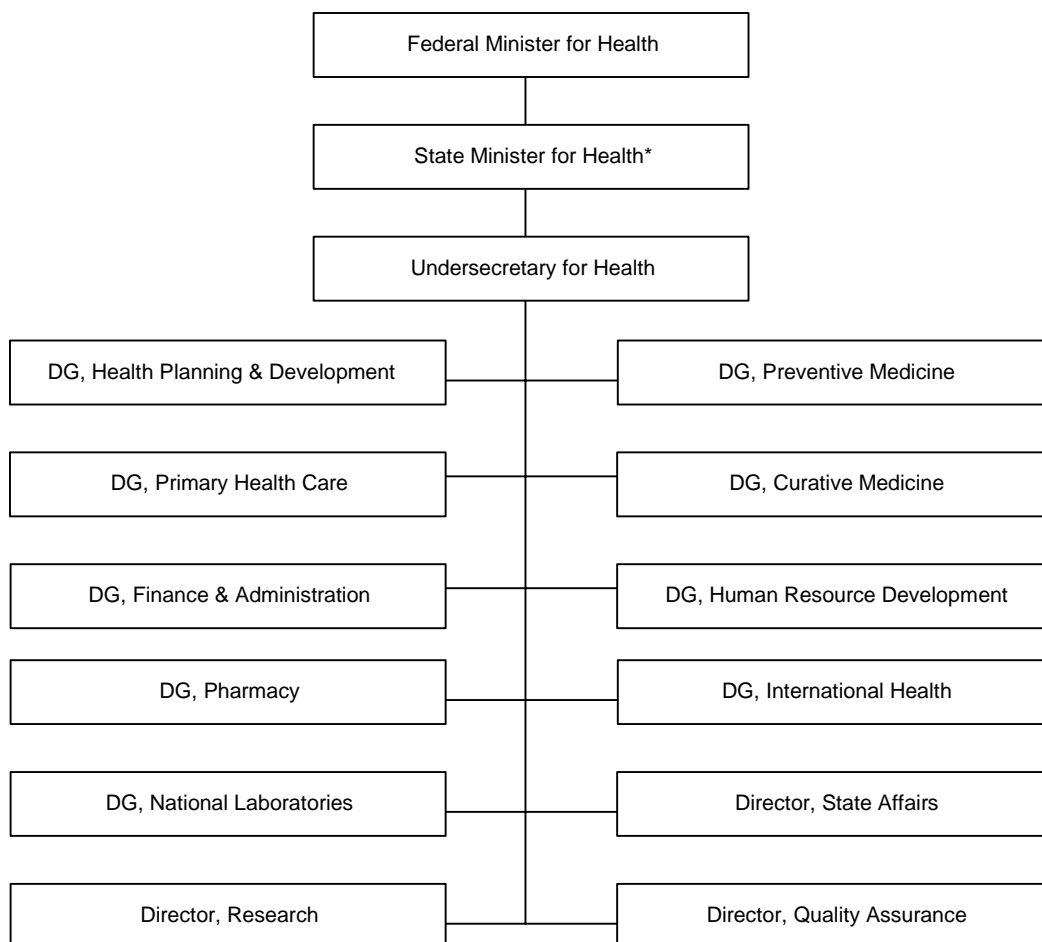
Figure 17 provides the organizational chart for the FMOH. In principle, each State Ministry is similarly structured, but usually limited to the core directorates of preventive medicine, primary health care, and curative (hospital) care. In addition, a number of vertical programs targeting specific diseases are headquartered in the FMOH and are implemented at the State level (under the responsibility of the preventive medicine directorates).

As discussed elsewhere, the real functioning of this organizational structure depends to a great extent on State and local resources. For example, only the most well-off four States have planning departments in their Ministries of Health. Although it is known that transfers from the federal level to the States for health are limited, there is no information about transfers from the States to the localities. Less than half of the localities have a functioning Health Area System in place, and only 19 are reportedly working according to the policy. A recent study of four Health Areas found that none operated using a budget. The impression given by the available information is that in the poorer States, it is vertical programs, such as those for malaria and TB, which have most resources and are most functional. More information on the functioning of the organizational structure at the State and local levels is needed, although it is clear that the poorer States are limited in their capacity to manage and finance the system.

In southern Sudan, health system policies adopted by the SPLM in 1998-99 envision a similarly decentralized organizational structure. The central Health Secretariat is to be responsible for overall policy and supervision of the system, as well as for the financing and management of any future tertiary hospitals. The regional level is responsible for the operation and financing of any future tertiary hospitals in regional capitals, while the county level is responsible for rural hospitals. There are three regions and 55 counties. Local communities are responsible for the financing and operation of primary care facilities. The policy recognizes that dependence on external aid will continue, and sets

out specific areas which are to be the responsibility of local communities, such as support for community-based health workers and provision of local building materials.

Figure 17. Federal Ministry of Health organizational chart, Sudan



DG = Director General

\* Not to be confused with Ministers of Health in the states.

Source is Tarin (2002b).

Operation Lifeline Sudan was created through an agreement in 1989 between the Government, the SPLM, and the UN, to formally authorize access by humanitarian agencies to war-affected areas. Most health services in southern Sudan are supported and managed by UN agencies and international NGOs, as well as externally-supported local NGOs and church groups. There are 33 agencies working in health under the OLS umbrella, and 31 operating independently (that is, without the sanction of the Khartoum Government). UNICEF is the lead OLS agency for health and has assumed a coordination role, while the NGO Action against Hunger (USA) has recently taken responsibility for coordination of nutritional programs. Coordination largely involves regular information-sharing meetings.

The local interlocutors for the humanitarian agencies are local authorities and, until recently, a civilian agency of the SPLM responsible for humanitarian relief. In recent

years, this function has been gradually taken over by the Health Secretariat and nascent County Health Commissions. UN agencies and NGOs have also recently started to include the Health Secretariat in the planning and coordination process. At present, however, the Health Secretariat does not have the financial and human resources to assume even the most limited of responsibilities beyond an advisory role to OLS and international agencies. County Commissioners for Health have also been placed in several counties, but have no staff, transport, or communication and office equipment, so that they are dependent in operational terms on international agencies.

## **2. Health System Organization**

The Government health system is a three-tiered network. Primary services are composed of, in ascending order of level of care, primary health care (PHC) units, dressing stations, dispensaries, and health centers. In principal, PHC units are staffed by Community Health Workers (CHWs), dressing stations are staffed by a nurse or “uncertified dresser,” and dispensaries are staffed by a medical assistant, a nurse, and a midwife. These facilities are under the responsibility of the locality. The health center is the referral point for the lower-level facilities and, in principal, is staffed by a two physicians (medical officers), medical assistants, and nurses. Health centers should be equipped with a laboratory and x-ray, but have no inpatient facilities. In addition, vertical programs, in particular TB and EPI, work through the primary-level facilities but also sometimes establish independent posts in peripheral areas.

Health centers are managed at the state level, along with first-referral level (or secondary) hospitals. These rural hospitals are located in the bigger towns and have bed capacities of 50 to 100. Tertiary hospitals, including teaching, specialized, and general hospitals, are located in State capitals and are operated by the State governments. In addition, the FMOH operates 17 tertiary-level hospitals.

Table 6 enumerates the different types of government health faculties. It shows that although the lowest level facilities (PHC unit, dressing station, dispensary) account for the majority of the total, their numbers have declined in recent years along with growth in the numbers of higher-level facilities (health centers and hospitals). Although the entire system came under pressure during the 1990s with decentralization and accompanying funding cuts, higher-level facilities retained more support than the lower-level facilities, many of which ceased functioning. For example a recent study of four Health Areas (localities) in four different States found that out of a total 55 PHC units, only 28 were functioning. One estimate is that 40% of PHC units are actually staffed with CHWs. A consequence is that the referral pyramid is often bypassed as patients seek care directly at hospitals. Because there is uncertainty about the real functionality of the system enumerated in Table 6, the FMOH, with support from WHO, is currently doing an inventory survey of government facilities.

Significant disparities are evident in the geographic distribution of health facilities. Many rural areas are underserved by the health system, as functional facilities, in particular health centers and hospitals, are clustered in towns and cities. There are also

significant differences between poorer States and better-off States. For example, there are 5.2 hospitals and 246 hospital beds per 100,000 population in Northern State, compared to 0.2 hospitals and 14 beds per 100,000 in Southern Darfur. The overall averages are 1.0 hospitals and 74 beds per 100,000.

Table 6. Government health facilities, Sudan, 1994-2000

	1994	1997	2000
primary health care unit	3,070	2,749	2,558
dressing station	1,412	1,442	1,236
Dispensary	1,400	1,468	1,475
health center	531	693	915
<i>sub-total primary</i>	<i>6,413</i>	<i>6,352</i>	<i>6,184</i>
general or rural hospital	162	186	200
provincial, specialized, or teaching hospital	78	88	109

Source is FMOH.

In southern Sudan, the 1998-99 SPLM health policy envisions a three-tiered system composed of fixed and mobile PHC units, health centers, and rural hospitals, with perhaps one tertiary hospital. At present, there are large gaps in coverage, so that up to 40% of the population does not live within reach of a health facility. It is estimated that there are presently around 0.2 hospitals and 18 beds per 100,000 people in non-government areas of southern Sudan overall (comparable to Southern Darfur State in the north). However, as shown in Table 7, hospitals are heavily concentrated in the Equatoria region, so that other areas have virtually no hospital services. Table 7 enumerates facilities in areas controlled by the SPLM. SPLM-controlled areas also include parts of southern Blue Nile, where there is one hospital, and parts of Southern Kordofan (Nuba Mountains), where there is one hospital. Parts of Western Kordofan controlled by the SPLM (Abyei) reportedly have no health facilities. Mobile surgical teams operate in some insecure areas with no hospital coverage. In addition, a tertiary hospital run by the International Committee for the Red Cross (ICRC) in Lokichoggio, Kenya, treats war-wounded as well as some other emergency cases evacuated by air from southern Sudan.

As for primary care facilities, there are 94 health centers and 510 primary health care units in non-government areas of southern Sudan.

As mentioned above, all of the facilities are supported, and in most cases operated, by external agencies, although CHWs, trained TBAs, and other community health workers are often supported by local communities.

It should also be noted that there are a number of hospitals and other health facilities part of the government system, and often supported by international NGOs, situated in government-held towns in the south. The ICRC is planning a survey of all hospital

facilities and their capacities in government and non-government areas of southern Sudan.

Table 7. Health facilities, southern Sudan, 2003

	hospitals	health centers	PHC units
Equatoria	13	50	304
Bahr el Ghazal	3	22	148
Upper Nile	1	22	144
Total	17	94	596

Source is Richer (2003).

A number of vertical programs work in parallel to the curative services offered by fixed facilities. As well, stand-alone nutrition programs, including inpatient therapeutic care centers, are set up by international agencies in areas of nutritional crisis.

### 3. Private and Non-Governmental Sector

In northern Sudan, the private (for-profit) sector plays an increasing role in health service provision, especially in cities, towns, and better-off rural areas. Since the mid 1990s, cuts in funding, and therefore quality, of government health services, combined with the introduction of user fees, have contributed to growth of the private sector. Patients who are able to pay seek higher quality in the private sector. Private sector providers focus on curative services, and have little role in preventive interventions such as immunization. In Khartoum (see Table 8), an increasing number of hospitals and clinics are run by the private sector, leaving lower-level primary care facilities to the public sector. There are 39 private hospitals, compared to 39 government facilities, and 450 private clinics, compared to 118 government health centers. Sudanese NGOs, including Islamic NGOs, are also playing an important role filling some of the gaps in coverage of the government system and serving populations which are not attractive markets for private providers, such as IDPs. In Khartoum, for example, the number of NGO health centers (114) is comparable to the number of government centers (118). A small number of health programs are also implemented by international NGOs.

Table 8. Health facilities in Khartoum State, Sudan, 2002

	government	private	NGO
dispensaries	175	0	38
health centers/clinics	118	450	114
hospitals	39	39	13

Source is Khartoum State Ministry of Health (2003).

In southern Sudan, as mentioned previously, HNP services are largely supported by UN agencies, international NGOs, and church groups. Private (for-profit) involvement in

the health sector is limited to a small number of private pharmacies and several laboratories in the major towns.

#### 4. Human Resources

In northern Sudan, the number of medical schools has exploded in recent years, so that there are now 24 public faculties and 5 private. This has come in response to markets for physicians in better-off urban areas of Sudan, but especially abroad, in particular the Gulf countries. About 1,400 doctors are trained annually, with up to 800 going abroad, although there are indications that both the domestic and international markets for Sudanese physicians are starting to become saturated. Physicians also receive specialized training through government scholarship programs abroad.

Table 9 lists the numerous training facilities for higher-level health professions in northern Sudan. In addition, paramedical training institutions in northern Sudan number 238, including midwifery schools, while there are 161 schools for basic nursing training.

Table 9. Health professional training faculties, northern Sudan, 2003

	public	private	total
Medicine	24	5	29
Dentistry	8	5	13
Pharmacy	8	5	13
Nursing	7	2	9
lab technology	7	6	13
Imaging technology	4	2	6
public health	5	5	10
ophthalmology	1	0	1

Source is FMOH.

The Government has developed a strategy to enhance the capacities of nurses with the intention of gradually phasing out the paramedical category of medical assistant.

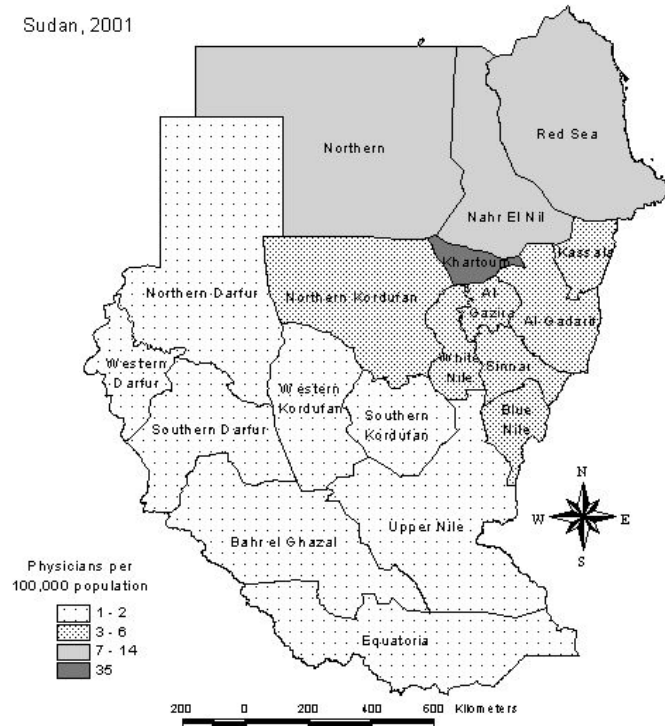
Although 16,000 physicians are registered with the Medical Council, about 5,000 are working in Sudan (with most of the remainder apparently working abroad). In addition, there are around 18,000 nurses, 6,000 medical assistants, about 7,000 other paramedical staff, and 9,300 trained midwives.

Health staff, especially higher cadres, are heavily concentrated in urban areas, in particular Khartoum, as well as in better-off rural areas. Figure 18 illustrates the geographic distribution of the ratio of physicians per 100,000 population. Khartoum, with a ratio of 35, has by far the highest density of doctors. The lowest ratios are in Darfur and Kordofan. Similar disparities are seen with regard to other cadres. In Northern State, there are 63 medical assistants per 100,000 population, compared to 5 in Southern Darfur. Similarly, in Northern State, there are 126 nurses per 100,000 population, compared to 16 in Southern Darfur.

The main reason for these disparities, of course, relates to incentives for individual health personnel. With government salaries around US\$100 per month, physicians are first attracted abroad, where they can earn US\$1,000 or US\$2,000 per month, and then to urban areas and better-off rural areas in Sudan. There, they can earn income from private practice, either exclusively or in addition to their work in public facilities. The Government has put in place a generous incentive scheme to attract physicians to war-affected areas in the south, but more sustainable strategies are required in order to attract higher-level cadres to other peripheral areas. In addition, monetary remuneration is not the only issue, as living conditions, opportunities for specialization and skill-development, and educational possibilities for children, are all barriers to working in peripheral rural areas.

A number of issues relating to human resources in northern Sudan require further investigation. The total number of training institutions, including the particularly large number of medical schools, is striking. More information is needed on they types and quality of the training provided. As well, the brain drain issue requires further study. As the international market becomes saturated, without a change in policy, a large oversupply of doctors is imminent. In general, the Government's overall human resource development strategy requires further policy dialogue.

Figure 18. Physicians per 100,000 population, Sudan, 2001



Sources are FMOH and Richer (2003).

In southern Sudan, health personnel training programs run by international NGOs focus on CHWs, laboratory technicians and assistants, and nurses. There is one 3-year program for clinical officers (analogous to medical assistants). There is no medical

school in southern Sudan. In 2002, there were 19 training programs supported by 17 different agencies. Since 1992, over 1,500 health workers have been trained in different programs.

In recent years, with the formation of a Health Personnel Council, significant effort has been applied to standardization and accreditation of training programs as well as to accreditation of their graduates.

Many of the health staff working in southern Sudan were trained before the start of the civil war in 1983, so that even meeting replacement needs in the coming years will be a challenge, let alone staffing an expansion of services. This difficulty is compounded by a reported lack of suitable candidates for training in the higher cadres, due to the extremely limited primary and, especially secondary, school system.

In non-government-held southern Sudan, a total of 23 physicians are working, most of whom are expatriates. In addition, a further 4 physicians are in southern Blue Nile and the Nuba Mountains. Overall, this translates to less than 0.5 doctors per 100,000 population, although most (17) work in the Equatoria region. (In government-held areas of southern Sudan, the FMOH reports there are 129 doctors).

Due to the shortage of southern Sudanese doctors, the SPLM's planning for human resource development in the sector focuses on lower-level cadres, in particular clinical officers, even though one medical school and teaching hospital is a long-range goal. One hope is that, once peace is consolidated, the southern Sudanese diaspora will help fill the gaps in skilled health staff. However, like in peripheral areas of the north, remuneration, living conditions, and opportunities for professional development, will likely act as barriers. Remuneration of expatriate health staff, in particular doctors and nurses, is currently an issue of contention. The policies of international agencies are such that southern Sudanese professionals are paid at local wage rates, while staff from neighboring countries (such as Kenya or Uganda) are paid on much higher expatriate wage scales. Because international agencies will need to continue to be heavily involved in health care provision in southern Sudan for the foreseeable future, this issue needs to be dealt with.

In general, future development of the health system in southern Sudan is crucially dependant on the availability of skilled staff, so that a human resource strategy should be a priority subject of focus.

## **5. Support Services**

Pharmaceutical supply for the government health system in northern Sudan is done by the Central Medical Stores, a government-owned corporation which is the largest drug importer. Pharmaceuticals are also imported by the private sector under government regulation. Local pharmaceutical production is also expanding. A revolving drug fund scheme is in place in seven States, including Khartoum, where revenues were US\$22 million in 2002. The government maintains an essential medicines list, as well as a drug

registration system and a quality control laboratory. The functioning of the drug distribution system is unknown, although likely constraints are the fact that States are responsible for transport, and the road system to peripheral areas can be impassable, in particular during the rainy season.

Although maintenance of the cold chain has been a problem in the past decade, recent investments in EPI have improved the situation. In 1999, cold chain equipment was reported in all the capitals of the northern States, 60% of localities, and 60% of health centers.

In Khartoum and other major cities, some hospitals maintain ambulances for referral, while there are also limited private services. For the most part, in both urban and rural areas, patients rely on ordinary private transport. Information on its cost and accessibility, important to prevention of maternal mortality in particular, is not available.

Data from the health information and surveillance systems are collected by two separate units in the FMOH. These systems suffer from problems common everywhere, including poor reporting, insufficient timeliness to detect epidemics, lack of standardized forms, doubts about the application of standard case definitions, questions about diagnosis given the lack of laboratory facilities in many places, and poor supervision and feedback to health facility staff. Each of the major vertical programs (malaria, HIV/AIDS, and TB) plans to strengthen surveillance, often through proposals to establish a system of sentinel sites.

In southern Sudan, pharmaceuticals and medical supplies are supplied by international agencies. A project implemented by an international NGO is now ongoing to centralize purchasing. Due to the lack of roads in most areas, as well as insecurity in many places, most supplies, equipment, and personnel, are transported by air. Security and an adequate road system will be essential to bringing down the enormous transport costs. Cold chain facilities are installed in a few locations in southern Sudan to serve as bases for immunization campaigns.

There are no ambulances in southern Sudan, although NGO vehicles often serve to transport emergency cases and make referrals. In a few cases, emergencies are evacuated by air. Private vehicles are rare, so that on the main, patients travel by foot or are carried in a stretcher.

The OLS health sector coordination has worked to establish a health information system over the years, but the difficulties involved in obtaining reports over such long distances from the myriad NGOs working in southern Sudan, along with a lack of data compilation and analysis, and lack of resources, have prevented its effective functioning. The SPLM Health Secretariat intends to take over this function, but does not have sufficient resources. An early warning surveillance system put in place by WHO, relying on a network of 31 sentinel sites put in place by the polio eradication campaign, has been successful in recent years in collecting information on a limited number of infectious diseases for the purpose of identifying epidemics.

## 6. Health Financing

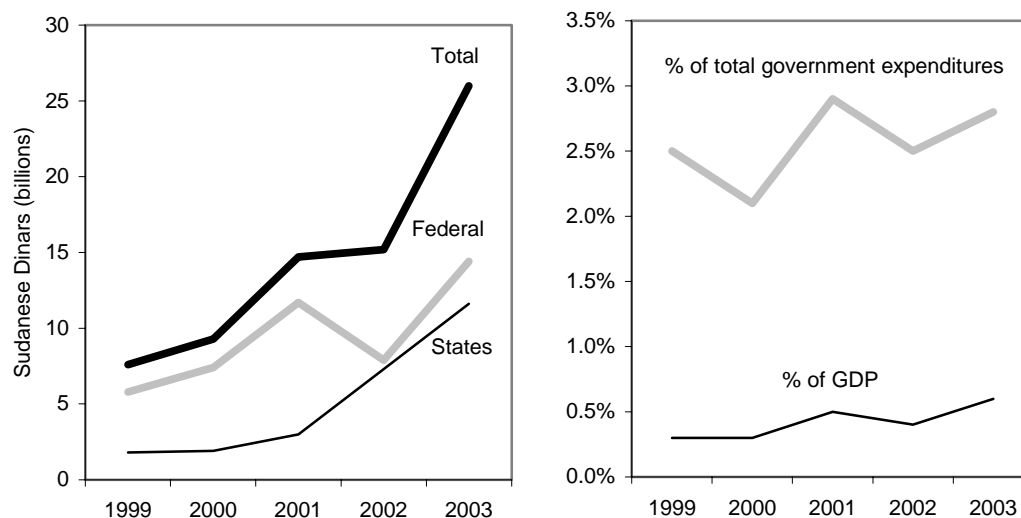
A detailed discussion of Central and State government financing of the health sector is provided in an appendix.

### 6.1 *Total government spending and allocation to health*

One determinant of government health spending is, of course, overall government expenditures. Total Federal and State government expenditures have dramatically increased in recent years, largely due to growth in oil revenues. Total Federal and State government spending in 1999 was SD 300.6 billion (around US\$1.2 billion), rising to a budgeted SD 920.2 billion (around US\$3.5 billion) in 2003.

The availability of external financing has been extremely limited over the past decade, mainly due to the accumulation of substantial arrears on Sudan's foreign debt, including to the World Bank. By the end of 2001, the stock of debt amounted to over US\$20 billion, most of it in arrears. Debt rescheduling will be essential for Sudan to have access to external finance in order to address its considerable reconstruction and development needs.

Figure 19. Central and State government expenditures on health, Sudan, 1999-2003



(Figures are actual spending in 1999-2002 and budgeted for 2003.)  
Source is Government of Sudan.

As overall government expenditures have increased, allocations to the health sector in absolute terms have also increased, as illustrated by Figure 19. Total Federal and State health spending rose from SD 7.6 billion (around US\$30 million) in 1999 to SD 15.2 billion in 2002 (around US\$60 million), and a budgeted SD 26 billion in 2003 (around US\$100 million). Government health spending has therefore tripled in absolute terms since 1999.

However, as a proportion of total government spending or of GDP, health expenditures have remained stable at very low levels in comparison with other developing countries. Figure 9 shows that government health spending has remained between 2 and 3% of total government expenditures, and less than 1% of GDP.

This translates to public sector health spending of between US\$3 and 4 per capita, which similarly ranks among the lowest in the world.

Defense and security expenditures take up a significant proportion of total Federal and State government spending (around 19% in 2003), so that a stable peace in the coming years has the potential of freeing up considerable resources for social services.

Current expenditures (wages, goods and services) in the health sector by the Federal and State governments totaled SD 11.2 billion in 2002, or three-quarters of total public health spending. Most of this went to the wage bill. Capital expenditures in the health sector totaled SD 4.0 billion in 2002, but are budgeted to increase to SD 12.1 billion in 2003, indicating that as total government revenues are increasing, and the wage bill is covered, attention is turning to capital investments which were neglected during the 1990s.

## **6.2 Total health spending**

Government is not the only, and probably not the most important, source of financial resources for the health sector in northern Sudan.

A national health insurance program plays a considerable role in health spending. Introduced in the mid 1990s, the insurance scheme, with branches in each State, covers about 8% of the population. Of those covered, 75% are government employees, 6% are poor families, 3% are families of martyrs, and 2% are students. The premium is 10% of salary, 60% of which is paid by the employer (the government) and 40% by the employee. The premiums for the poor and others are covered by various government programs and charities. Insured individuals are registered at a health center, which acts as a gatekeeper for referrals, and buy drugs at government pharmacies, paying 25% of the cost. The system has large administrative costs, estimated at 25% of expenditures, although it is reported to have difficulties in premium collections and in information systems. Of the remaining expenditures, 40% are on health care services and 30% on drugs. The national health insurance program is reported to spend around US\$90 million annually. (El-Idrissi, 2002)

In the mid 1990s, user fees for government health services were instituted, including exemptions for vulnerable groups and for emergency services. Anecdotal information suggests that access to health services by the poor may have been affected, but there are no empirical data available.

No data are available on household out-of-pocket payments for health services. They are likely to be substantial, however, given the policy of user fees at government facilities as well as the growing importance of the fee-for-service private sector in urban areas. In addition, spending by the urban economic elite on health services abroad, particularly in Jordan, is reported to be substantial. The Government, as well as private entrepreneurs, are attempting to keep more of this spending in Sudan through the development of specialized tertiary-level care facilities and other amenities in Khartoum.

Aside from humanitarian programs and support for vertical programs, in particular immunization, international assistance to the health sector in northern Sudan has not been significant since the suspension of development aid to Sudan by major donors in the early 1990s.

Thus, for now, we have estimates of total government spending on health of around US\$100 million, expenditures by the national insurance scheme of about US\$90 million, and spending by Sudanese on health services abroad reported to be of a similar magnitude. The resulting total of perhaps \$300 million (or less than 3% of GDP) does not include out-of-pocket payments within Sudan, which are likely substantial given the importance of the private sector in the cities as well as the system of user fees for public services. Including such out-of-pocket spending could bring total spending to 4 or 5% of GDP, equivalent to US\$15 to US\$20 per capita.

These estimates are speculative, but suggest that overall resources available for health services in northern Sudan are not insubstantial, even though still in the lower range of what is found in other countries in Africa.

In any case, it is clear that more information on health expenditures, particularly by States, localities and households, is required.

### **6.3 Disparities**

Aside from 17 hospitals run by the FMOH, the States are largely responsible for financing of the government health system. States raise tax and non-tax revenue, but different States have vastly different tax bases, so that regional differences in financial resources available to State governments vary considerably. At the same time, Federal transfers to the States, although rising in recent years, have been limited. In 1998, Federal transfers to the States were only around SD 9 billion (around US\$45 million) but rose significantly in 2002 to SD 36.1 billion (around US\$140 million), about 38% of total State revenues. There is no information on which States received which proportions of this amount.

In any case, Federal transfers have been insufficient for the poorer States to fulfill their health sector responsibilities, so that, in particular, the primary health care system in rural and peripheral areas has deteriorated.

However, the available information indicates that spending is highly skewed towards the better-off. Of course the significant spending for care abroad is by and for the economic elite of the country. As well, insurance expenditures, which are of the same order of magnitude as government spending, benefit only 8% of the population, most of whom are government employees. Finally, government spending itself is also likely focused to a considerable extent on hospitals, which tend to be used more by the better-off, as shown in a further section.

#### **6.4 *Budgeting and transparency***

The budgeting process has several characteristics which limit the Federal Ministry of Health's control over health spending, and in particular its ability to plan capital investments. First, the lack of a Ministry of Planning or a public investment program weakens coordination of capital investments from year to year, and limits planning for new obligations taken on in terms of future recurrent spending. Second, spending is largely done on a cash basis, with first priority given to the wage bill, then to goods and services and other needs, depending on available funds. Third, the Federal Ministry of Finance closely controls most spending, approving spending decisions by line ministries and directly allocating many of the line ministries' recurrent expenditures (for example, cars, spare parts, maintenance, travel).

The control over State government financial resources by State Ministries of Health is unclear and more information on this is required.

There are serious transparency issues in Sudan's fiscal system. They relate mainly to revenue exemptions, extra-budget spending, federal and States accounts. Revenue exemptions may be granted without legal basis. Public resources are collected on religious grounds and managed by non-government institutions such as the Zakat Fund. Final budgetary and extra-budgetary accounts are not published. Data on debt (domestic as well as external) and on detailed economic and functional expenditures by the central government are not published. States' accounts are available on a piecemeal way in various units of the central government or at the state level but they are not published or even circulated among the various branches of government. The National State Support Fund (NSSF), established in 1995 to collect resources from the central government and rich states to provide financial support to poorer states does not publish its accounts.

#### **6.5 *Health spending in southern Sudan***

In non-government areas of southern Sudan, approximately US\$55 million is spent annually by external donors on health services, (Richer, 2003) which is about a third of total non-food humanitarian assistance. In comparison, local spending is thought to be negligible, although may represent significant resources to the communities themselves. This would include spending by local authorities, and contributions in-kind by communities, which for the most part take the form of supporting Community Health Workers. Other out-of-pocket expenditures would be to the limited number of private

pharmacies or to traditional healers, since there are few or no private practices of Western-style medicine.

The Health Secretariat has a very limited resources, largely dependent on external funding from vertical programs such as onchocerciasis and HIV/AIDS. While the UN tracks financial contributions to programs under its Consolidated Appeal, information on health programs implemented outside the UN and OLS structure is not systematically centralized.

The Health Secretariat does not have a formal budgeting process aside from meeting the reporting requirements of project donors. This is currently a particular subject of capacity-building efforts involving the World Bank Institute.

Between 60% and 70% of the total US\$55 million donor funding are said to be devoted to logistics, security, and transport, supplied by international agencies and contractors. A further 20% is estimated to cover the costs of expatriate staff. This leaves perhaps 10% to 20% of total external funding directly reaching the southern Sudanese, implying between US\$1 and US\$2 per capita health spending.

## **7. Summary of Main Points**

The organization and financing of the health system in Sudan is complex, but a number of general observations can be made.

### Administrative Structure

- Decentralization of most responsibility for operation and management of the government health system in northern Sudan has widened regional disparities due to the States' differing capacities and abilities to raise revenue.
- International agencies support (and coordinate) health services in southern Sudan, although the SPLM's health policy envisions a similarly decentralized system.
- Policy and planning capacities are weak at the State level, and would also need to be strengthened at the federal level for effective planning and reform efforts. In southern Sudan, the planning and coordination capacity of the health authorities require considerable strengthening to enable transition from coordination by UN and NGO structures.

### Health System Organization

- Decentralization and funding cuts has led to deterioration of the primary health care system, further emphasis on hospitals, and regional disparities in service coverage in northern Sudan.
- In southern Sudan, the number and coverage of health facilities is extremely limited, with about 40% of the population having no access to health services.

- Private provision of services is growing in northern Sudan, in particular in urban areas, and more information on this sector is required.

### Human Resources

- Human resource development in northern Sudan is dominated by the training of higher cadres, in particular physicians, who supplying the urban market in Sudan as well as international labor markets, both of which are showing signs of saturation.
- Skilled health personnel in northern Sudan are concentrated in urban areas, leaving peripheral facilities significantly under-staffed.
- In southern Sudan, human resources are very limited, with most training confined to lower health cadres. A lack of candidates for training will be an important constraint to the future expansion of services.
- Further analysis on human resource issues, in particular relating to incentives and the role of the private sector, is required.

### Support Services

- Revolving drug funds are in place in some parts of northern Sudan and further information is required on their functioning and effectiveness.
- Costs of transport and supply are considerable due to the distances involved, poor transport infrastructure, and insecurity.
- The challenges of maintaining cold chains are considerable, in particular in peripheral areas of northern Sudan and in southern Sudan.
- Transport of emergencies and referrals is a significant barrier to care in many areas, in particular with regard to obstetric emergencies.
- Health information systems and surveillance requires strengthening.

### Health Financing

- Although government spending on health is limited to perhaps US\$4 per capita, significant private spending and expenditures by the insurance system likely mean that overall resources available to the health sector in northern Sudan are significant, perhaps as much as US\$15 to 20 per capita.
- Due to differing revenue-raising abilities of the States and other factors, this spending seems to be highly skewed towards benefiting the better-off.
- In southern Sudan, although humanitarian programs in health and nutrition account for over \$50 million annually, up to 80% is spent outside the country on

transport costs and expatriate staff, leaving estimated health spending reaching the Sudanese at perhaps US\$1 to 2 per capita.

## B. HEALTH SYSTEM PERFORMANCE

### 1. Availability and Utilization of Services

As discussed previously, availability of health care services varies widely. Urban areas benefit from more and better public and private services than rural areas, although some parts of cities, in particular migrant settlements, are underserved. Regional differences are also obvious, with health staff and functioning facilities concentrated in Khartoum and other more prosperous states. Socio-economic disparities are evident, with indicators from household survey data showing that the poor make use of services significantly less than those higher on the socio-economic scale.

Immunization rates (discussed below) are indicators for availability and utilization of health care, although in Sudan they considerably depend on externally-financed campaigns. Coverage of measles immunization (an MDG indicator) is estimated at 58% in northern Sudan in 2000, with 70% of children in urban areas vaccinated, compared to 47% in rural areas. In southern Sudan in 1999, coverage was 34%. It is shown in a previous section that the poorest are significantly less likely to be immunized, especially in rural areas.

Another MDG indicator of availability and utilization of services is the proportion of birth attended by skilled health staff. In northern Sudan in 2001, this was 57% of births, with little difference between urban and rural areas, likely due to wide distribution of village midwives. Similarly, access to trained midwives seems to be more evenly distributed along the lower and middle ranges of the socio-economic scale, even though women in the very highest economic groups are significantly more likely to have a skilled birth attendant. In southern Sudan, coverage of skilled delivery care is estimated at 6%, concentrated in the Equatoria region, with virtually no access to such care in many areas.

Table 10. Treatment-seeking behavior (% of children with ARI symptoms), northern Sudan, 2000

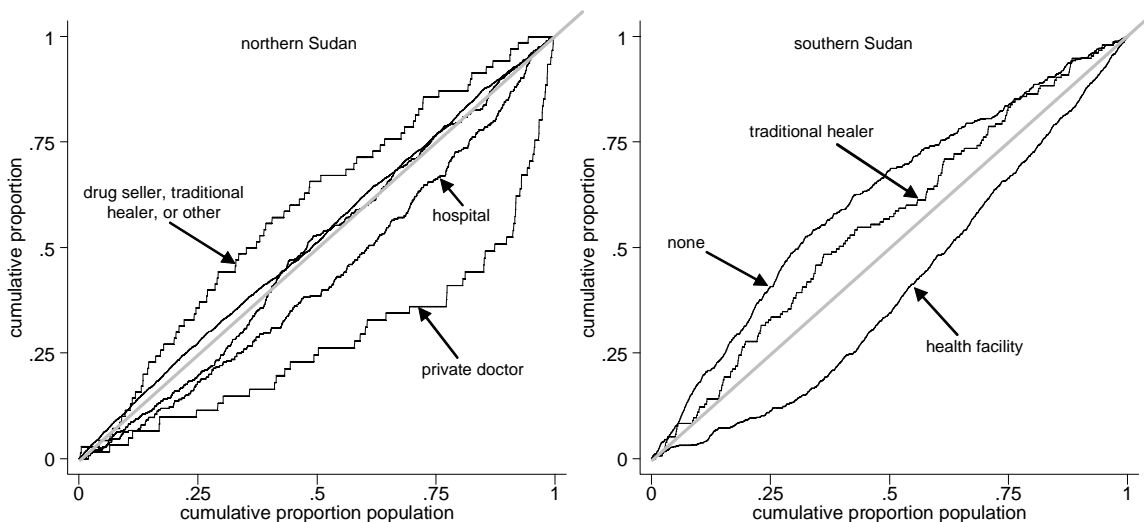
	urban	rural	overall	concentration index
hospital	17	9	12	0.140
health center or other primary care	17	19	19	0.015
private doctor	7	2	4	0.449
drug seller, traditional healer, or other	2	3	3	-0.171
none	60	69	65	-0.033

Source is 2000 MICS in northern Sudan.

A third MDG indicator discussed previously is the proportion of febrile children treated with anti-malarial medication. This is estimated at 50% in northern Sudan, where urban children are more likely to be treated (61%), compared to rural children (42%). The proportion is 36% in southern Sudan. Poorer children are significantly less likely to receive anti-malarial treatment.

Household survey data on ARI treatment can also be analyzed to reveal patterns in service utilization. Table 10 shows the treatment sought for children reported to have ARI symptoms in the two weeks previous to the 2000 MICS in northern Sudan (n=2,333). A number of conclusions can be drawn from this table.

Figure 20. Concentration curves measuring socio-economic inequality in treatment-seeking behavior for children with ARI symptoms, Sudan, 1999-2000



Source is 2000 MICS in northern Sudan.

**First**, utilization of hospitals is similar to primary care facilities, supporting the notion that many patients are bypassing the referral system in northern Sudan and going directly to secondary-level facilities.

Table 11. Treatment-seeking behavior (% of children with ARI symptoms), southern Sudan, 1999

	%	concentration index
health facility	56	0.202
traditional healer	9	-0.116
None	36	-0.225

Source is 1999 MICS in southern Sudan.

**Second**, utilization of hospitals and of private doctors is somewhat higher in urban areas than rural areas of northern Sudan. This reflects both their availability and the fact that households in urban areas are on average better-off than in rural areas.

Indeed, and this is the **third** point, the concentration indices show that the poorest are significantly less likely to access hospitals and private doctors, and more likely to use

drug sellers and traditional healers.<sup>15</sup> The first graph in Figure 20 illustrates the concentration curves for northern Sudan.

Table 11 provides data from the 1999 MICS in southern Sudan on treatment-seeking for children with ARI symptoms (n=1,421). It shows that 56% went to a health facility, 9% went to a traditional healer, and 36% did not seek treatment outside the home. The concentration indices and curves (Figure 20) show that the better-off are significantly more likely to go to a health facility, while the poorest are more likely to use a traditional healer. As well, the poorest are much more likely to choose not to seek treatment, indicating that there are significant barriers to accessing services, for the most part geographic, but also likely economic in some cases.

## 2. Quality

Scattered information indicates that quality of health care services in northern Sudan deteriorated along with cuts in funding over the past decade, especially in peripheral areas. For example, an EPI assessment found that safe injection procedures were poorly followed in rural areas, with many syringes recapped after injection. An assessment of 60 health facilities in three states in 1997 found that only 21% of children with diarrhea were correctly managed. In urban areas, it is widely accepted that quality in the private sector is higher than in government facilities.

Table 12. Services received at least once during antenatal care visits (% of mothers whose first antenatal care visit was to a health center), northern Sudan, 1999

investigation		distribution	
weight	43	iron tablets	63
height	32	folic acid tablets	54
Blood pressure	61	maternal card	66
hemoglobin	74		
Urine	77	counseling	
fetal size	57	nutrition	49
fetal heartbeat	55	breastfeeding	38
fetal position	26	risk factors	16
internal checkup	59	family planning	19
x-ray	3	post-natal care	29
ultrasound	4		

Source is 1999 SMS in northern Sudan.

As well, the composition of antenatal care, for which household survey data are available, can provide indications of service quality. The 1999 SMS estimates that 71% of pregnant women received antenatal care, half of whom went to a health center. Table

<sup>15</sup> A larger positive value for the concentration index indicates that the outcome is concentrated among the better-off, while a larger negative value indicates that the outcome is concentrated among the poorest. On the graph, a curve under the diagonal indicates concentration among the better-off, while a curve over the diagonal indicates concentration among the poorest, with distance from the diagonal measuring the magnitude of inequality.

12 describes the services received by mothers who went to health centers for antenatal care. A few of these standard services were provided to around three-quarters of women (blood and urine tests), others were provided to about two-thirds (iron and folic acid, fetal size and heartbeat, and internal checkup), and many (in particular counseling) were provided to less than half.

Women who go to a government hospital are slightly more likely to receive these different services, while those who go to a dispensary or midwife's home are significantly less likely. Because poorer women are more likely to see less skilled health workers, they are significantly less likely to receive these services than women higher on the socio-economic scale. For example, 35% in the lowest third of households as ranked by economic status received iron supplementation, compared to 77% in the highest third.

An ongoing inventory and assessment of health facilities in northern Sudan by the FMOH and WHO is collecting data on service quality. In southern Sudan, international NGOs directly implementing health services should in principle be following internationally-accepted standards for humanitarian programs. However, little information is available on this subject.

### **3. Key Public Health Programs**

#### ***3.1 Immunization***

The Expanded Program on Immunization (EPI) started as a limited in scope trial program in 1976 following the eradication of smallpox. The first National EPI five year program was prepared in Sudan in 1985. During the 1990s, immunization coverage increased with results varying from year to year, depending on security conditions and donor support. The strategy used combines routine immunization with mass campaigns including door-to-door delivery of vaccines. Polio eradication campaigns began in 1994 and by 2000 seven campaigns had been carried out.

Estimates from household survey data show relatively low vaccination coverage in both northern and southern Sudan. Table 13 provides estimates for the EPI vaccines in northern Sudan in 2000. The 2000 MICS in northern Sudan found 66% of children aged 12-23 had received the BCG vaccination, 44% had received three doses of DPT (DPT3), 46% had received three doses of polio vaccine (OPV3), and 58% were immunized against measles. Only 29% had received all recommended vaccines, while 22% had not been vaccinated at all.

These estimates contrast with official figures, which are generally higher. Official estimates from 2001 in northern Sudan are 71% for each of BCG, DPT3, and OPV3, and 80% for measles. However, there is evidence of low vaccine efficacy, possibly due to cold chain problems. A recent study in Khartoum found that 59% of confirmed measles cases had been previously vaccinated. (de Swart et al., 2001)

Data from the 1999 MICS in southern Sudan showed that 26% of 12-23 month-old children had received the BCG vaccination, 12% had received three doses of DPT, 11% had received three polio vaccinations, and 34% had received a measles vaccination. Only 7% were completely vaccinated, while 40% had received no immunization. Coverage estimates for 2002 are even lower, with for example, BCG at 9%, measles immunization at 11%, and the third DPT dose at 5%. This likely reflects the fact that the 1999 MICS did not survey inaccessible areas, where coverage was probably near zero.

Table 13. Vaccination coverage (12-23 months), northern Sudan, 1999-2000

	northern Sudan	southern Sudan
BCG	66	26
DPT1	67	33
DPT2	57	21
DPT3	44	12
polio (birth)	25	..
polio1	75	45
polio2	66	34
polio3	46	11
Measles	58	34
all vaccinations	29	7
no vaccinations	22	40

Sources are 2000 MICS in northern Sudan and 1999 MICS in southern Sudan.

**Polio** is the focus of a global eradication campaign, and significant resources have been applied to Sudan in recent years through National Immunization Days (NIDs) campaigns. Coverage of three doses of polio vaccine in northern Sudan was officially reported to have increased to 71% in 2001, although WHO and UNICEF estimate country-wide coverage of 47%, reflecting low coverage in the war-affected areas of the south. In any case, the last confirmed case of wild polio virus in Sudan was detected in April 2001, raising hopes that the country is now free of the disease.

**Drop out rate**, an important indicator of program performance and quality is officially estimated at 17% in northern Sudan, which is not very high in comparison to other African countries.

EPI in both northern and southern Sudan is highly dependant on external assistance. In northern Sudan, cuts in donor funding for vaccination in the early 1990s led to a drop in coverage, leading to epidemics of polio and measles. Government and some donors renewed support in the mid 1990s, but again a cut in government funding in 1999 led to reduced coverage. In 2001, the government of Sudan received approval for US\$10.8 million support over five years from the Global Alliance for Vaccines and Immunization (GAVI). In southern Sudan, EPI is implemented for the most part by UN agencies and international NGOs.

### **3.2 Malaria Control Program**

Sudan has a long history of malaria control activities, dating as far back as the beginning of the 20<sup>th</sup> century, when very successful interventions based on trained volunteers (the “mosquito men”) and simple vector control strategies led to the near elimination of malaria from many parts of northern Sudan. In contrast, the attempt at malaria eradication in the 1950-60s had very limited success due to managerial, technical and financial constraints. The extensive use of pesticide in large irrigated areas led to early insecticide resistance, which in turn led to frequent malaria epidemics in the 1970s. Current malaria control activities swing between disease management and vector control with little attention being paid to multiple preventive measures. In 1998, Sudan endorsed the international Roll Back Malaria initiative as the organizing principle for its own activities, placing more attention on early diagnosis and prompt treatment.

Recently, “Malaria Free” programs for Khartoum and Al-Gazira have been given a high priority. Annual prevalence surveys in March in Khartoum indicate a decrease in malaria prevalence among the population from up to 5% in 1998-2000 to under 1% in 2002. Surveys in January in Al-Gazira found prevalence to have decreased from 3% in 2001 to 2% in 2002. However, the continued success of these programs will require sustained investment, at the same time that resources are needed for preventive and curative interventions elsewhere in the country.

As discussed in a previous section, treatment of febrile children with anti-malarial medication is an indicator of access to care, and is estimated from survey data to be 50% in northern Sudan and 36% in southern Sudan. The data show that the most poor have significantly less access to treatment, especially in rural areas of northern Sudan and in southern Sudan.

Insecticide-treated nets (ITNs) are rare, used by 2% of children in northern Sudan in 2000. Untreated nets are more common, with 33% and 26% of under-5 children estimated to sleep under them. Malaria programs in both northern and southern Sudan have distributed several hundred thousand nets in recent years.

Malaria control programs are currently limited in scale and in geographic scope, so that large-scale expansion is awaiting the Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM), which has approved US\$37 million over five years in northern Sudan and US\$23 million in southern Sudan.

### **3.3 Tuberculosis**

The National Tuberculosis Control Program was launched in 1974 and has since then received support from a variety of donors. In 2001, the TB control program was being implemented in 22 States (out of 26). The case detection rate was low for many years until improving in the 1990’s. According to official figures, about 11,000 smear-positive TB cases were detected in 2001, compared with less than a 1,000 cases in 1993, but

showing almost no change since 1997. It is officially estimated that 40% of all smear-positive cases are detected.

Coverage of the population with Directly Observed Treatment (DOTS) is reported to be 97%. It is reported that 79% of detected cases are treated under DOTS, essentially reaching the WHO target of 80%. Of detected cases, an estimated 56% are cured.

In southern Sudan, limited programs are in place, with coverage of perhaps 25% of the population, and only 1,500 cases were treated under DOTS in 2001, compared to an estimated annual incidence of 25,000 new cases. Expansion of TB control is constrained by the inadequate network of health facilities, so that a US\$15 million program over five-years approved by the Global Fund is planned to cover only half of the population.

### **3.4 HIV/AIDS**

The leadership in both northern and southern Sudan have realized the seriousness of the HIV/AIDS situation and in recent years have adopted policies and programs in response. Although an HIV/AIDS control program was initiated in northern Sudan in 1987, it is now in the nascent stages of planning concrete interventions after having had some success in gaining political support for addressing the problem. A prevalence and behavioral study done by the program in 2002 is an extremely important step in this process. The program's strategic plan covers the range of HIV/AIDS interventions, including, advocacy and raising awareness, increasing condom use, STI treatment, blood screening, reducing mother-to-child transmission, voluntary counseling and testing (VCT), improving surveillance, and supporting people living with AIDS. The plan is ambitious and will depend both on political support and on significant external funding. A proposal to the GFATM has been submitted.

In southern Sudan, the SPLM adopted an HIV/AIDS policy in 2001 which set out a commitment to address the epidemic and established a coordinating council. USAID is providing \$2 million funding for pilot interventions. Implemented by international NGOs, these include awareness raising and community training, as well as VCT, condom distribution, and mother-to-child transmission prevention programs. A Global Fund proposal for a five-year program of about US\$14 million annually has been submitted.

### **3.5 Maternal Health**

A key indicator of maternal care is the proportion of births delivered by a skilled health worker. Skilled health staff are doctors, nurses, midwives, or health visitors. The 1999 SMS in northern Sudan found that 57% of births are delivered by a skilled attendant, little changed from 1990. There is little difference between urban and rural areas, as coverage in urban areas declined during the 1990s. As described in a previous section, although women at the highest end of the range of economic status have significantly better access to such care, coverage over most of the socio-economic range is comparable, reflecting wide availability of village midwives. In southern Sudan, only 6% of births were delivered by a skilled attendant, mostly in the Equatoria region.

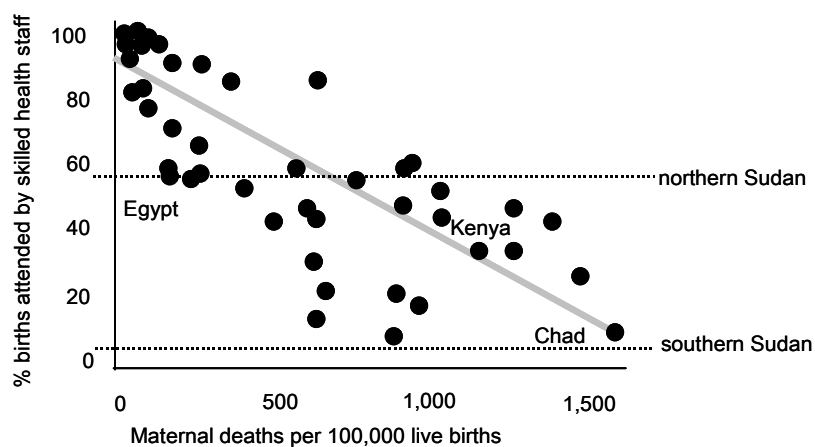
Table 14. Delivery care, Sudan, 1999 (% of births)

	northern Sudan	southern Sudan
doctor	6	6
skilled health worker	57	
Traditional birth attendant (TBA)	23	63
other or no-one	14	31

Sources are 1989-90 DHS and 1999 SMS in northern Sudan and 1999 MICS in southern Sudan

Table 14 provides a breakdown by type of health care worker. In northern Sudan, 6% of births are attended by a doctor, while 57% are attended by other skilled health workers, mostly trained midwives. There was little change in these proportions during the 1990s, except possibly for a decline in the proportion of doctors. In southern Sudan in 1999, only 6% of births were attended by a doctor or other trained health worker, while 63% were delivered by traditional birth attendants (TBAs). The definition of skilled birth attendant does not include TBAs, who are the focus of existing maternal health training programs.

Figure 21. Delivery care by trained health personnel (1999) and maternal mortality ratio (1995)



Adapted from World Bank (2002).

Figure 21 situates northern and southern Sudan on a graph showing the correlation between the proportion of births attended by skilled health staff and the estimated maternal mortality ratio for a number of countries. It indicates that the estimate of 57% of births receiving skilled care in northern Sudan would be consistent with a maternal mortality ratio of between 500 and 1,000. The estimate of 6% of births attended by skilled personnel in southern Sudan would be consistent with a maternal mortality ratio of over 1,500.

Although this graph shows a correlation between access to skilled delivery care and maternal mortality, there is evidence that the effect on mortality depends on both the

skills of the attendant and on possibility for referral to facilities offering emergency obstetric care, in particular Caesarian section. (Freedman, 2003)

In northern Sudan, formal training of village midwives is a long-standing priority of the health system, dating from the establishment of a midwifery school in Omdurman in 1921. (Bell, 1998) Although not trained to intervene with serious birth complications, village midwives should be able to identify and refer them. Their impact on maternal mortality will depend on the possibility for referral. Although data on functionality and quality of referral services in northern Sudan are not available, the network does exist and likely plays an important role in addressing maternal mortality. Survey data indicates that 86% of deliveries in northern Sudan are at home. 2% of deliveries are by Caesarean section, while 14% are assisted by forceps.

In southern Sudan, where TBAs are similarly trained to identify and refer complications, in most areas, there are no facilities to which to refer. In the absence of a functioning referral system, the overall effect on maternal mortality of trained TBAs may be questioned, although they likely play an important role in antenatal care, delivery cleanliness, and newborn care. About 95% of deliveries in southern Sudan are done at home. A qualitative study in southern Sudan found that transport and lack of quality care were important barriers. (Palmer, 1999)

Antenatal care has not been found to have a significant impact on maternal mortality, but it is associated with better health for newborns. In northern Sudan, overall, 71% of pregnant women receive antenatal care, while coverage is 90% in urban areas and 62% in rural areas. Tetanus toxoid vaccination coverage of pregnant women in 1999 is estimated at 52%, with significantly higher coverage in urban areas (72%) than rural areas (42%). In southern Sudan, only 21% of pregnant women receive antenatal care, and a similar proportion receive tetanus toxoid vaccination.

#### **4. Summary of Main Points**

Analysis of data on MDG and other indicators reflecting availability and utilization of services indicates the following:

- Disparities in service availability and utilization between urban and rural areas, as well as between regions, are significant.
- Socio-economic disparities in service utilization are evident, with the poor less likely to have access to services, less likely to benefit from hospitals, and more likely to go to drug sellers and traditional healers.
- Coverage of basic services in many areas is low, sometimes extremely low. Some evidence that government primary health care facilities are relatively accessible to large proportions of the population does not contradict this, since the range and quality of services available in many place seems to be limited.
- In northern Sudan, the referral system is being bypassed to some extent by care-seeking at hospitals in particular by the better-off.

- In northern Sudan, private providers provide a significant proportion of services, especially in urban areas, but for basic care most still seem to rely on the public system.

Conclusions about quality are the following.

- Available data, in particular on antenatal care, suggests that there are significant gaps in the package of basic services provided by health facilities in northern Sudan as well as their quality.
- In southern Sudan, most quality control is supervised by international NGOs, which in principle follow international humanitarian standards, but no information is available.

The following can be concluded from the discussion of key public health programs.

- Immunization coverage has been low in recent years in northern Sudan and is extremely low in southern Sudan, although better-funded programs in recent years have reportedly had some impact.
- Although there is some routine immunization in northern Sudan, immunization is largely dependent on externally-funded campaigns.
- Malaria programs in northern Sudan have traditionally emphasized vector control and are reportedly seeing some success in urban areas, although the sustainability of these focused interventions is a question.
- Malaria control in peripheral areas of northern Sudan and in southern Sudan is limited to sporadic preventive interventions, such as ITN distribution, as well as routine curative care at health facilities.
- The national tuberculosis program in northern Sudan has had success in recent years in expanding coverage of DOTS, although only 40% of estimated cases are detected.
- In southern Sudan, tuberculosis programs are presently limited.
- In both northern and southern Sudan, the political leadership has acknowledged the problem of HIV/AIDS so that interventions are now in their planning and pilot stages.
- Aside from the TB program in northern Sudan, these key vertical programs in both northern and southern Sudan currently have limited coverage, awaiting Global Fund financing before scaling-up to cover larger populations.
- Coverage of skilled delivery care in northern Sudan is relatively high, due to a long-standing emphasis on training village midwives, but extremely low in southern Sudan.
- The effectiveness of delivery care in preventing maternal mortality depends to a great extent on the availability of referral to emergency obstetric care. Little information is available on this in northern Sudan, although it is known that

such services are in place in many areas. In southern Sudan, it is known that such referral is impossible in most cases.

## C. POLICIES, STRATEGIES, AND PLANS

### 1. Government Policies in the 1990's

The central Government's main vision, goals and objectives for the 1990s are found in its 10 year National Strategy (1992-2002). In 1992, the vision was emphasizing the need to place Human Development at the center of the overall Sudan's development strategy and was based on the principle of "citizenship for health" (i.e. health as a social right with family and community participation as the corner stone for health development).

The main goal was to improve equity by generalizing the provision of basic health care to include prevention, treatment and rehabilitation. Very ambitious objectives and targets were adopted including among others: reducing infant mortality to 20 per 1,000 live births; providing maternal health care throughout the country; eradicating epidemic and endemic diseases and achieving 100% immunization coverage; making essential medicines available to all and establishing the national industry for medical equipment and supplies and drugs; developing human resources for health and reducing absenteeism at work; and updating health information systems and improving health education and awareness.

The implementation of these plans has been limited by: (i) the high inflation rates and the continued drain of resources to finance the civil war which resulted and drastic cuts in public social expenditures and forced the Government to keep wages of civil servants at a level that undermined incentives for performance; and (ii) the weak health sector absorptive and implementation capacity. These elements can partially explain why in spite of stated policy, the performance of the health sector has remained far from satisfactory and why main health outcomes have shown little progress if any during the past decade.

However, the 1990's have not been a completely lost decade for the health sector and some of the steps taken have paved the way for future policy re-orientation and improvement in health service delivery. Major changes during the 1990's include capital development, decentralization, cost sharing, health insurance, and private sector development.

#### *1.1 Capital Development*

The number of hospitals has increased by 50% (from 205 in 1989 to 309 in 2000, with a 20% increase in hospital beds). Specialized hospitals have also been created, their total number increasing from 19 in 1989 up to 46 in 2000. Although concerns have been expressed over the geographic distribution of the facilities and the package (and quality) of services effectively provided within these institutions, this can be seen as progress towards developing a network of referral facilities.

If the total number of primary health care units (combining health centers, dispensaries, dressing units and PHC units) has hardly varied during the period (from 6,093 in 1989 to 6,184 in 2000), the composition of the PHC network has significantly changed, mainly due to the upgrading of PHC units and dressing units into health centers. This can be seen as important progress. However, a considerable proportion of these units are closed or not fully functional due to deterioration of infrastructure or lack of trained personnel and supplies. As well, the increase in health centers seems to have disproportionately benefited urban areas.

## **1.2 Decentralization**

In 1993, a Federal Government Act was adopted stipulating the respective responsibilities of the 3 main levels in the public system:

- 1) the Federal Ministry of Health is responsible for formulating national policies, international relations, health human resource development, health legislation and control of epidemics.
- 2) the State MOH is responsible for planning, administration and financing of health services within the framework of national health policies
- 3) the Health Area System is responsible for planning and implementing health programs at the locality (“*Muatamadia*”, equivalent to district) level.

The re-organization of Sudan’s governmental structure and in particular the creation of “health districts” can be seen as a positive step for future development. However, as most of the States do not collect or allocate revenues sufficient to fund their health service responsibilities, they have continued to face shortages of resources and have remained largely dependent on the centrally approved budgets.

## **1.3 Cost Sharing**

User fees for government health services were instituted in the mid-1990s, including exemptions for vulnerable groups and for emergency services. Anecdotal information suggests that access to health services by the poor may have been affected, but there are no empirical data available. Some of the main government hospitals have started competing with the private sector in terms of offering services and amenities for those who can afford to pay the necessary fees.

## **1.4 Health Insurance**

Set up in 1996, a national health insurance system has been developed and now covers 16 States. Even if the system provides only limited insurance coverage to a relatively limited proportion of the population (about 8% of the total population, mainly public sector employees and students) and administrative costs still remain at a very high level (more than 20%), its initial development constitutes an important step for the future.

### 1.5 *Private Sector Development*

Private health services, including pharmacies, clinics, and hospitals, have considerably developed in recent years in the major urban areas and in better-off rural areas. The government encourages this development of the private sector and is open to exploring public/private partnerships in the future. This will be essential to improving services within the limits of constrained public budgets as well as to addressing issues related to human resource production and incentives.

## 2. **Future Government Policy**

A Health policy and Strategic plan for the coming 25 years is being prepared. At time of writing, only a draft document has been communicated to development partners and the strategic plan still need to be discussed within the FMOH and approved by the Government. In May 2003, the FMOH also released a draft paper to be used as a health chapter for the Interim Poverty Reduction Strategy Paper.

From these documents as well as from discussions with FMOH authorities, the main features of this new health policy are as follows:

- the vision remains largely unchanged, based on the principles of health as human right but insists on the need to improve individual and community participation in service development and financing.
- The main goal continues to be to expand the provision of basic health services, while the documents put more emphasis on the reduction of inequalities in health outcomes and access to health care services.
- More emphasis is now placed on addressing human resource issues, particularly the retention and redeployment of health staff, as well as on improving the quality of services provided and staff performance.
- Reform of the health financing system is stressed in order to enhance cost effectiveness, get better value for money, and better protect the poor and the most vulnerable.

The document also prioritizing ten health problems: malaria, HIV/AIDS, tuberculosis, bilharzia, diarrhea, respiratory infections, nutritional disorders, immunizable diseases, vector born diseases and finally life-style related diseases.

In its current form, the strategic plan remains a set of desired intentions and is not supported by consideration of either financial needs or implementation constraints. Although there is some indication that equity as well as systemic and management related issues should be given more attention, little is said on how to address them. Some concerns have also been expressed that these documents were prepared by health experts in isolation, with little involvement of other stakeholders, in particular beneficiaries.

The strategic plan also largely fails to identify specific key health issues for the poor and to propose a clear pro-poor approach.

### **3. Envisioned Health System in southern Sudan**

A health policy adopted by the SPLM in 1998-99 provides a blueprint for the health system envisaged for southern Sudan. The policy affirms health as integral to the development of southern Sudan and emphasizes, in the Alma Ata tradition, primary health care and community participation.

#### ***3.1 Organization***

The future health system is envisaged as a four-tiered structure. The central Health Secretariat is to be responsible for overall policy and supervision, as well as any future central tertiary and teaching hospital. The three regions are responsible for overall supervision within the region, along with management of any tertiary hospitals in the regional capitals. The counties are charged with most operational role, responsible for the management of primary health care facilities (centers and units), as well as county hospitals. Finally, it is envisioned that local communities are to be involved in governance as well as providing contributions to primary health care services, in particular supporting community health workers (CHWs).

For the present, most services are supported and implemented by international NGOs and church groups, so that only the outlines of this structure are in place. The Health Secretariat is staffed and has become more involved in OLS and donor coordination and planning, but its financial and human resources are constrained. The regional level is not presently active. Some counties have been staffed with County Commissioners for Health, who have started to play a role in liaising with international agencies as well as taking management responsibility for some primary facilities supported from external sources. In many cases, local communities are starting to fill their roles in supporting CHWs and providing contributions.

The policy sets out standards for the numbers, staffing, and services to be provided by the different types of facilities. Primary health care units are to serve a population of 4,000, and concentrate on basic maternal and child health interventions. They are to make referrals to primary health care centers, which are to cover a population of 20,000, staffed with physicians and with inpatient capacity. The catchment population for county hospitals is to be 75,000, with a capacity of 100 beds. Were these standards to be met, there would be around 2000 primary health care units, 400 primary health care centers, and over 100 county hospitals. Given that there are presently 510 units, 94 centers, and 19 hospitals, in non-government-held areas of southern Sudan, it is clear that this plan sets out a vision of an ideal, and that further policy development will require an incremental and prioritizing approach.

### 3.2 *Services and Regulation*

As part of the emphasis on primary health care, the policy envisions the development of a basic package of services. Further work on this could be done by the Health Secretariat, in discussion with donors and NGOs who already have policies in place on the types of services provided by their humanitarian programs.

The SPLM health policy has detailed sections on regulation of human resources, and some progress has been made in recent years in standardizing NGO training programs and accreditation of personnel. However, because lack of human resources will be an enormous constraint to health system, strategy development is essential.

The policy goes into detail on planned pharmaceutical regulation, including an essential drugs list and accreditation. At present, an NGO project for central drug procurement is planned. Like with human resources, although regulations of the type set out in the policy will at some point be necessary, there are more pressing needs for the development of overall strategies. In the area of drugs and supplies, the need to work on options to reduce transport and logistics costs is paramount.

### 3.3 *Financing*

The policy also goes into considerable detail on mechanisms for community support for primary care services, including user fees, and the main priorities seem to relate less to resource-generation than to foster self-reliance and reducing perceived dependency syndrome.

As it stands, the policy assigns most responsibility for funding services to the counties, without mentioning possible transfers from the central authorities. This carries clear risks of exacerbating regional disparities.

The policy recognizes that dependence on external assistance will continue for the foreseeable future, so that the envisioned system is one where most services are supported by international and national NGOs as well as churches. It is not clear, however, whether it is envisioned that this support is to be provided to facilities and staff that are part of a government system, or whether NGOs and others will directly manage and run services, as is largely the case now. Similarly, the policy seems to intend that the planned county and tertiary hospitals are to be government-managed. Experience has shown that this can come to dominate the time and resources of health authorities so that other responsibilities are neglected. Further policy work is needed, clearly separating the health system functions of provision, financing, and supervision, and determining to what extent government is to be involved in each.

A “strong” mechanism for coordinating the various agencies involved in the health sector is planned. At present, involvement of the SPLM Health Secretariat in planning and coordination of health services in southern Sudan is nascent, and hampered by lack of resources. It is not obvious how the transition will be managed from a policy

development and coordination process dominated by donors, the UN, and NGOs, to one where southern Sudanese have overall authority. This should now be a subject of focus and discussion.

The policy aims at annual health spending of US\$10 per capita, which implies total expenditures in the magnitude of US\$80-100 million. Much of this would come from public and donor sources, given that the wide poverty in southern Sudan will limit out-of-pocket and community expenditures. This amount is not unreasonable, given that present humanitarian programs, which cover perhaps only 60% of the population, are estimated to cost around US\$50 million annually. However, the enormous costs associated with transport and logistics need to be addressed, while the availability of human resources will remain a key constraint in terms of absorptive capacity.

The policy does not mention vertical programs. At present, several vertical programs represent the only significant sources of funding for the Health Secretariat, which is already skewing its structure and focus. With significant GFATM funding in the pipeline, effort should be devoted to how these programs are to be integrated within the larger strategy for health system development.

In general terms, the existing SPLM health policy is an essential first step in the policy process, drawing a broad outline of an ideal system. However, key policy choices remain to be made, in particular about the role of government. As well, more attainable goals and priorities need to be decided and strategies to achieve them developed.

#### **4. Donor Plans**

##### **4.1 *Humanitarian Assistance***

Most donor aid to Sudan is for humanitarian assistance delivered by UN agencies and NGOs. In 2002, funding to UN agencies for health and nutrition programs was US\$8 million out of total funding of US\$174 million. Much of the total funding is accounted for by food aid (US\$127 million). (Water and sanitation projects accounted for another \$4 million). An additional US\$35 million were provided for NGO health and nutrition programs, out of a reported total of \$95 million for NGO programs.<sup>16</sup> Thus, leaving out food aid, health and nutrition programs represent about 30% of the approximate total of US\$140-150 million in non-food humanitarian assistance to Sudan.

The most important donors in the health sector are the United States and the European Commission (EC), although a number of other countries provide assistance in the millions of dollars. These include the Islamic Development Bank, Denmark, Finland, Sweden, Norway, the Netherlands, the United Kingdom, Italy, Ireland, Germany, Japan, and Canada.

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<sup>16</sup> These figures are only those amounts reported to the UN. Richer (2003) finds that a total of around \$55 million is spent annually on health projects in non-government areas of southern Sudan.

## 4.2 *Planned Development Programs*

**USAID** is preparing a five-year program strategy for Sudan which is to encompass both humanitarian and development assistance. Health is one of five focus areas, with a planned program reported to be US\$25-30 million over five years. This will focus on development of the primary health care system in southern Sudan. Humanitarian assistance in health and nutrition is also expected to continue, planned at around US\$12 million in 2003.

Similarly **European Union** funding for humanitarian assistance in the health sector will continue. In 2003, it is projected at around US\$9 million. Planned development assistance, however will focus on food security and education, sectors which are expected to account for 80% of funding. Health is one of four secondary priorities, projected to receive funding of around US\$2.5 million over four years. Assistance is envisioned for primary health care services, epidemic surveillance, immunization, drug supply, and secondary medical facilities.

Other donors also reportedly plan to continue humanitarian assistance in health and nutrition, but do yet have any significant plans for development funding in the sector.

The **Global Fund** to fight AIDS, Tuberculosis and Malaria (GFATM) could become a significant source of grant funding for the health sector in Sudan. The Global Fund has approved US\$60 million over five years for malaria programs, including US\$23 million in southern Sudan. It also approved \$15 million over five years for tuberculosis programs in southern Sudan. Proposals for HIV/AIDS programs in northern and southern Sudan have also been submitted. As well, the government has received approval for US\$11 million over five years from the Global Alliance for Vaccines and Immunization (GAVI) to support immunization programs

## 4.3 *Quick Start Program*

Major donors, meeting at the Hague in April 2003, agreed that in the short term, capacity building and a “Quick Start” program should be priorities. Among the agreed priorities for the Quick Start program are rehabilitation of basic services, including health, water, and sanitation. The draft Quick Start program is a list of proposed projects organized by MDG. In health, proposed projects total approximately US\$32 million and focus on primary health care services, maternal care, immunization, nutrition, and HIV/AIDS, malaria, and tuberculosis. An additional series of projects to improve access to water and sanitation total about US\$14 million.

Quick impact programs have not had a very good record in other post-conflict situations and the main danger is that new programs and infrastructure cannot be sustained because recurrent financing needs are not considered. The other problem with this project-based approach is that investments are often made in an uncoordinated fashion, isolated from any strategic plan for health system development.

In this case, however, many of the projects have a humanitarian character, and indeed were transferred from the annual UN appeal. It is widely recognized that humanitarian assistance will continue to be required and likely extended as needy populations become accessible after a peace agreement. Calling these needed projects “Quick Start” programs and fitting them in the MDG framework may tend to imply that they have a developmental focus. In other words, there may be a risk that available “development” money is used for these essentially humanitarian projects, to the detriment of longer-term investment in health system development. Although implementing relief programs in a way that encourages, or at least does not undermine, longer-term development should be encouraged, muddying the waters between projects which meet immediate needs and programs with longer-term developmental goals may have unintended consequences.

#### **4.4 Overall Comments**

At the moment, the emerging picture of future donor assistance to the health sector, both humanitarian and development, has several characteristics.

- 1) It will be dominated by a project approach with international NGOs, and perhaps UN agencies, as the main implementers. Continued humanitarian assistance, the planned USAID primary health care project, any EC developmental program in health, and the proposed Quick Start program, will all be done this way. This stems from the fact that UN agencies, NGOs, and church groups are best placed to continue and expand primary health care in southern Sudan, but it is crucial that this be done as part of an overall strategy for health system development, and that the local authorities are heavily involved in planning and coordination.
- 2) Planned assistance, even labeled “Quick Start” or “development” aid, will have a decidedly humanitarian character, focusing on meeting basic service needs among long-neglected populations, mostly in southern Sudan. This is clearly necessary. However, again, longer-term strategy for health system development should not be neglected.
- 3) A very large proportion of currently envisioned external funding for the health sector in Sudan focuses on a limited number of diseases – malaria, tuberculosis, and probably HIV/AIDS. Again, although this funding is necessary in order to meet obvious needs, it carries well-known risks of “verticalizing” the health system, so that overall development and integration can be compromised.
- 4) The focus on immediate needs, primary health care, and disease-specific programs, has so far not included much consideration of secondary referral care services – hospitals – as well as training of higher cadres – doctors – both of which are obvious needs in the south.

Current donor plans include US\$50 million or more annually devoted to humanitarian programs, up to US\$7 million annually for planned development of primary health care

in the south by USAID, and up to US\$15 million annually in the form of (eventual) Global Fund grants, for a total of perhaps US\$70 or US\$75 million per year. In addition, proposed Quick Start health projects total US\$32 million.

## **5. Summary of Main Points**

A number of general observations can be made about future policies, strategies, and plans of the government, the nascent authorities in southern Sudan, and donors.

### Government

- The government's ambitious health sector plan in the 1990s was constrained by lack of resources and weak implementation capacity.
- However, although each raises problems, a number of reforms made during the decade hold promise for the future. These include development of the secondary and tertiary referral system, decentralization, cost sharing, health insurance, and private sector development.
- The government's draft documents on future policy prioritize expansion of basic health services and control of priority diseases, while putting more emphasis on human resources, financing, and disparities. However, more work on strategies and plans to achieve the stated goals is required.

### Southern Sudan

- The SPLM's health policy, emphasizing primary health care and community involvement, sets out standards of service coverage for an ideal system, but more work is needed on strategies and plans to achieve this.
- The envisioned decentralized system sets out responsibilities of the different levels but does not address transfers of resources between them.
- At present, most health services are supported by international agencies. Although a coordination body is envisioned, more work on the transition is required. At the same time, coordination and integration of vertical programs is needed.
- The exact role envisioned for government over the longer term in the health system functions of provision and financing are not clear.

### Donors

- Planned donor assistance to the health sector in Sudan will focus on humanitarian assistance, improvement and extension of primary health care in southern Sudan, and strengthening of HIV/AIDS, malaria, and TB programs.

- The project-based and vertical orientation of these plans has risks in terms of coordination and consistency with the longer term development and sustainability of the health system.
- Little attention has so far been given to overall health system development.
- Focused on primary health care, donor plans do not consider hospital services or the development of higher-level health cadres, obvious needs in southern Sudan.

**CHAPTER III**  
**EXPLORING OPTIONS FOR WORLD BANK INVOLVEMENT IN THE**  
**HEALTH SECTOR IN SUDAN**

## A. THE WORLD BANK AND SUDAN

While in the 1970s and 80s (following the Addis peace agreements of 1972), the Bank was a major player in the reconstruction of Sudan, it has been mostly absent from Sudan since 1992, just occasionally supporting relatively small initiatives, on a grant basis, such as UNICEF's data-collection effort.

With peace looming on the horizon, there is an increasing consensus, both within the Bank and outside, that the Bank's engagement in Sudan, if timely, will be critical to the consolidation of peace and the reconstruction of Sudan. The Bank is therefore accelerating its efforts at building its knowledge and developing relations with the main actors and stakeholders.

Recently, as the prospects for peace have risen, the Bank has:

- engaged the Government in a policy dialogue on reforming agriculture,
- initiated a Country Economic Memorandum (CEM) to start rebuilding its knowledge base,
- been asked (i) by the IGAD peace mediators to provide technical advice during the peace process on issues relating to inter-governmental fiscal relations and wealth sharing as well as budgeting (done jointly with the IMF) and, (ii) by the Troika to co-lead (with the UN) a working group to explore options for coordinating donor assistance immediately after peace and for longer term development.

Large obstacles remain however in the way of a full-fledged resumption of Bank lending activities, not least the size of Sudan's arrears to the IMF, the AfDB, and the Bank.<sup>17</sup> As a necessary step toward debt relief under HIPC, the Bank is also providing support to the Government in the elaboration of its I-PRSP. A series of activities are underway to sensitize the Government about the nature of pro-poor policies, analyze existing data and prepare for a national household survey, and foster participatory discussions. A specific goal is that the I-PRSP will trigger Government reflection on the sustainability and social cost of its macro-economic program.

In 2003, a Bank internal document<sup>18</sup> was produced delineating possible phases for the Bank's re-engagement:

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<sup>17</sup> World Bank disbursements to Sudan have been suspended since April 1993, and the country has been in non-accrual status since January 1994. Although the Sudanese authorities have taken steps towards normalizing relations with the Bank and making notional debt service payments since mid-1999, this has not been sufficient to prevent a continued accumulation of arrears to the Bank. Clearance of these arrears, which stood at \$195 million by end-2001 and had risen to about \$240 million by end-2002, is thus an essential prerequisite for normalizing relations between the Bank and Sudan.

<sup>18</sup> World Bank : Country Re-Engagement Note- Sudan- February 18, 2003

- **Phase I:** Preparing for peace
  - Timing: until a peace agreement is reached
  - Envisaged funding: limited Bank Budget, Post Conflict Fund and Trust Funds.
- **Phase II:** Immediate post-conflict needs while arrears are cleared (“stabilization”)
  - Timing: following a peace agreement (6-12 months)
  - Possible funding: IDA(12) pre-arrears clearance grant and leveraged support under a Transitional Support Strategy (*TSS-1*)
- **Phase III:** Full transitional support strategy (*TSS-2*) (“recovery and reconstruction”)
  - Timing: once arrears are cleared (12-24 months)
  - Possible funding: Exceptional IDA allocation under *TSS-2*

To move forward on re-engagement, the Bank has defined a three-pronged approach for 2003-2004 that will focus on:

- Knowledge generation and sharing to foster national dialogue
- Capacity building to support policy reform
- Demonstration project to help improve the delivery of basic social services

## **B. OPTIONS FOR BANK INVOLVEMENT IN THE HEALTH SECTOR**

In defining a strategy for Bank involvement in the health sector, the following should be considered:<sup>19</sup>

- In providing assistance to Sudan, the Bank has an agenda, which is to promote pro-poor and more equitable policies and the use of more efficient and sustainable health sector development strategies. This does not mean that the Bank is promoting a particular model of health sector organization and financing. Experience shows that simply transposing approaches and solutions from one country to another generally leads to at least disappointing results if not failures. In its policy dialogue with Sudan, the Bank will act (i) as a global knowledge broker, contributing experiences and lessons learned from other parts of the world, particularly on how to accelerate progress towards achieving the MDGs; and (ii) as a partner, not only providing additional resources but also contributing to the building of national capacity and to developing a better understanding of the political economy of reforms through knowledge generation.

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<sup>19</sup> After 40 years of providing development assistance for health (DAH), a number of lessons have been learned – in particular on how best to organize the financial assistance required for low capacity, least developed countries and countries emerging from conflict. A brief summary of lessons learned is annexed.

- Obviously, in the case of Sudan a two-track approach is needed. One track is to contribute to health system and capacity development in both the northern and southern sections of the country. Simultaneously, the Bank should assist Sudan in responding to immediate post-conflict needs, particularly in war-affected areas of – mostly – southern Sudan. Because, (i) little attention has so far been given to overall health system development, an area for which the Bank has a strong comparative advantage; and (ii) in view of other development partners plans, the Bank should give relative priority to activities and interventions aiming at building up capacity and strengthening national systems and procedures.
- Despite the current optimism surrounding the peace process there remain serious risks that could either derail prospects of a sustainable peace as a whole or complicate the implementation of an eventual agreement. Therefore, the strategy should be built in ways that a) prepare the Bank to rapidly scale up activities when peace is signed; but b) also mitigate the risks of stop and go.
- As mentioned above, large obstacles remain in the way of a full-fledged resumption of lending activities and there is little opportunity for the Bank to develop in the near future a large scale project/program. This should be given full consideration. Because of this, as well as for other obvious reasons, the Bank will need to develop collaborative arrangements with other partners, especially with UN agencies who have a long-standing presence in Sudan and a good knowledge of Sudan's context and HNP issues.

In line with these points and with the Bank's overall re-engagement strategy, and on the basis of the rapid situation analysis provided in the previous chapters, it is proposed to focus assistance efforts on: 1) policy dialogue and coordination mechanisms; 2) knowledge generation and sharing; 3) capacity building, in particular in management; and, 4) the definition of health sector development plans for both the northern and southern parts of the country.

### **1. Policy dialogue and coordination mechanisms**

The country is responsible for the preparation of the Interim and full PRSPs. However, this is new to Sudan, especially to the Federal Ministry of Health (FMOH). In a first phase, it is proposed to engage in a dialogue with and provide assistance to the FMOH for the definition of the health-related section of the I-PRSP. While avoiding substitution, this could take the form of advisory services and technical assistance and the financing of the necessary consultations of various stakeholders.

The Bank should also support efforts towards better coordination. For the North, the willingness and readiness of different partners to undertake a first joint review of the sector (with government in the driving seat and including all stakeholders), to contribute to the definition of the sector's resource envelope and the design a health sector program of work for the next coming year, should be further explored.

Obviously, the Bank will need to work with many others towards the definition of the post conflict reconstruction program for the South. As many partners seem to be willing to focus their efforts on the direct provision of health services (through NGOs for instance), the Bank could focus on working with the nascent administration on the design of coordination mechanisms.

## 2. **Knowledge generation and sharing**

Existing data on the health status of the population and the health sector already provide a relatively good overview of the situation. Several donors, including for instance WHO and UNICEF, are currently supporting efforts to collect information on health facilities, improve the surveillance system for communicable diseases, and assess health needs in underserved areas. Despite this, however, there remain major gaps in information and analysis and there is an obvious need to rapidly improve knowledge and understanding of the situation in order to be able to define appropriate reform measures. This is particularly true with regards to: a) health financing; b) human resources; c) the private sector; d) support services; and e) financial management system and procedures.

- a) **Health financing**: Information on health financing is still very scarce and fragmented. In particular, we have insufficient knowledge of the overall resource envelope for the sector, intra-sectoral allocations and State expenditures on health and, user fees and out of pocket payments. This should be considered by the Bank and others partners as one of the top priorities for knowledge generation and technical assistance should be rapidly provided to Sudan (both northern and southern parts) in this particular area.
- b) **Human resources**: This is a key factor for future health sector development. Four aspects need to be further explored: (i) production, both in terms of numbers produced and quality of training; (ii) brain drain and conditions for the return to Sudan of staff who have emigrated; (iii) measures to retain staff and to re-deploy them to deprived areas; and (iv) needs for continued training. This should constitute the second highest priority for knowledge generation and be linked with current efforts by other partners.
- c) **Private sector**: At present, a limited purely private sector (mainly located in urban areas) co-exists with extended private practice within the public sector. The possibilities to develop public/private partnerships should be explored. This however will need to be associated with studies on the nature and quality of service effectively provided in public and private facilities. Studies on the private sector are required but constitute a relative secondary priority at this time and could be first limited to studying the opportunities for developing public/private partnerships on a pilot basis.
- d) **Support services**: Medical equipment and drug supply is key to health sector performance. Considering the geographical specificities of Sudan, procurement and logistic issues and strategies to both improve access and reduce costs need to be further explored. This could first be done in southern Sudan in close collaboration with UN agencies and other partners involved.

- e) Financial management: In view of financing constraints and the movement in other developing country contexts towards program lending and budget support, there is a clear need to rapidly improve national systems and procedures. Financial management systems and procedures as well as capacity, particularly within the State Ministries of Health, should be assessed and a plan of action should be discussed. This should not be done in isolation from other work and needs to be linked with studies on health financing, health sector performance reviews, and capacity building efforts.

### 3. Capacity building

There is a clear need, for the northern part of Sudan, to build up capacity at both the central level and in the States in: 1) public health; 2) planning and budgeting; 3) management of health services; and 4) financial management.

It could first be proposed to link capacity building efforts at the central level with the preparation of the health-related section of the PRSP and the finalization of the National Health Strategy. The Bank could assist the Federal Ministry of Health on the necessary translation of its vision into a multi-annual Program of work, the definition of the resource envelope for the sector, and the design of an intra-sectoral allocation formula.

Second, it could be proposed to start on a limited number (2-3) of stable and secure States, providing assistance for a review of the situation and performance of the health sector. While doing this, training needs at the State levels could be assessed and a plan of action for improving capacity designed.

At present, the health administration in the southern parts of Sudan is embryonic. With virtually no budget and few staff, its capacity is extremely limited. Narrowing the existing gap in capacity between the northern and southern parts of the country and empowering the southern health administration in particular with regard to coordination should be seen as a key priority for the Bank's action. Therefore, it could be proposed to directly provide external technical assistance to this nascent administration and contribute to the financing of its operating costs.

### 4. Post conflict "quick start" and priority programs

The follow are proposed areas for Bank support to assist in improving the response to meeting immediate and basic health needs in Sudan:

- a) HIV/AIDS: Already at a generalized stage, the HIV/AIDS epidemic is likely to spread even more rapidly during the post-conflict period, spurred by foreseen large population movements. Although several partners have ongoing or planned programs and the Global Fund could soon become a major supporter in this area, the Bank should step in to fill immediate needs for controlling the epidemic. As it is too early for the Bank to start the preparation of a large scale program, the possibility to finance – on a grant

basis – a limited number of key interventions (within and outside the health sector) should be rapidly explored. As a first step, these could include focused research on high-risk groups and behaviors in order to better target planned interventions.

- b) Malaria: In anticipation of planned Global Fund resources for malaria control in Sudan, support could be provided for knowledge-generation activities with potentially high impact on future programs. These could include prevalence studies (using the new rapid diagnostic “dipstick” tests) and research on household preventive and care-seeking behavior.
- c) Maternal health: The almost complete lack of emergency obstetric care in southern Sudan certainly contributes to extremely high maternal mortality. While basic primary health care is being improved through the support of various donors, attention should be paid to second-level referral services in collaboration with other interested partners, starting with improving knowledge about existing services and needs.

**APPENDICES**

## **APPENDIX 1: PUBLIC FINANCING OF THE HEALTH SECTOR IN SUDAN**

### **A. THE FISCAL SYSTEM IN SUDAN**

#### **1. The federal system**

Reflecting political decentralization resulting from constitutional provisions, the public finance system introduced in 1995 in Sudan is a federal system, in which public resources are managed by the federal or central government, 26 states and local councils.

The constitution provides for the states to raise tax and non-tax revenues and cover basic social needs, such as primary health facilities. Since States' revenues have been largely insufficient to cover States' expenditures, significant transfers to the States are made by the central government to assist them in the financing of both current and capital expenditures. In the present revenue-sharing arrangement, the states get 43% of Value Added Tax (VAT), 10% of dividends from joint ventures, 15% of all other revenue raised by the central government and, since 2002, a compensation for the abolition of agricultural taxes.

#### **2. Budget preparation**

The preparation of the central government budget starts in August by estimating the total revenue and defining the spending limit for the next fiscal year. The Ministry of Finance and Economy (MFE) and the Central Bank prepare these revenue projections on the basis of forecasts for GDP growth, inflation, exchange rate, oil price and net bank credit to government. The spending limit is then adjusted to meet government overall priorities, additional measures for increasing revenue or reducing non priority spending being considered.

On this basis, a distribution by sector of both recurrent and capital projected spending is prepared. It should be noted that since 1994, there is no Ministry of Planning and no Public Investment Program to help select and coordinate capital development projects from year to year. Because of the dearth of external financing, foreign-financed projects are given priority.

By the end of September, the MFE sends out a circular outlining the broad strategy and priorities and indicating the provisional ceiling for each line ministry. Line Ministries are invited to discuss these ceilings and prepare bids. During the "arbitrage" discussions, the MFE checks compliance with priorities, consistency with ceilings previously set and accuracy of costing. To respect fiscal discipline, any upward adjustment made to spending for one ministry must be accompanied by revenue raising measures and/or reduced spending by another ministry.

Once the budget is approved by the Legislature and promulgated, line ministries receive a circular outlining their appropriations and in turn distribute spending authority internally to their units, including those in the regions.

### **3. Budget execution**

The budget execution is largely dominated by MFE in that: 1) some of the line ministries' recurrent expenditures are directly allocated to and executed by MFE (e.g. maintenance, cars, spare parts, travel) and, 2) MFE approves spending decisions by line ministries.

This high centralization of budget execution is reinforced by budget cash management. Because of variations in revenue collection and unforeseen expenditures arising from security considerations, a Committee (composed by the Minister of Finance, his Deputy and the Director General for Budget) meet twice a month and determines cash allocations based on available liquidities. It is worth noting that the Committee gives the utmost priority to the wage bill. Spending on goods and services is given the second priority. Transfers to states come third and development expenditures are given the lowest priority.

Before committing any current and capital expenditures, officials in the line ministries have to obtain an authorization from MFE. Once the commitment is approved, a payment order is prepared and submitted to the Cash Committee, which proceed to final payment only if and when cash is available.

### **4. Budget monitoring**

Quarterly and monthly overall reports on budget execution are prepared by MFE and sent to the Legislature. However, MFE does not have the analytical instruments to monitor budget execution by recording on a regular basis all government operations, highlighting the various stages of revenue and spending, and tracking arrears- both domestic and external. Since monitoring is very weak, the government cannot take in time the necessary remedial measures to adjust revenues and expenditures. Therefore, arrears are accumulated vis-à-vis external lenders, States, government companies, and the private sector without proper evaluation and transparency. There are no supplementary or revised budgets but transfers from a budget chapter to another have to be approved by the Legislature.

### **5. Auditing and transparency**

An Auditor General's Office exists since 1920 with extensive powers to audit the accounts of the central government, the State governments, state-owned and joint venture companies. The Auditor General reports directly to the President and the Legislature. However, these reports are not published.

## B. OVERALL FISCAL DEVELOPMENTS

### 1. At the Central Government level

#### 1.1 *Central Government revenue*

Total Central government revenues have increased from SD 156.8 billion (7.8% of GDP) in 1998 to SD 470 billion (13.5% of GDP) in 2002. This observed increase in central government revenue mainly resulted from increasing non-tax revenue, whose share of total central government revenue rose from 20% in 1998 to 55% in 2002. The onset of large-scale oil production is certainly the major factor in this significant increase in non-tax revenue.

Table 15. Central government revenue, Sudan, 1998-2003

	1998	1999	2000	2001	2002		2003
					Budget	Actual	Budget
(in billions of Sudanese Dinars)							
<b>Total revenue</b>	<b>156.8</b>	<b>205.4</b>	<b>326.3</b>	<b>367.0</b>	<b>484.3</b>	<b>470.4</b>	<b>603.5</b>
<b>Tax revenue</b>	<b>126.4</b>	<b>153.2</b>	<b>157.4</b>	<b>187.9</b>	<b>243.5</b>	<b>213.5</b>	<b>268.5</b>
Taxes on income and profits	31.2	36.1	37.4	42.1	52.0	41.3	53.5
Personal income tax	4.1	3.0	5.3	4.7	7.5	5.1	6.0
Business profits tax	8.7	22.9	22.9	23.1	27.5	26.1	33.0
Sudanese working abroad	4.7	5.4	2.7	4.9	8.0	4.2	7.0
Development tax	0.7	0.9	1.9	1.6	0.0	0.0	0.0
Other	13.0	3.9	4.7	7.8	9.0	5.9	7.5
Taxes on domestic goods and services	25.9	32.8	34.3	32.4	39.9	74.7	100.3
Excise duties	21.3	24.7	30.9	32.4	39.9	33.2	40.0
Sales taxes	4.6	8.1	3.4	0.0	0.0	0.0	0.0
VAT	...	...	16.1	41.2	52.1	41.5	60.3
Taxes on international trade	69.3	84.3	69.6	72.2	99.5	97.5	114.7
Import duties	35.5	53.8	51.2	54.2	68.1	71.1	77.1
Export tax	1.2	1.8	0.2	0.1	0.1	0.1	0.1
Consumption/VAT	17.1	18.4	9.4	17.9	31.3	26.3	37.5
Other	15.5	10.3	8.8	0.0	0.0	0.0	0.0
<b>Non tax revenue</b>	<b>30.4</b>	<b>52.2</b>	<b>169.0</b>	<b>179.1</b>	<b>240.8</b>	<b>256.9</b>	<b>335.0</b>
Oil	1.2	15.7	140.9	149.7	174.0	200.6	249.0
(Revenue in percent of GDP)							
Total revenue	7.8%	8.4%	11.4%	11.3%	13.4%	13.5%	13.7%
Tax revenue	6.3%	6.2%	5.5%	5.8%	6.7%	6.1%	6.1%
Nontax revenue	1.5%	2.1%	5.9%	5.5%	6.7%	7.4%	7.6%
Oil	0.1%	0.6%	4.9%	4.6%	4.8%	5.8%	5.7%

Source is Federal Ministry of Finance and Economy.

Major tax and tariff reforms have been recently introduced, for example the VAT which was introduced on June 1, 2000. Despite the reforms, tax revenue have declined, from 6.3% of GDP in 1998 to 6.1% of GDP in 2002 (see Table 15), a very low tax-to-GDP ratio compared to other developing countries. Several factors constrain tax revenue mobilization. One obvious factor is difficulty in taxing the informal sector. The main factor, however, is extensive tax avoidance in Sudan. In accordance with provisions of the Investment Encouragement Act – but also frequently without legal basis – a large number of exemptions are granted at both the customs and domestic tax levels. As a result, for instance, revenue forgone at customs is estimated to exceed collected import duties.

To reduce Sudan's vulnerability to oil price fluctuations, the government established in 2002 an oil stabilization account at the Bank of Sudan. At the end of March 2003, US\$96 million had accrued into this account because the 2003 budget projections were based on a price of US\$22 per barrel whereas the actual export price was much higher.

Table 16. Central government operations, Sudan, 1998-2002

	1998	1999	2000	2001		2002		2003
				Budget	Actual	Budget	Actual	Budget
(in billions of Sudanese Dinars)								
<b>Total revenue</b>	<b>156.8</b>	<b>205.5</b>	<b>326.3</b>	<b>402.9</b>	<b>367.0</b>	<b>484.3</b>	<b>469.8</b>	<b>603.6</b>
Tax revenue	126.4	153.3	157.4	205.0	187.9	243.5	212.3	268.6
Nontax revenue	30.4	52.2	169.0	197.9	179.1	240.8	257.5	335.0
<b>Total expenditures</b>								
<b>(excluding interest arrears)</b>	<b>170.9</b>	<b>227.2</b>	<b>349.8</b>	<b>468.9</b>	<b>411.0</b>	<b>559.6</b>	<b>510.3</b>	<b>696.4</b>
Current expenditures	155.3	195.0	275.3	352.3	332.3	461.0	393.8	533.7
Wages and salaries	57.3	80.4	96.6	125.4	125.1	157.9	155.5	184.6
Goods and services	31.2	37.9	53.3	70.0	48.8	74.1	50.5	75.5
Transfers	8.9	12.8	26.8	43.8	33.6	58.8	52.1	81.3
Interest paid	14.7	20.2	34.5	45.6	33.1	68.4	28.9	64.7
Other	43.2	43.7	64.1	67.5	100.0	101.8	106.8	127.6
Capital expenditures	15.6	32.2	74.5	116.6	78.7	134.6	116.5	162.7
<b>Overall deficit on cash basis</b>	<b>-14.1</b>	<b>-21.7</b>	<b>-23.5</b>	<b>-66.0</b>	<b>-44.0</b>	<b>-111.3</b>	<b>-40.5</b>	<b>-92.8</b>
(in percent of GDP )								
Total revenue	7.8%	8.4%	11.4%	12.4%	11.3%	13.4%	13.5%	13.7%
Total expenditures								
(excluding interest arrears)	8.5%	9.3%	12.2%	14.5%	12.7%	15.5%	14.7%	15.8%
Current expenditures	7.7%	8.0%	9.6%	10.9%	10.4%	12.7%	11.3%	12.1%
Development expenditures	0.8%	1.3%	2.6%	3.6%	2.4%	3.7%	3.3%	3.7%
Overall deficit on cash basis	-0.7%	-0.9%	-0.8%	-2.0%	-1.4%	-3.1%	-1.2%	-2.1%

Source is Federal Ministry of Finance and Economy.

## 1.2 Central Government expenditures

Central Government total expenditures (excluding interest arrears) increased from SD 170.9 billion (8.5% of GDP) in 1998 to SD 510.3 billion (14.7% of GDP) in 2002.

Central government total recurrent expenditures rose from SD 155 billion (7.7% of GDP) in 1998 to SD 394 billion (14.7% of GDP) in 2002 (a 47% increase). During the same period, the wage bill share in recurrent expenditures increased from 36.9% in 1998 to 39.5% in 2002 while the share of goods and services has substantially declined from 20.1% in 1998 to 12.8% in 2002.

Central government capital expenditures rose eightfold in the past years, from SD 15.6 billion in 1998 to SD 116.5 billion in 2002 (see Table 16). Central capital expenditures increased from 0.8% of GDP in 1998 to 3.3% of GDP in 2002 (ie. multiplied by a factor of four).

## 1.3 Overall cash deficit

Following the adoption of a stabilization program in 1997, the overall cash deficit has been maintained at around 1% of GDP throughout the period 1998-2002. The improved fiscal consolidation mainly results from: a) the adoption of a stringent budget cash management system; b) reduced inflation; and c) regular increase in oil revenue.

Sudan, indeed, is increasingly oil-dependent and therefore vulnerable to oil price fluctuations. If the overall cash deficit were to be adjusted for oil revenue, it would rise to unsustainable levels of 5.8% of GDP in 2000 to 6.2% in 2001, 6.9% in 2002 and an estimated 7.8% in 2003.

Table 17. Functional distribution of central government current expenditures, Sudan, 2002

	Wages	Supplies	Subsidies	Other	Total
(in millions of Sudanese Dinars)					
Administrative services	18,311	7,786	...	...	26,097
Defense	93,040	34,576	...	...	127,616
Social services	21,822	7,181	3,696	...	32,699
<i>Education</i>	17,542	4,963	1,324	...	23,829
<i>Health</i>	3,280	2,218	2,372	...	7,870
Social subsidies (1)	...	...	17,000	...	17,000
Economic services	2,784	940	...	...	3,724
Miscellaneous (2)	19,568	...	...	...	19,568
Other	...	...	...	167,096	167,096
<b>Total</b>	<b>155,525</b>	<b>50,483</b>	<b>20,696</b>	<b>167,096</b>	<b>393,800</b>

1/ Subsidy for electricity consumption

2/ Including reserve for salary adjustment

Source is Federal Ministry of Finance and Economy.

## 1.4 Sectoral distribution of Central Government expenditures

### Sectoral distribution of recurrent expenditures

In recent years, expenditures on defense and security have dwarfed spending on any other activity, particularly health. As indicated in Table 17, in 2002 expenditures on defense and security amounted to SD 129.6 billion, representing 32% of current spending and 3.7% of GDP. This can be compared with the SD 7.9 billion allocated to health, which represent 2% of current spending and 0.2% of GDP. It is worth noting that recurrent expenditures on defense and security were 16 times higher than those on health. Wages and salaries for defense and security formed 60% of the wage bill as compared to 2% allocated to the health sector. The difference in respective shares of total spending on goods and services is even more striking with 69% for defense and security but only 4% for health.

Table 18. Functional distribution of central government capital expenditures, Sudan, 2002

	Estimate	Actual
(in millions of Sudanese Dinars)		
Defense	7,500	3,586
Social services	19,600	275
<i>Education</i>	9,604	17
<i>Health</i>	4,435	37
Economic services	87,420	90,719
Other	20,080	21,920
<b>Total</b>	<b>134,600</b>	<b>116,500</b>

Source is Federal Ministry of Finance and Economy.

### Sectoral distribution of capital expenditures

In 2002, total capital spending amounted to SD 116.5 billion, to be compared to the SD 134.6 billion that had been budgeted (a shortfall of 13%). However, actual health sector-related capital development expenditures were as low as SD 37 million, compared to the budgeted SD 4.4 billion. (Table 18)

Table 19 indicates that the staggering shortfall in health spending in 2002 was not due to lack of foreign financing but to cutbacks in domestically-financed capital expenditures and the priority given by the authorities to defense and economic services.

## 1.5 The 2003 Central Government budget

The 2003 budget was prepared under the following assumptions: 5.7% GDP growth rate, 7% inflation rate (year-to-year), 5% of GDP limit on government domestic bank borrowing, 5% rise in both exports and imports, stabilization of the exchange rate and an

average oil price of US\$22 per barrel. Assuming that oil prices would remain relatively high, the MEF budgeted a 24% increase in oil revenue from over actual revenue in 2002.

Table 19. Function distribution of central government capital expenditures (by source of financing), Sudan, 2002

	Estimate		Actual	
	Domestic	Foreign	Domestic	Foreign
(in millions of Sudanese Dinars)				
Defense	7,500	...	3,586	...
Social services	18,000	1,600	237	38
<i>Education</i>	9,604	...	17	...
<i>Health</i>	3,280	1,155	18	19
Economic services	72,020	15,400	84,277	7,503
Other	170,080	3,000	20,859	...
<b>Total</b>	<b>114,600</b>	<b>20,000</b>	<b>108,959</b>	<b>7,541</b>

Source is Federal Ministry of Finance and Economy.

The recurrent budget was planned to increase by as much as 41% over actual spending in 2002, with a 19% higher wage bill, a 56% increase in transfers (mainly to the States), and a 50% rise in purchases of goods and services. Capital spending is estimated to soar by 50%.

Table 20. Functional Distribution of central government budgeted current expenditures, Sudan, 2003

	Wages	Supplies	Subsidies	Other	Total
(in millions of Sudanese Dinars)					
Administrative services	19,600	11,319	...	...	30,919
Defense	115,497	48,608	...	...	164,105
Social services	25,816	13,569	6,700	...	46,085
<i>Education</i>	21,798	10,353	4,000	...	36,151
<i>Health</i>	4,018	3,216	2,700	...	9,934
Social subsidies	--		17,000 (1)	...	17,000
Economic services	3,072	1,980	...	...	5,052
Miscellaneous (2)	20,615	24	...	...	20,639
Other	...	...	...	249,900	249,900
<b>Total</b>	<b>184,600</b>	<b>75,500</b>	<b>23,700</b>	<b>249,900</b>	<b>533,700</b>

1/ Subsidy for electricity consumption

2/ Including reserve for salary adjustment of SD 18 billion

Source is Federal Ministry of Finance and Economy.

As shown in Table 20, current spending on health is planned to increase by 26% over actual expenditures in 2002 – to SD 9.9 billion, or 1.9% of total current expenditures, still a mere 0.2% of projected GDP. About 2% of the wage bill has been allocated to health as compared to 63% to defense and security. With regard to goods and services, the budgeted 4% share for health is to be compared with the 64% allocated to defense and

security. In the 2003 budget, SD 5.8 billion have been allocated to health sector capital expenditures (3.6% of the total capital budget), out of which SD 4.5 billion are to be financed by external sources (see Table 21).

Table 21. Functional distribution of central government capital expenditures (by source of financing), Sudan, 2003

	Estimate		Total
	Domestic	Foreign	
(in millions of Sudanese Dinars)			
Defense	7,500	753	8,253
Social services	10,200	7,258	17,458
<i>Education</i>	4,027	227	4,254
<i>Health</i>	1,310	4,515	5,825
Economic services	50,052	22,261	72,313
Other	58,424	6,252	64,676
<b>Total</b>	<b>126,176</b>	<b>36,524</b>	<b>162,700</b>

Source is Federal Ministry of Finance and Economy.

## 2. At the States level

Data on the 26 state budgets and actual expenditures are scattered at different units in the central government and extremely difficult to collect. The difficulty lies not only in their bureaucratic dispersion but also in the fact that States do not use a single template for reporting. Therefore, the data presented below, compiled by the authors, should be interpreted with caution. The data refer to all 26 States, but do not of course refer to the situation in areas not administered by the government.

Table 22. State government revenues, Sudan, 2001-2003

	2001			2002			2003
	Estimate	Actual	% of Estimate	Estimate	Actual	% of Estimate	Estimate
(in millions of Sudanese Dinars)							
Tax revenue	38,900	22,229	23.6%	48,900	32,020	34.5%	57,100
<i>Value added tax</i>	28,500	15,879	16.8%	37,900	22,582	24.3%	45,000
<i>Other tax revenue</i>	10,400	6,350	6.8%	11,000	9,438	10.2%	12,100
Nontax revenue	57,075	36,897	39.2%	60,377	24,862	26.7%	66,414
Federal transfers	48,019	34,975	37.2%	74,270	36,104	38.8%	80,300
<b>Total</b>	<b>143,994</b>	<b>94,101</b>	<b>100.0%</b>	<b>183,547</b>	<b>92,986</b>	<b>100.0%</b>	<b>203,814</b>

Source is Federal Ministry of Finance and Economy.

Table 22 and Table 23 show the estimated revenues and recurrent and capital expenditures of all 26 states over the period 2001-2003. The wage bill is the major

component of consolidated current spending, representing 42% of the total and 5-6% of GDP.

Table 23. State government expenditures, Sudan, 2001-2003

	2001			2002			2003
	Estimate	Actual	% of Estimate	Estimate	Actual	% of Estimate	Estimate
(in millions of Sudanese Dinars)							
Wages	59,948	41,789	69.7%	72,712	43,154	59.3%	81,818
Goods and services	49,887	29,348	58.8%	54,764	30,670	56.0%	61,859
Other	16,253	6,291	38.7%	23,382	3,369	14.4%	25,720
Capital	20,582	10,693	52.0%	29,928	17,777	59.4%	34,417
<b>Total</b>	<b>146,670</b>	<b>88,121</b>	<b>60.1%</b>	<b>180,786</b>	<b>94,970</b>	<b>52.5%</b>	<b>203,814</b>

Source is Federal Ministry of Finance and Economy.

## 2.1 *Financing of health by the States*

Table 24 shows total funding by States of the health sector both on current and capital accounts. It is remarkable that, in spite of very limited financial resources, health sector allocations have risen. Total expenditures increased from SD 1.8 billion in 1999 to SD 7.3 billion (0.2% of GDP) in 2002 and should continue to increase to an estimated SD 11.6 billion (0.3% of GDP) in 2003.

Table 24. Consolidated total expenditures of central and State governments on health, Sudan, 1999-2003

	1999	2000	2001	2002	Budget 2003
(in billions of Sudanese Dinars)					
Central Government	5.8	7.4	11.7	7.9	14.4
States	1.8	1.9	3.0	7.3	11.6
<b>a. Consolidated total expenditures on health</b>	<b>7.6</b>	<b>9.3</b>	<b>14.7</b>	<b>15.2</b>	<b>26.0</b>
b. Consolidated total expenditures of central and State governments	300.6	444.7	499.1	605.3	920.2
(in percent)					
a/b	2.5%	2.1%	2.9%	2.5%	2.8%
(in percent of GDP)					
a/GDP	0.3%	0.3%	0.5%	0.4%	0.6%

Source is Government of Sudan.

Table 25 shows recurrent spending by the 26 States on health facilities during the period 1999-2003. In 2002, such spending amounted to SD 3.3 billion or 0.01% of GDP. Even though it rose from SD 1.5 billion in 1999 (a 74% increase), it remains extremely low by all standards.

Table 25. Consolidated current expenditures of central and State governments on health, Sudan, 1999-2003

	1999	2000	2001	2002	Budget 2003
(in billions of Sudanese Dinars )					
Central Government	4.8	5.6	9.3	7.9	9.9
States	1.5	1.8	2.4	3.3	4.0
a. Total current expenditures on health	<b>6.3</b>	<b>7.4</b>	<b>11.7</b>	<b>11.2</b>	<b>13.9</b>
b. Total consolidated current expenditures of central and State governments	259.7	358.5	409.7	471.0	723.1
(in percent )					
a/b	<b>2.4%</b>	<b>2.1%</b>	<b>2.9%</b>	<b>2.4%</b>	<b>1.9%</b>
(in percent of GDP )					
a/GDP	<b>0.3%</b>	<b>0.3%</b>	<b>0.4%</b>	<b>0.3%</b>	<b>0.3%</b>

Source is Government of Sudan.

The health-related wage bill has increased from SD 504 million in 1999 (33% of recurrent spending) to SD 1.7 billion in 2002 (50% of recurrent spending). Expenditures on goods and services amounted to SD 993 million (65% of recurrent spending) in 1999 but declined to 48% of recurrent spending in 2002.

Table 26. Consolidated capital expenditures of central and State governments on health, Sudan, 1999-2003

	1999	2000	2001	2002	Budget 2003
(in billions of Sudanese Dinars)					
Central Government	1.0	1.8	2.4	0.0	4.5
States	0.3	0.1	0.6	4.0	7.6
a. Total capital expenditures on health	<b>1.3</b>	<b>1.9</b>	<b>3.0</b>	<b>4.0</b>	<b>12.1</b>
b. Total consolidated capital expenditures of central and State governments	40.9	86.2	89.4	134.3	197.1
(in percent)					
a/b	<b>3.2%</b>	<b>2.2%</b>	<b>3.4%</b>	<b>3.0%</b>	<b>6.1%</b>
(in percent of GDP)					
a/GDP	<b>0.0%</b>	<b>0.0%</b>	<b>0.1%</b>	<b>0.1%</b>	<b>0.3%</b>

Source is Government of Sudan.

Capital spending on health facilities has been extremely limited during the period 1999-2002 (see Table 26). However, from a mere SD 163 million in 2000, it has been rapidly increasing to SD 567 million in 2001 and to almost SD 4 billion in 2002; it is estimated to almost double to SD 7.6 billion in 2003.

Table 27. Consolidated expenditures of central and State governments, Sudan, 1999-2003

	1999	2000	2001	2002	Budget 2003
(in billions of Sudanese Dinars)					
<b>Current expenditures</b>					
Wages	106.9	135.5	166.9	198.7	266.4
Central Government	80.4	96.6	125.1	155.5	184.6
States	26.5	38.9	41.8	43.2	81.8
Nonwages	152.8	223	242.8	272.3	456.7
Central Government	114.6	178.7	207.2	238.3	369.1
States	38.2	44.3	35.6	34	87.6
Central Government	195	275.3	332.3	393.8	553.7
States	64.7	83.2	77.4	77.2	169.4
<b>Total consolidated current</b>	<b>259.7</b>	<b>358.5</b>	<b>409.7</b>	<b>471</b>	<b>723.1</b>
<b>Capital expenditures</b>					
Central Government	32.2	74.5	78.7	116.5	162.7
States	8.7	11.7	10.7	17.8	34.4
<b>Total consolidated capital</b>	<b>40.9</b>	<b>86.2</b>	<b>89.4</b>	<b>134.3</b>	<b>197.1</b>
<b>Total expenditures</b>					
<b>Total consolidated expenditures</b>	<b>300.6</b>	<b>444.7</b>	<b>499.1</b>	<b>605.3</b>	<b>920.2</b>
(in percent of GDP)					
<b>Current expenditures</b>					
Wages	4.2%	4.8%	5.3%	5.7%	6.0%
Nonwages	6.0%	7.9%	7.8%	7.8%	10.4%
Total consolidated current	10.2%	12.7%	13.1%	13.5%	16.4%
<b>Capital expenditures</b>					
Total consolidated capital	1.6%	3.0%	2.8%	3.9%	4.5%
<b>Total expenditures</b>					
<b>Total consolidated expenditures</b>	<b>11.8%</b>	<b>15.7%</b>	<b>15.9%</b>	<b>17.4%</b>	<b>20.1%</b>

Source is Federal Ministry of Finance and Economy.

### 3. Consolidated budgetary financing of the health sector

Consolidated revenue of the central and State governments rose from SD 300.6 billion (11.8% of GDP) in 1999 to SD 605.3 billion (17.4% of GDP) with an increase in central government revenue offsetting a relatively small decline in the States' revenue, arising from the elimination of taxes on agricultural products. States' revenue is on average 15% of central government revenue.

Consolidated recurrent spending by the central and State governments in 2002 amounted to SD 471 billion (13.5% of GDP), rising from SD 259.7 billion (10.2% of GDP) in 1999 (see Table 27). Consolidated capital expenditures increased from SD 40.9 billion in 1999 up to SD 134.3 billion in 2002.

### **3.1 Consolidated total expenditures on health**

Table 24 shows that consolidated total expenditures on health by the central and State governments increased from SD 7.6 billion in 1999 to SD 15.2 billion in 2002. Over these years, the health sector's share of total spending has however remained stable at 2.5%. Total consolidated budgetary resources allocated to the health sector are at about 0.4% of GDP.

#### Consolidated recurrent expenditures

In nominal terms, current expenditures of the central and State governments on health almost doubled from SD 6.3 billion to SD 11.2 billion in 2002; it is estimated to rise further to SD 13.9 billion in the 2003 budget (Table 25). However, as a share of consolidated recurrent expenditures, spending on health remained flat at 2.4% between 1999 and 2002. In real terms, current spending on health by all layers of government has also remained flat at 0.3% of GDP during the period 1999-2002. Even in the 2003 budget, it is projected to remain at that level.

#### Consolidated capital expenditures

In nominal terms, consolidated capital expenditures of the central and State governments on health have increased by more than a factor of three during the period 1999-2002, from SD 1.3 billion (or 3% of total consolidated capital spending) in 1999 to SD 4 billion (or 3% of total consolidated capital spending) in 2002 (Table 26). It is slated to soar to SD 12.1 billion or 6.1% of the total in the 2003 budget. However, in real terms, such spending has stagnated at an insignificant fraction of GDP during the period 1999-2002. The 2003 budget estimates increase it to 0.3% of GDP.

## **C. DISCUSSION AND MAIN ISSUES**

### **1. Revenue mobilization**

Even when taking into account oil revenue, the central and State governments' ratio of revenue to GDP - at 13.5% in 2002- remains one of the lowest in developing countries.

Oil revenues have rapidly increased and now almost equal tax revenue at around 6% of GDP in 2002, illustrating an increasing dependency on oil and – despite the establishment of the stabilization account – a potential vulnerability to oil price fluctuations. The non-collected and foregone revenue at the domestic tax level represent a huge loss of potential government resources. Limiting tax exemptions and broadening

the tax base could help increase government revenue and open space for increased spending on social sectors, particularly on the chronically under-funded health sector.

These problems in Sudan are compounded by the lack of foreign financing. In addition to its weak domestic revenue mobilization, Sudan has received very limited foreign financing due mainly to the accumulation of long-standing and substantial arrears on its bilateral and multilateral debt. Sudan finds itself in a vicious circle: by defaulting on its external debt service, Sudan does not receive sufficient foreign assistance to partly finance its development, particularly the development of its human resources – and the lack of development tends to perpetuate its default.

Sudan is an heavily indebted poor country. By the end of 2001, the stock of debt amounted to over US\$20 billion, most of it in arrears. Given the size of the debt, a comprehensive and phased approach to debt rescheduling will be essential. However, even after debt rescheduling, Sudan will still have difficulties financing all its development and reconstruction needs, so that additional external resources will be needed.

World Bank disbursements to Sudan have been suspended since April 1993, and the country has been in non-accrual status since January 1994. Although the Sudanese authorities have taken steps towards normalizing relations with the Bank and making notional debt service payments since mid-1999, this has not been sufficient to prevent a continued accumulation of arrears to the Bank. Clearance of these arrears, which stood at \$195 million by end-2001 and had risen to about \$240 million by end-2002, is thus an essential prerequisite for normalizing relations between the Bank and Sudan

## **2. Revenue sharing and transfers to States**

A major characteristic of the situation in Sudan is the contradiction between the constitutional provisions for decentralization of social service responsibilities and the actual distribution of fiscal resources within the Federation. States and local councils are entrusted with the provision of social services, (including 6,000 health facilities and 292 hospitals) yet do not have sufficient financial resources to assure their responsibilities. Transfers from the central government are inadequate, untimely and depend on available liquid resources. Since all states, with the exception of Khartoum State, rely on the central government for these transfers, the consequences on regional disparities in social spending, and corresponding accessibility of public services to the poor, are dire. The situation is even worse for localities which are constitutionally responsible for providing resources for primary basic health facilities and have no resources of their own to speak of and rely on the States.

## **3. Sectoral distribution of expenditures and allocations to health**

In the past decade, government resource allocation has not been favorable to social sectors, in particular to health, and the conflict has drained considerable resources towards defense and security expenditures. However, it is somewhat disappointing to

note that, despite the improvement in revenue in recent years, the Government continues to neglect the health sector which attracts only 2.5% of total consolidated central and state governments expenditures, a mere 0.4% of GDP.

In view of the level of poverty in the country, public financing of basic social services should be considered a key element of Sudan's overall development, as the provision of social services, in particular education and health, enhance human capital, raise productivity, and contribute to growth and social peace.

#### **4. Functional distribution of resources**

It is not only the level of public spending that matters but also its allocation to various activities. The wage bill's share of current expenditures rose from 36.9% in 1998 to 39.5% in 2002. Transfers to States from the central government increased from 5.7% of current spending in 1998 to 13.2% in 2002. At the same time, the share of goods and services substantially declined from 20.1% in 1998 to 12.8% in 2002.

On the one hand, the observed decline in the financing of goods and services is deleterious to the maintenance of government equipment and services and sound management of government facilities, mainly in the health sector. On the other hand, increasing the wage bill is a necessity as civil servants are under-paid and the brain drain is considerable. The latter is particularly true for the health sector, as doctors and nurses trained in Sudan are leaving the country to work abroad.

#### **5. Budget preparation process and budget cash management system**

It is clear from the above description of budget procedures and cash management system that the Ministry of Health is extremely limited in its capacity to: 1) plan for health sector development; 2) allocate adequate budgetary resources to the sector; and 3) actually manage scarce budgetary resources.

Sudan has not put in place a Medium-Term Expenditure Framework. Together with other factors (for instance the lack of a ministry of Planning, the limited planning capacity of Ministries and States, and the lack of capacity to undertake cost effectiveness studies) result in: 1) relatively poor planning of capital development projects; and 2) a lack of adequate linkage between investments and recurrent expenditures.

Assigning capital expenditures lowest priority in the management of liquidities raises serious issues for the country's development by entailing significant delays in project implementation with attendant cost overruns, overestimation of bids by contractors and negative impact on poverty reduction.

## **6. Transparency issues**

There are serious transparency issues in Sudan's fiscal system. They relate mainly to revenue exemptions, extra-budget spending, federal and States accounts. Revenue exemptions may be granted without legal basis. Public resources are collected on religious grounds and managed by non-government institutions such as the Zakat Fund. Final budgetary and extra-budgetary accounts are not published. Data on debt (domestic as well as external) and on detailed economic and functional expenditures by the central government are not published. States' accounts are available on a piecemeal way in various units of the central government or at the state level but they are not published or even circulated among the various branches of government. The National State Support Fund (NSSF), established in 1995 to collect resources from the central government and rich states to provide financial support to poorer states does not publish its accounts.

## APPENDIX 2: LESSONS LEARNED

### A. LESSONS LEARNED FROM DEVELOPMENT ASSISTANCE FOR HEALTH (DAH)<sup>20</sup>

After 40 years of providing development assistance for health (DAH), a number of lessons have been learned, in particular on how to best organize the financial assistance required for low capacity, least developed countries and countries emerging from conflict.

**First, to more rapidly improve the health status of their populations, poor countries still need both financial and technical support and to engage in a policy dialogue with their external partners.**

Even when achieving relatively high levels of GDP growth and macro-economic performance, developing countries' national economies alone are not yet able to provide sufficient revenue to finance health services at an appropriate level. However, providing additional resources is not sufficient. In most cases, health sectors in developing countries, particularly in Africa, cannot rapidly absorb large amounts of funds. (Note that this does not imply a lack of real need, commitment or skills).

In reality, the extent to which external financing can be readily absorbed results from numerous factors, some of which developing countries cannot resolve alone and/or in the short-term. Among many others, these include: a) the multiplicity of needs to be satisfied, the complexity of issues to be addressed, the paucity of reliable data for decision making, and insufficient access to global knowledge, render very difficult the formulation of health policies and priorities for action and the definition of the most appropriate strategies; b) the quantity, quality, motivation and distribution of human resources (particularly in countries affected by an intense brain drain and/or HIV/AIDS); and c) the weaknesses in public sector management systems.

Most poor countries still require considerable technical support in appraising the situation and evaluating the performance of their health sectors, formulating their health policies, defining the most appropriate strategies, reflecting these in their expenditure programs, managing available resources, and implementing health related interventions.

Also, implicit in DAH is that donors have agendas when it comes to the orientation of policies and strategies. However, donor perspectives may vary significantly from those of government and other stakeholders. Therefore the need to engage in and maintain a policy dialogue and develop a better and joint/common understanding of the health sector situation.

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<sup>20</sup> This section draws largely from a paper written by Julie McLaughlin, presented on February 3-4, 2003 and titled: "Accelerating Progress Towards the Health MDGs: Incorporating Lessons Learned for Development Assistance."

**Second, the way external assistance is provided matters.**

Development assistance partners have become more aware of fungibility and its implications. It is not difficult to appreciate that when DAH is earmarked for primary health care services, recipient governments may in turn shift their resources from primary to secondary or tertiary care. One also readily recognizes that in a poor country which allocates a very large share of its public budget to defense and security, DAH can enable the recipient country to afford its disproportionate defense spending. Donor earmarking can appear an artificial mechanism which mainly comforts external financiers. It also places additional demands on the limited capacity of poor countries, forcing them to spend considerable time, effort and management capacity in trying to program other resources in a complementary fashion.

Many development assistance partners also recognize that the individual procedures for reporting, accounting and managing funds – often encompassing completely different budget structures, ways of measuring progress towards objectives, different regulations surrounding the procurement of goods, services and works, and different approaches and cycles to disbursing funds – place unreasonable demands on recipient countries. This is a particular concern for those countries forced to allocate limited human resources away from service delivery to the management of development assistance. Lessons also counsel against individual project management facilities. Such structures (i) do not make sustainable contributions, as they run supplant local structures; (ii) foster a sense that the project staff are accountable to the financier rather than the government; and (iii) often direct the most qualified human resources away from government employment towards long-term employment in development assistance agencies.

In recognition of the above, several development partners are progressively changing their approach, from earmarked funding and discrete projects towards allocating funds against a comprehensive expenditure framework, monitoring progress against an agreed set of outcome indicators, and consolidating/streamlining implementation procedures. Medium Term Expenditure Frameworks (MTEF) reflect priorities, commitments and expectations for a forthcoming period (in general 3 years). Not surprisingly, however, there is little agreement upon what an appropriate expenditure program looks like. The diversity in health systems, and the way in which health systems are financed, leaves little room for generalized formulas. Therefore, expenditure programs can only be assessed with a detailed knowledge of the particular country's health sector.

The assumption is that development assistance partners would only allocate financing against an *approved* expenditure program. HIPC and Poverty Reduction Support Credits (PRSCs) (a translation into budgetary terms of the priorities expressed within the PRSP) are expected to reflect appropriate priorities for the social sectors, increasing the allocation of resources to the health sector, while avoiding the many problems associated with earmarked and projectized financing described above. The additional financing

required to achieve the MDGs, for example, could presumably support overall expenditure programs that reflect the MDGs as a priority.

Modes of budget support, such as the Bank's PRSCs, are welcomed as responding to the realities of fungibility, and the focus on an overall expenditure program, while they also eliminate earmarked and tied aid, and reduce the burden of multiple donor procedures. It also seems clear that such approaches to delivering development assistance are more consistent with the aims of local ownership and sustainability, as they allow recipient countries to define their own priorities, attempt innovative strategies, and allocate resources accordingly. Budget support redirects attention away from project management and individual donor implementation procedures, as projects (i.e., the discrete set of activities circumscribed by external financing) cease to exist.

**Third, there is a need to pay sufficient attention to the recurrent costs of investment programs and to Human Resource issues.**

Lessons also caution against focusing only on supporting capital or investment costs over recurrent costs. Many countries have made unsustainable investments in infrastructure relative to the human and financial resources available to support such investments (empty health facilities can be found all across Africa).

For a number poor countries, whose health sectors are dramatically affected by brain drain and AIDS, much of the low absorptive capacity reflects the simple lack of health professionals required to manage and undertake activities which will utilize financing. Human resources are a fixed constraint, which precludes financial constraints in many poor countries' health sectors, where brain drain disproportionately affects the health sector – physicians and nurses are international commodities. In such settings, there are limitations on how much could be accomplished with unlimited financing, even if every possible actor were fully engaged. The stock of health professionals cannot be increased quickly, as the production of medical and nursing graduates requires significant lead time (in the worst affected countries, the number of secondary school graduates is also a limiting factor). In most poor countries, raising salaries for health professionals demands reforms in the civil service and encounters ceilings (as paying physicians twice what one pays any other professional could negatively affect the domestic labor force) that may leave many developing countries unable to compete with the European and American demand for health professionals.

Donor procedures and earmarked financing only compound the problem. In low capacity settings, projectized or earmarked DAH competes for project management staff and/or for implementers. In many Ministries of Health, the distribution of human resources, staff attention, and management time has been determined by earmarked DAH for decades. Recipient countries will have to consider more carefully what interventions and activities can be sustained given human and financial resource constraints.

## **B. LESSONS LEARNED IN POST-CONFLICT HEALTH SYSTEM DEVELOPMENT**

Health sector assistance in a post-conflict context is confronted with the requirement to meet urgent needs and the goal of developing systems and capacities for the longer term. This has been summarized as a dichotomy between relief and development. The recommendation is to bridge the two by attempting to incorporate longer-term developmental goals into programs addressing immediate needs.

On the one hand, this is seen as a useful re-orientation of humanitarian projects which are sometimes short-lived investments leaving no lasting impact. In southern Sudan, in general, up to 80% of expenditures on humanitarian programs in health have, due to infrastructural and security constraints, been spent on logistics and expatriate staff. Given that the emergency in southern Sudan has persisted for two decades, this problem is well-recognized, and significant effort has been applied in recent years to build local capacity, in particular in terms of training.

On the other hand, applying the idea of a relief-to-development continuum can be seen as leading to reduced spending on direct relief, based on the notion that local capacities can be built up to take more of the burden. This strategy has been criticized in the southern Sudan context, where local resources and capacities are not sufficient to support services to any great extent, in particular in a context of continuing insecurity. (Macrae *et al.*, 1997) On the other side of the coin, labeling relief-type projects as “development” risks neglect of real longer-term developmental needs.

Instead of continuing to discuss this issue in abstract, it is useful to describe several related practical issues observed in various post-conflict situations in recent years.

- 1) The enormous immediate needs of populations emerging from conflict, as well as the political requirement to show a “peace dividend,” compel donors and recipient governments to focus on programs that will provide quick and obvious benefits. Assistance typically focuses on infrastructure and equipment, basic health services, and vertical programs. However, the record of such quick impact projects is mixed at best. On the one hand, in many cases, they are not so quick, as promised donor funding is slow to materialize or other barriers, such as continuing insecurity, intervene. On the other hand, the requirement for speed may not allow for the very “developmental,” interventions posited by the notion of the relief-to-development continuum. In particular human resource capacity-building is often more difficult than envisioned and takes longer is allowed by politically-constrained and donor-determined timeframes. Similarly, rapid investments in programs and infrastructure often do not address the problem of how to meet recurrent costs in the future.
- 2) The combination of a focus on individual projects, increased donor resources, newly identified needs, and weak government capacity, invariably results in a large number of uncoordinated programs, fitting poorly if at all in any overall strategic plan for health sector development. For example, in Cambodia in the

- early 1990s, the situation in the health sector was characterized as a “free-for-all,” with 70 different groups working in health in the immediate post-conflict period. (Lanjouw, Macrae and Zwi, 1999) Similar lack of overall planning and coordination was seen in Bosnia, Kosovo, and more recently, Afghanistan. (Waldman and Hanif, 2002)
- 3) Local capacity is invariably the key constraint to both scaling-up basic-needs interventions and to supporting longer-term development of the health system. The numbers of skilled health cadres are very low and it takes time to train them. At the same time, candidates for such training may also be rare due to weak primary and secondary schooling during the conflict. Capacity is also usually weak at the central level, so that locally-owned strategic planning and coordination processes are very difficult to achieve. Because of these constraints, the usual “relief-to-development” prescription of training local personnel as part of the implementation of relief-type programs may founder. In East Timor, for example, it was observed that “local staff are expected to take on roles and skills they may never have had [...],” as NGOs handed responsibilities over to local structures. (Morris, 2001)
  - 4) With an overriding focus on rapidly-implemented projects to meet immediate needs, issues crucial to the longer-term development of the health system are neglected. In particular, developing the capacity of the new health authorities for strategic planning and coordination on key health system issues, such as financing and human resource development, is often an afterthought, in some cases introduced into assistance programs years after the peace agreement.

Each of these problems relates to the inherent tension between meeting immediate needs and developing longer-term capacities, and the problems cannot be addressed by simply incorporating training components into relief programs or re-packaging them under a “relief-to-development” transition strategy. Unfortunately, there are no simple solutions in a world of finite donor resources, but at least one prescription seems obvious. This is to focus very early on building the capacity of the central health authorities in terms of policy development, planning, and coordination. In the case of southern Sudan, this could involve expanding and training the staff of the Health Secretariat, possibly with support from a full-time policy “advisor,” an approach which has worked well in other situations. (Wilson, 2003)

A strategy to meet immediate needs in a coordinated way which progressively enhances local capacities is to contract health services to NGOs under a centrally-managed process. The key is to ensure that the local health authorities are fully involved in overseeing the contracting and supervision processes – in other words, that they have a determinant voice in where and how resources are used. Such mechanisms have been used in Cambodia, East Timor, and Afghanistan, where NGOs are contracted to deliver a standard package of basic services and then evaluated on the basis of a number of key indicators. A rigorous study in Cambodia concluded that this NGO-based system provided better results in terms of services and health outcomes than a program supporting government-run facilities. Although the contracting system was more costly

to the government and donors, it was found to be less costly overall once out-of-pocket payments were considered. (Bhushan, Keller, and Schwartz, 2002)

In southern Sudan, it is certain that NGOs and other non-governmental groups will continue to provide the bulk of health services for the foreseeable future. Whether this is done in a coordinated way which fits within an overall development strategy depends on choices taken now. In a way, the situation represents an opportunity, in that there are few entrenched structures which would be resistant to innovative approaches at a time of high donor interest and increased resources.

Perhaps the better metaphor is a two-track approach rather than a continuum or transition. One track is to meet immediate needs through expanding basic services (possibly through centralized contracting of NGOs), while a simultaneous track is health system and capacity development.

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