

BMB Mott MacDonald

**Decentralized Health System Development Project (DHSDP)
Technical Assistance Component**

Situation Analysis Monitoring & Evaluation

Sudan Health Sector

by

Maria Paalman

Monitoring and Evaluation Expert

with

Abeer Yehia Abdulsalaam

Head M&E Section FMoH Sudan

August 2009

Table of contents

TABLE OF CONTENTS	3
ACRONYMS	4
INTRODUCTION	5
POLICIES AND PLANS RELEVANT FOR M&E IN THE HEALTH SECTOR	6
THE FIVE-YEAR PLAN (2007 – 2011)	6
THE 25-YEAR STRATEGIC PLAN FOR THE HEALTH SECTOR	7
THE NATIONAL HEALTH POLICY.....	8
THE 5-YEAR HEALTH SECTOR STRATEGY.....	9
SUB-SECTOR STRATEGIES.....	10
OVERALL ASSESSMENT OF POLICIES AND PLANS	11
SOURCES OF INFORMATION – ASSESSMENT	12
CENSUS	12
VITAL STATISTICS	12
SURVEYS	13
SURVEILLANCE	16
FINANCIAL STUDIES.....	16
FACILITY-BASED STATISTICS	17
VERTICAL PROGRAMMES.....	19
THE HRH OBSERVATORY	20
FACILITY MAPPING	20
NATIONAL HEALTH INSURANCE FUND (NHIF)	21
RESEARCH.....	22
OTHER SOURCES.....	23
EVALUATION.....	23
STAKEHOLDERS AND ACTORS – ASSESSMENT	24
NATIONAL COUNCIL FOR STRATEGIC PLANNING	24
CENTRAL BUREAU OF STATISTICS.....	24
FEDERAL MINISTRY OF HEALTH - DIRECTORATE OF PLANNING.....	25
FEDERAL MINISTRY OF HEALTH - DIRECTORATE OF PREVENTIVE MEDICINE AND PHC	26
FEDERAL MINISTRY OF HEALTH - DIRECTORATE OF HUMAN RESOURCES FOR HEALTH DEVELOPMENT	27
THE STATES	27
DONORS	30
NGOs	31
PREVIOUS WORK DONE ON M&E	32
CONCLUSIONS AND RECOMMENDATIONS	33
ANNEX 1 FMoH HIERARCHY WITH SPECIAL REFERENCE TO M&E.....	36
ANNEX 2 INDICATORS IN ANNUAL STATISTICAL REPORT + COMMENTS	37
ANNEX 3 SUMMARY LIST OF MAIN INDICATORS SHHS SUDAN.....	41

Acronyms

ACT	Artemisinin-based Combination Therapy
AIDS	Acquired Immune Deficiency Syndrome
BHU	Basic Health Unit
CBS	Central Bureau of Statistics
CRO	Civil Registration Organisation
CSO	Civil Service Organisation
DFID	Department for International Development (UK)
DHS	Demographic and Health Survey
DHSDP	Decentralised Health System Development Project
DOTS	Directly Observed Treatment Short course (for TB)
EMRO	WHO Regional Office for the Eastern Mediterranean
EPI	Essential Programme for Immunization
FMoH	Federal Ministry of Health
GAVI	Global Alliance for Vaccines and Immunisation
GDP	Gross Domestic Product
GFATM	Global Fund for AIDS, TB and Malaria
GIS	Geographical Information System
GoNU	Government of National Unity Sudan
GOSS	Government of South Sudan
GNI	Gross National Income
HAC	Humanitarian Aid Commission
HC	Health Centre
HF	Health Facility
HIS	Health Information System
HIV	Human Immunodeficiency Virus
HMN	Health Metrics Network (WHO)
HR(H)	Human Resources (for Health)
ICD-10	International Classification of Diseases (10 th version)
IMCI	Integrated Management of Childhood Illness
M&E	Monitoring and Evaluation
MCH	Maternal and Child Health
MDG	Millennium Development Goal
MDTF	Multi-Donor Trust Fund
MICS	Multi-Indicator Cluster Survey
MoV	Means of Verification
MTR	Mid-Term Review
NGO	Non-Governmental Organisation
NHA	National Health Accounts
NHIC	National Health Information Center
NHIF	National Health Insurance Fund
PER	Public Expenditure Review
PETS	Public Expenditure Tracking Survey
PHC	Primary Health Care
PMTCT	Prevention of Mother To Child Transmission (of HIV)
SHHS	Sudan Household Health Survey
SHIC	State Health Information Centre
SMoH	State Ministry of Health
SMS	Safe Motherhood Survey
TB	Tuberculosis
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
VCT	Voluntary Counseling and Testing
VP	Vertical Programme
WHO	World health Organization

Introduction

This situation analysis was made in the context of the DHSDP. The DHSDP is a project which seeks to immediately improve access to basic health services in South Kordofan, Blue Nile, Kassala, and Red Sea, which have a total population of approximately 5.1 million, by rehabilitation of infrastructure, provision of equipment and drugs etc., while at the same time providing technical assistance in the areas of planning, financing, human resources and monitoring and evaluation, thereby preparing these post-conflict states for further development and reform of their health system. These four states were chosen, because their health indicators, including service utilisation and health outcomes, are consistently lower than overall Northern Sudan averages.

Technical assistance will focus on capacity building and support of local ownership.

In October 2008 a situation analysis was made of the M&E at federal level, including an overview of what is in the national plans and policies that is directly relevant for M&E, an overview and assessment of the different sources of information, an overview and capacity assessment of the many stakeholders and some conclusions and recommendations. In April/May 2009 two states were visited: South Kordofan and Kassala, in order to include information on the status of M&E and the HIS at state level and below into the situation analysis. The federal part was updated to reflect recent changes.

This report only describes features of the health system in Sudan, where this is necessary for a good understanding of the M&E system; for a comprehensive overview of the health system as such the reader is referred to the National Health Policy and the 5-Year Health Sector Strategy for Sudan. A detailed description can also be found in the Health System Profile for Sudan, prepared by WHO/EMRO.

Policies and plans relevant for M&E in the health sector

This section reviews the content of national policies and plans which have a direct bearing on monitoring and evaluation of performance in the health sector. On the one hand, each of these plans contain objectives and indicators related to health, which need to be monitored/evaluated. On the other hand the plans usually have a section on M&E, which can guide the development or improvement of the health sector M&E system. The following documents are reviewed:

- The Five-Year Plan 2007-2011
- 25-year Strategic Plan for the Health Sector (2003-2027)
- National Health Policy, 2007
- 5-year Health Sector Strategy (2007-2011)

The Five-Year Plan (2007 – 2011)

Sudan has a 25-year development plan to guide implementation of interventions and activities that will allow the country to make progress on the road to becoming a middle-income country¹. After the 2005 peace agreement between the North and the South the Government of National Unity (GoNU) produced The Five-Year Plan (2007 – 2011), Objective, Challenges and Opportunities.

The Plan has eight major strategic result areas, none of which are (health) sector-specific, as they relate to cross-cutting objectives, such as promoting political stability and sustainable peace, good governance, sustainable development (including equitable supply of primary and preventive health care services), poverty alleviation, building capacities, use of ICT and supporting scientific research. Almost all of these result areas, however, have a direct or indirect bearing on health sector policies and plans, and therefore also on the monitoring and evaluation demands of the health sector.

In the situation analysis of the state of development of the country a number of weaknesses are mentioned in the Five-Year Plan that are directly related to M&E:

- Weak strategic decision-making capability in institutions
- Weakness of administrative capacity at state level
- Weakness of monitoring mechanisms
- Insufficient databases and information, hindering good decision-making
- Inadequate application of the conclusions of scientific research

As a strength increasing participation of the private sector and CSOs in the provision of social services (including health) is mentioned, meaning that their inclusion in any M&E system is becoming more important.

In the eight result areas the following strategic objectives, related to M&E, are mentioned:

- Identify criteria to measure good governance
- Monitor performance of the civil service
- Simplify M&E protocols
- Adopt internationally recognised indicators to monitor and evaluate institutional performance and monitor the level of implementation of the Plan
- Support capacity-building and training of personnel in using information technology
- Utilise the results of scientific research in decision-making and planning

It is mentioned that objectives should be realistic, achievable and measurable

¹ Sudan already is a low-middle-income country in 2009, due to high oil revenues over the past year.

The Five-Year Plan has a separate chapter on implementation, monitoring, follow-up and evaluation, detailing reporting requirements and the role of different government institutions. Each Ministry and State should submit quarterly and annual progress reports on implementation of ministerial and state 5-year plans, following a prescribed format. This means that it is assumed that the ministerial and state 5-year plans are aligned with and include the indicators of the Five-Year Plan relevant for their sector. These reports are consolidated by the General Secretariat of the National Council for Strategic Planning and forwarded to the Council of Ministers.

In a separate volume, the Five-Year Plan includes some 1000 indicators. Recently 56 core-indicators have been identified². The indicators are only available in Arabic. The DHSDP office will identify the health sector specific indicators in the Five-Year Plan³.

The 25-Year Strategic Plan for the Health Sector

The Federal Ministry of Health (FMoH) has produced a 25-year strategic plan for the health sector (2003-2027). The Strategy has eight goals, with sub-objectives, targets and indicators.

The Strategic Plan does not contain any objectives for improving M&E as such, nor does it have a chapter on M&E explaining how the 25-year Strategic Plan will be monitored and evaluated. However, the following challenges related to M&E are mentioned :

Health information system (HIS)

- Weakness of monitoring and supervision
- Low availability of registration books and formats
- The current system is based upon health units with minimal use of the information at the community level
- Problems of timely sending of reports
- Poor local utilization of data
- Lack of feedback systems
- The system is paralleled by a number of vertical health information systems without clear coordination and integration
- The basic and continuing training programmes for statistical clerks are inadequate.

Research

- Lack of adequate funds and resources for health research
- Weakness of coordination of the research activity at the national level
- Most of the researches are conducted for academic purposes with no consideration to the health system priority problems
- Lack of training on research methodology

Other

- Magnitude of the health services provided by the private sector are unknown
- Deficiency in the available information about NGOs regarding their plans, budgets and areas of working.

² Oral communication Dr. Osman Gaffer of the General Secretariat of the National Council for Strategic Planning

³ A search was done for all health related indicators and an initial translation has been made, but needs more work

While many weaknesses and challenges were thus enumerated, in the section on priorities no specific mention is made of the HIS or M&E, although research has been made a priority. The goal *“To build the capacity of federal and state ministries of health to be able to implement the strategy”* does include an objective on the HIS: *“To develop an HIS based on area and to generalise it in all health areas by 2007.”* The objective contains the following strategies:

- Revising and unifying the HIS (reporting, summarizing, sending, standards,...)
- Rebuilding the HIS based on health area policy
- Human resources development (basic and continuing education- curricula development)
- Advocacy for data use among health care providers
- Supportive supervision
- Availing registration and reporting formats at all levels
- Exchange of experience
- Development of a computerized HIS databases for data analysis and transmission and promotion of GIS use

There is no mention of including the private sector and NGOs in the HIS.

The same goal also includes an objective *“To increase the financial allocation for priority research problems to at least 2 % of the national health budget and create a critical mass of researchers at all levels by 2010.”* The objective contains the following strategies:

- Strengthening of health research management system.
- Partnership
- Priority setting
- Capacity building (training, setup, funds)
- Promotion of research ethics
- Promotion of use of research results for evidence based health policy, planning and practice.

The National Health Policy

In 2007 a National Health Policy was approved. The policy formulates the vision for the future and the mission of the FMoH. It also contains guiding principles, one of which reads: *“reform will be based on solid policies, scientific evidence and a critical analysis of the situation”*. The policy takes into account the following cross-cutting issues:

- Multisectoral involvement and attention to health promotion
- Gender mainstreaming
- Quality of health care and clinical governance
- Partnerships with other sectors, NGOs, universities and donors
- Consumer satisfaction and patient’s rights

The policy has a chapter on implementation and monitoring. A health coordination committee/council will be set up to oversee implementation and the policy will be translated into strategic and operational plans. *“The objectives of the National Health Policy, enshrined as policy statements, will be systematically monitored. Therefore, the FMoH will take appropriate measures, including the provision of adequate resources to institutionalize the monitoring of the achievements towards policy objectives. Verifiable indicators and measurement tools are needed to monitor progress at all levels. The FMoH, with the SMoH, will select appropriate indicators and will install mechanisms to measure and monitor the achievement of the objectives of the policy. Furthermore, the FMoH will draw up a consolidated periodic health report for all levels of care which outlines developments in public health. The aforementioned report will also serve as a document for reporting and*

reviewing the achievements in order to assist in a decision regarding whether any policy should be maintained, replaced or terminated. There may also be other evidence for assessing the outcome of a particular policy. A health policy unit in the FMOH will be the focal point coordinating the activities for the formulation, implementation, monitoring and evaluation of policies.”

The Policy contains 18 policy statements, 10 related to structural issues and 8 to health service delivery. Each of these contain a number of strategies that together should guide the health sector in the years to come. Being a policy, the document does not contain indicators as such. However, in order to facilitate monitoring of the policy, it might be worthwhile to formulate general indicators for the 18 statements.

One of the statements pertains to *Health statistics and the Information System*: the following strategies are mentioned:

- a. Designing and implementing a comprehensive HIS
- b. Revamp existing disease surveillance system
- c. Conducting household surveys
- d. Perform registration of vital events
- e. Maintain patient and service records
- f. Conduct programme specific M&E
- g. Include private sector into system
- h. Compile and evaluate data for publication
- i. Capacity building in M&E at all 3 levels of government

The statement on *Health Systems and Biomedical Research* contains the following strategies:

- j. Encourage research institutes to form ethical and technical committees
- k. Use health systems and policy research to inform decision-making
- l. Update national and regional health research priorities
- m. Make available funds for required research
- n. Acquire new research tools and technologies
- o. Conduct studies to document and learn lessons from the health system reform

The 5-Year Health Sector Strategy

Like the Five-Year Plan the 5-Year Health Sector Strategy covers 2007-2011⁴. It is based on the policies and plans mentioned above, as well as on a number of sub-sector policies and strategies that had already been developed (see below). It also emphasises the importance of reaching the MDGs.

On the HIS the 5-year strategy says:

“The HMIS performance is weak, unreliable and fragmented. This was a result of poor administrations of the systems, under funding and inharmonious actions of different players in the health arena. Recognizing these facts, the FMOH has developed a plan to strengthen the Health Management Information System which will be financed through the Health Metrics Network (HMN). The strategy will further expand on this work and provide a framework for future development.”

⁴ According to the Planning Directorate the 5-year strategic Plan was only approved by the end of 2007.

The 5-year Health Sector Strategy contains 7 goals and 19 strategic objectives. Within each objective several targets/outputs with indicators have been formulated. As in the national Health Policy there is a Strategic Objective to promote a culture of *research* and provide evidence for policy and decision making. The objective has 5 outputs:

- Develop the national research priority agenda
- Dedicate at least 2% of the health budget to conduct priority researches
- Build a critical mass of health researchers
- Make health research findings accessible and available
- Assure compliance to research ethics

However, unlike in the National Health Policy, there is no specific strategy to improve the M&E system and the HIS.

The chapter on Implementation, Monitoring and Evaluation framework mentions that:

“This strategy will serve as a guideline for the plans of states and localities, which will be developed in consultation with all related partners. The national annual plan will be based on the annual plans of the States. Capacity building of states and localities especially in planning and monitoring and evaluation is an important element in assuring the implementation of the plan. The plan will be monitored regularly according to the list of indicators included in the 5-year plan. Annual, mid-term and end term reports will be developed. The monitoring process will depend on the regular reports of the HIS as well as the reports of the programs and departments. Part of the indicators will be assessed only at the mid-term or end-term evaluations. This will be done through surveys as well as reports.”

“There will be some national surveys such as;

- *MICS at the end of plan*
- *HIV/AIDS sero-prevalence and behavioral survey (baseline-end term)*
- *Nutritional surveys (mid term-end term)*
- *Annual public expenditure reviews*
- *2 rounds of the NHA*
- *Tuberculin survey (baseline-end term)*
- *Prevalence surveys for communicable diseases (mid term and end term)”*

“For assessing the financing of the health system the NHA is an important tool. Fortunately the FMOH availed funds through the MDTF/ MOFN funded health project to develop NHA. The success of the M&E system will depend to a greater extent on improving the HIS, the integrated disease surveillance system and the reporting and communication system.”

Sub-sector Strategies

Several programmes have a policy or strategic plan of their own, such as the Reproductive Health policy, Child Health Policy, HIV/AIDS Policy, Essential PHC Package Policy, the 10-Year Human Resources Strategy, National Strategic Plan for RBM (Roll Back Malaria), Tuberculosis National Strategic Plan 2006-2010. There also is a National Health Information Strategic Plan, dated 2007. The programmes responsible for the implementation of the sub-sector strategies will also monitor them. Some of the key indicators of these sub-sector strategies are included in the overall 5-Year Health Sector Strategy.

Overall assessment of policies and plans

Generally speaking the 25- and 5-year strategic plans for the health sector as well as the national health policy are of good quality. There could have been more synergy between the 5-year health sector strategic plan and the national health policy and some improvements are needed in the internal logic of the 5-year health sector strategic plan. Most indicators of the 5-year health sector strategic plan correctly measure the outputs, have a baseline and a target, but no clear means of verification (MoV): some sharpening up of indicators and MoV is needed.

Sources of information – assessment

This section describes the various mechanisms available to generate information, necessary for M&E of health system/sector performance. General information on each data source is given, as well as the role it plays in Sudan. Additionally an assessment is given of quality and usefulness for M&E - in a grey box.

Census

A Census is a door-to-door study, done to establish how many people live in a country. Data are usually broken down by administrative division (state, locality, village), by age, gender, ethnicity etc. This information is essential for the comparison of health indicators, because it provides the denominators for the calculation of rates and percentages. For example: if we want to compare the number of midwives between the localities within a state, it is not informative to know only the absolute number of midwives, because the number of people in localities differ, or more precise the number of women of reproductive age differ. In order to have relevant information, we need to know how many midwives there are per 10,000 women of reproductive age for example.

Sometimes other information is collected at the same time, such as information about education level, income, availability of electricity, water and sanitation.

In April 2008 a new census was conducted by the Central Bureau of Statistics (CBS), while the previous one was done in 1993. A short questionnaire, including questions on gender, age, nationality, and place of residence was filled for all residents in Sudan. A longer questionnaire was used on a sample of 10%. This questionnaire included additional questions on disability, literacy, education level, employment status, marital status, number of children (alive and dead), number of children born in the last 12 months (and how many of those have died), housing (tenure status, number of rooms, sources of energy available, source of drinking water, toilet facilities), proxy questions for wealth/income, main source of livelihood, deaths in last 23 months (including information on gender, age, and whether the death was accident or pregnancy related (among girls/women 12-54).

For the short questionnaire preliminary data will be available by mid-2009, for the long questionnaire preliminary data are expected end-2009. This means that basic population data, necessary for establishing reliable denominators for indicator calculations will be available shortly, but also that important new information about infant and maternal mortality and numerous health determinants will be available soon. The technical quality of the census seems very good. However, some problems were experienced with data collection, in particular in South Kordofan. This means that the data for this state might be less reliable. This would be unfortunate, because it would also mean that calculations of key health indicators for South Kordofan cannot be based on recent population data, making them less reliable and less comparable to those of other states. If demographic data collected during the Sudan Household Health Survey (SHHS) 2006 are found to be more reliable for South Kordofan, then these could be used for M&E of key indicators in this state.

Vital Statistics

Because a census is usually only done once every 10 years, it is important to have reliable estimates about births and deaths, the so-called vital statistics, in order to estimate the size of the population in the years between censuses. Vital statistics are derived from birth and death registrations. If death certificates are reliably filled out they also can shed light on causes of death.

In Sudan the Civil Registration Organization (CRO) was established in the Ministry of Interior in 2001 for registration of vital events. Village midwives and traditional birth attendants record births and report to the health facilities. There seems to be no community-based organised system for recording deaths and their causes. Health facilities record both births and deaths and transfer data to the SMOH from where it is transferred to the CRO, which has presence at state level. From there it is forwarded to the CRO at federal level.

Registration of vital events in Sudan is very problematic and by far not reliable enough to provide more accurate data in between censuses than extrapolation of the census data itself will. The Sudan Household Health Survey (2006) indicated that only 32.6% of births were recorded in the CRO system⁵. Main reasons for the low birth registration rates were found to be the fact that households have to pay 15 Sudanese Pounds for a birth certificate, the distance to the locality, and lack of awareness about the obligation to register births. A multi-stakeholder workshop was conducted in March 2006 to look for solutions, but it is not known whether this resulted in any systemic improvements.

Surveys

Surveys are studies in which data or opinions are collected from a sample of the population considered to be representative of a whole group. This sample can be drawn from the whole population, but also from subsets of the population or groups at risk for a specific disease. Standardized surveys, done in many countries, relevant for the health sector are: Demographic and Health Survey (DHS), Standard (of) Living Survey, Household Budget Survey, Multi-Indicator Cluster Survey (MICS), Safe Motherhood Survey etc. Prevalence surveys for specific diseases or conditions (such as HIV) are also frequently done. A survey usually gives more reliable information about (a health problem in) the population than health facility-based statistics (see below), because the latter only provide data about people who utilise (public) health facilities and those are not necessarily representative of the whole population (group) that is in need of the service. There are many reasons for this, among which lack of geographical or financial access to health care, low confidence in (public) health care provision, transport problems to reach a facility etc. Another problem is that some diseases or conditions do not lead to noticeable symptoms (for example hypertension or early stage HIV) so people have no reason to see a health worker. In facility-based statistics these cases are missed.

Below the most important surveys (ever) done in the health sector in Sudan are described.

Demographic and Health Survey

DHS surveys are nationally-representative household surveys that provide data for a wide range of monitoring and impact evaluation indicators in the areas of population, maternal and child health, nutrition, HIV and malaria. There are two main types of DHS Surveys: Standard DHS Surveys have large sample sizes (usually between 5,000 and 30,000 households) and are typically conducted every 5 years, to allow comparisons over time. Interim DHS Surveys, although nationally representative, have smaller samples than DHS surveys (2,000–3,000 households) and are conducted between rounds of standard DHS surveys. They have shorter questionnaires and focus on the collection of information on key performance indicators, but may not include data on mortality rates.

DHS Survey Topics:

- *Anemia* - prevalence of anemia, iron supplementation
- *Child Health* - vaccinations, childhood illness
- *Education* - highest level achieved, school enrollment
- *Family Planning* knowledge and use of family planning, attitudes
- *Female Genital Cutting* – prevalence, attitudes
- *Fertility and Fertility Preferences* - total fertility rate, desired family size, marriage and sexual activity

⁵ There are actually contradictory figures in the SHHS report on the federal average for Birth Registration: 32.6% in the text and table, and 38.9% in the graph. The average is clearly higher in Northern Sudan than in the South, but figures in the report are not split out for the North and the South.

- *Gender/Domestic Violence* - history of domestic violence, frequency and consequences of violence
- *HIV/AIDS Knowledge, Attitudes, and Behavior* - knowledge of HIV prevention, misconceptions, stigma, higher-risk sexual behavior
- *HIV Prevalence* - Prevalence of HIV by demographic and behavioral characteristics
- *Household and Respondent Characteristics*- electricity, access to water, possessions, education and school attendance, employment
- *Infant and Child Mortality* - infant and child mortality rates
- *Malaria* - knowledge about malaria transmission, use of bednets among children and women, frequency and treatment of fever
- *Maternal Health* - access to antenatal, delivery and postnatal care
- *Maternal Mortality* - maternal mortality ratio
- *Nutrition* - breastfeeding, vitamin supplementation, anthropometry, anemia
- *Wealth/Socioeconomics* - division of households into 5 wealth quintiles to show relationship between wealth, population and health indicators
- *Women's Empowerment* - gender attitudes, women's decision making power, education and employment of men vs. women

In Sudan a DHS was last done in 1989/90. It is not clear why no surveys have been done since, but lack of US funding was pointed out as a possible reason. The CBS would welcome a new DHS survey, because of its high reputation for validity and reliability and the importance of the indicators it focuses on (maternal & child health and HIV mainly). On the other hand a good number of the DHS indicators were also included in the MICS and PAPFAM surveys, as well as in the SHHS 2006 (see below), since done in Sudan.

Multiple Indicator Cluster Survey

The MICS programme, developed and usually supported by UNICEF, assists countries in filling data gaps for monitoring the health situation of children and women through statistically sound, internationally comparable estimates of socioeconomic and health indicators. The household survey programme is the largest source of statistical information on children. Almost half of the MDG indicators are collected through MICS surveys. So far three rounds of MICS surveys have been conducted internationally: MICS-1 in 1995, MICS-2 in 2000 and MICS-3, which is currently ongoing.

MICS surveys use three modular questionnaires that can be customized to fit the data needs of a country. Together, they help measure key indicators on the following topics:

- *nutrition*: nutritional status, breastfeeding, salt iodization, vitamin A, low birth weight;
- *child mortality*;
- *child health*: immunization, tetanus toxoid, care of illness, solid fuel use, malaria, source and cost of supplies;
- *environment*: water and sanitation, security of tenure and durability of housing;
- *reproductive health*: contraception and unmet need, maternal and newborn health, maternal mortality;
- *child development*;
- *education*: literacy;
- *child protection*: birth registration, child labour, child discipline, early marriage and polygyny, female genital mutilation/cutting, domestic violence, disability;
- *AIDS, sexual behaviour, and orphaned and vulnerable children*: knowledge and attitudes, sexual behaviour, support to orphaned and vulnerable children.

In 2003 a MICS survey was conducted for the whole of Sudan, but a separate MICS survey was also done in the Southern States. Sudan is not participating in round 3 of MICS. As with the DHS, a good number of MICS indicators have been included in the SHHS 2006.

PAPCHILD survey

The Pan Arab Project for Child Development (PAPCHILD) surveys were done within the framework of the League of Arab States. Tabular data are provided on population characteristics, fertility, fertility preferences, contraception and contraceptive use, marital and contraceptive status, postpartum variables, infant mortality; and disease prevention and treatment.

In Sudan, a PAPCHILD survey, called the Sudan Maternal and Child Health Survey, was conducted in 1992/1993.

Safe Motherhood Survey

SMSs are usually supported by UNFPA and cover the following topics: maternal care; obstetric complications; reproductive morbidity; child feeding; infant and maternal mortality; fertility and family planning; harmful traditional practices; and knowledge of sexually transmitted diseases. Maternal mortality is measured through the so-called sisterhood method, an indirect method.

A SMS has been conducted in Sudan in 1999, supported by UNFPA. This survey was carried out in an effort to measure the health status of the women, the harmful traditional practices and the situation of the maternal health services in the states of Northern Sudan. A total of 16,907 households and 16,075 ever-married women aged 15-49 participated in the interview. It has apparently not been repeated since. Just previous to the SMS a baseline Reproductive Health survey was done in 1998.

PAPFAM survey

The Pan Arabic Project for Family Health Survey, which succeeded PAPCHILD, is likewise a project executed by the League of Arab States. It is supported by AGFUND, UNFPA, OPEC Fund, WHO, IOMS, IPPF, UNICEF and ESCWA6. The major purpose of PAPFAM is to enable Ministries of Health and other national health institutions in the Arab region to obtain a timely and integrated flow of reliable information suitable for formulating, implementing, monitoring and evaluating the family health and reproductive health policies and programs in a cost-effective manner. For this purpose a survey method has been designed, which has been used in about 10 Arab-speaking countries. In Sudan a PAPFAM survey as such was not done, but its contents were used in the SHHS.

Sudan Household Health Survey

The methodology for the SHHS combined modules of the MICS3 and the PAPFAM Survey. The SHHS was conducted in 2006 in all 25 States, in a joint effort of the National Government of Unity (NGoU) and the Government of South Sudan (GOSS). The survey has been conducted as part of an effort to assess the situation of children and women and to monitor progress towards selected MDG indicators. The SHHS used a direct method to assess maternal mortality. The SHHS sample covered 24,046 households, 26,923 ever-married women aged 15-49 years old, and 19,870 children under-five. It is the most recent big survey that has been conducted in Sudan and is representative at the state level. A list of indicators included in the SHHS is attached as Annex 3.

All the internationally standardised surveys done in Sudan are now outdated. The downside of not having participated in later rounds is that Sudan will no longer be included in international comparisons that use the huge databases of the international surveys, such as the DHS and MICS surveys. The SHHS, however, incorporates a good number of questions from several of the above mentioned international surveys, is very recent, has been used as baseline for the 5-year health sector strategic plan, and seems to be well conducted and reported. Many indicators correspond with the WHO essential indicator list. A second round of SHHS should be planned for latest mid 2011, towards the end of the present 5-year plan. It would be advisable to include information on more infectious and non-communicable diseases, as well as on client satisfaction with services, as the survey is now heavily slanted towards fertility and MDG-related indicators (as are all the international surveys).

⁶For the meaning of these abbreviations see list of acronyms in the front of the report

Surveillance

Disease surveillance is often defined as the ongoing systematic collection and analysis of data and the provision of information which leads to action being taken to prevent and control a disease, usually one of an infectious nature. In a surveillance system all diagnosed cases of diseases included in the surveillance system are reported, either provider-based (all or sentinel sites) or laboratory-based. Infectious Disease surveillance is almost always part of a NHIS and related to the notification system. But the tool can also be used for the monitoring of noncommunicable diseases (NCD), injuries and accidents, risk factors for disease etc. The WHO STEPwise approach to Surveillance of NCD Risk Factors (STEPS) uses a standard survey instrument and a methodology that can be adapted to different country resource settings. The approach to chronic disease risk factor surveillance provides an entry point for low and middle income countries to get started on chronic disease surveillance activities. It is also designed to help countries build and strengthen their capacity to conduct surveillance.

In Sudan the epidemiology department of the FMoH collects data on 22 notifiable infectious diseases from 726 sentinel surveillance sites, located in hospitals, health centres and a few dispensaries. The number of sites will be doubled in the near future, while the objective is to reach full coverage in the years to come. The sites transfer weekly reports to the state level by phone⁷ and from there to the FMoH. Seven diseases have to be notified within 24 hours. Weekly surveillance reports are sent to the Minister, the Undersecretary, Director of the Infectious Diseases Department, the NHIC and to WHO. South Kordofan was (again) mentioned as a weak state. At the national level annual reports are produced by the M&E section of the Epidemiology Department, that also conducts supervision and follows up on low response rates.

The surveillance system seems to be well organised and able to produce reliable data. The response rate is around 80%, which is acceptable. For surveillance of meningitis each state is divided into sectors, which do not coincide with the administrative divisions into localities. For monitoring purposes in the future this could pose a problem, once localities become the unit of decentralisation. The objective to include all health providers in the notifiable infectious disease surveillance system (however laudable) might lead to the same difficulties with compliance and response rate as now encountered by the HIS (see below).

Financial studies

National Health Accounts (NHA) describe all flows of funds, both public and private, domestic and foreign, involved in the health system: it makes an inventory where funds in the health sector are coming from – the sources – through which channels they are disbursed – the agents – to which providers and what the money is used for (the functions). In a summary matrix several dimensions can be shown: total expenditures by financing sources, financing agents, providers or functions (preventive, curative or rehabilitative care e.g.). NHA can show how much money is going around in the sector, how much is spent on what, and whether that reflects the priorities set in the policies and plans. All this can also be compared to the data of other countries. It can be an important tool, both for planning and for M&E.

A *Public Expenditure Review* (PER) analyses the allocation and management of public expenditure. A Health PER may cover all government expenditure in the sector or focus on a few priority sub-sectors or programmes (e.g. infectious diseases or child health). They can be used to inform strategic planning and budget preparation and to identify ways in which to improve the efficiency and effectiveness of resource allocations⁸.

A *Public Expenditure Tracking Survey* (PETS) is a quantitative survey of the supply side of public services. The unit of observation is typically a service facility and/or local government i.e. frontline providers like clinics. A PETS traces the flow of resources from origin to destination and determines the location and scale of anomaly.

⁷ The surveillance programme provided all included sites with a mobile phone for this purpose

⁸ Adapted from the website of Oxford Policy Management in the UK.

They highlight not only the use and abuse of public money, but also give insights into cost efficiency, decentralization and accountability⁹.

Costing studies are done to gain insight into the (total) costs of diagnosis and treatment of different diseases, benefit packages of insurances, or prevention interventions. Ideally they should include all direct and indirect costs to all parties concerned (including to the patients). Additionally costing studies are often done to calculate the incremental costs of scaling up a service or expanding a package. Knowing what service delivery costs is not only important for budgeting, but also for priority setting and resource allocation.

The FMoH is now conducting the first National Health Accounts study with support of the World Bank and GAVI, channeled through WHO. The latter also provides technical assistance. In November 2008 the CBS will start with the first of four household surveys. Data collection on the public system will start in the first quarter of 2009. Preliminary results are expected end of 2009. A PER is also planned with WHO support, but has not started yet. Other planned studies are costing the basic PHC benefit package and evaluating coverage and costs of the National Health Insurance.

The number of financing studies underway or planned is highly commendable as they will be very useful for proper financial monitoring and evaluation of the 5-year plan. The effort and time needed for a first round of NHA seems to be underestimated and preliminary results might not be available as early as end 2009. It is unfortunate that for this first round it has been decided that the private sector will not be included, as one of the main purposes of doing NHA is to capture non-state expenditures. It would be good to do a PETS as well, but given the already planned number of studies, this might have to wait, unless the FMoH would decide to do a PETS instead of a PER, since the PER will be somewhat duplicating the NHA, given that the latter does not include the private sector.

Facility-based statistics

Routinely collected data from health facilities are an important source of regular information for monitoring and evaluating health system performance, in particular intermediate indicators such as outputs and outcomes. These data are based on patients' records, that is utilisation of the health services. Data from patient records is transferred to standard forms, which are usually sent to the next higher level in the health system, where they are collated/summarised and ultimately forwarded to the MoH or a national institute for health management information. The MoH usually uses the information thus generated in an annual report or publishes an annual statistical yearbook. Whereas the census and survey methodologies are population-based, facility-based statistics only provide information about those patients who seek health care, and these might not be representative of the whole population. Common problems with service statistics are: they are often not comprehensive, because major (disease) programmes run parallel information systems, leading to duplication and incongruent results; the private sector is often not included, while they provide a substantial percentage of all health services in most countries; it appears to be difficult to motivate health workers in health facilities to regularly and accurately fill in the forms, resulting in under-reporting and/or unreliable information. This is partly due to feedback to lower levels being absent.

In Sudan the National Health Information Centre (NHIC) in the FMoH is responsible for the health information system (HIS). The NHIC receives quarterly and annual reports from the State Health Information Centres (SHIC), who in turn receive monthly reports from the localities, who receive them from the health facilities. Hospitals use a form with ICD-10 classification for categorisation of diseases of admitted patients and outpatients. At the NHIC the reports are compiled into national reports, which are sent back to the states. Once a year a meeting is held to discuss the annual reports with the SHICs and each state receives a supervisory visit at least once a year. The NHIC produces a statistical annual report. In this

⁹ Adapted from the World Bank website

report also data from other sources than the HIS are included, such as demographic data from the CBS, survey data, HRH and expenditure data from other departments in the FMOH. An annotated list of indicators included in the annual report is attached as Annex 2.

At federal level the HIS uses MS Excel to enter data, at state level the system is mostly computerised, but at locality level and below most of the work is done manually, although most hospitals have computers. There is an HIS training centre at the federal level, organising 2 4-months courses per year for 40 participants, who are trained on statistics, medical records, ICD-10, epidemiology, demography etc. They also receive an orientation on health, as almost none of them have a medical background.

The vertical programmes (in particular HIV/AIDS, malaria, TB and MCH) have their own information system, while some data on these programmes are also collected through the general HIS, resulting in duplication. The vertical programmes collect their own data at the facility level, which is collated and transferred to higher levels through the vertical programme staff. Only once a year, for the preparation of the annual statistical report, the vertical programmes and the NHIC sit together to integrate the data. During the past two years an effort has been made to harmonise the systems and a manual was agreed upon, containing joint formats for data collection and a division of labour between the NHIC and the vertical programmes. Piloting of the new manual is awaiting funds, committed by the WHO Health Metrics Network.

While 90% of hospitals provide data, the quality of the data is questioned by the states. This is due to the fact that health professionals often refuse to fill the patient register, leaving this to administrative assistants, who sometimes have to guess what the diagnosis and treatment of the patient is (on the basis of the prescription given by the medical officer to the patient). While the quality of the data for HCs is considered much better, the response rate for functional HCs and BHUs is only 40%. Timely collection of data is hampered by lack of transport, in particular during the rainy season (due to the manual system, it is not possible to transfer data through the internet). A second constraint is lack of HIS tools and training at the PHC level and a third relates to the high turn-over of staff, due to low salaries or otherwise non-conducive working environments. Private and NGO sectors are not systematically included in the HIS, data from police and army hospitals are partly included. Recently Khartoum state has made licensing of private facilities dependent on provision of data. It is not unknown yet how successful that is.

In 2007 an extensive, very participatory review and assessment of the HIS was done, using the Health Metrics Network framework. This tool scores the completeness of the HIS on 6 major dimensions: HIS resources (not adequate), indicators (adequate), data sources (not adequate), data management (not functional), information products (adequate), dissemination and use (not adequate). It also includes a SWOT analysis and recommendations on potential development areas (with existing resources). On the basis of this the NHIC produced a 5-Year National Health Information Strategic Plan 2007-2011. However, implementation of this plan is hampered by lack of funds.

The HIS produces a wealth of data, but unfortunately a dearth of information. The annual report consists mostly of tables and very few summary data and cross-tabulations. Analysis is almost absent and there is no relationship with plans and policies. It is not user-friendly. The incompleteness and inadequate quality of the data also renders the usefulness of the HIS

questionable. Because this is well known at the national level among potential users, the HIS is hardly utilised by anyone, making it a costly and inefficient system.

Vertical programmes

In almost all countries the big vertical programmes (in particular those funded by global health initiatives, such as the GFATM, the Gates Foundation, GAVI etc.) collect data through their own systems. Historically these programmes were already vertical, but just when a big move towards integrating them horizontally into the health system had been agreed in the nineties, large amounts of funding became available in the new millennium, related to the MDGs, which basically kept them vertical. Due to the fact that HISs in many countries are weak, the regular HIS usually often does not provide the completeness and accuracy in data collection that the vertical programmes need to fulfill their obligations to their donors. So rather than waiting for the HIS to improve, they strengthened their own vertical information systems even further, supported with money from their donors, paying for salary top-ups, cars, fuel, computers, etc. etc. making it possible to train staff at all levels, perform close supervision and follow-up non-response, at the same time paying incentives for good performance.

Sudan is no exception. The vertical programmes for HIV/AIDS, malaria and to a lesser extent TB have their own HIS, and have well developed M&E systems. The **HIV/AIDS** programme has M&E staff at federal and state level, a draft M&E plan, data sheets for each of the 65 indicators that they collect data on in the health facilities, a separate HIV surveillance system (in VCT and PMTCT centres) and they conduct serosurveys among pregnant women. Also in this HIS the private sector is not included. Of the 65 (mostly internationally agreed) indicators, 11 are reported to the FMoH, after it was decided together which indicators would be most relevant for general monitoring of progress. The persons interviewed were not aware of the new HIS manual with joint formats for data collection forms. Important for streamlining monitoring and evaluation is that their strategic plan (2004-2009) is not aligned with the general planning cycle (2007-2011).

The **Malaria** programme also has M&E staff at federal and state level and likewise has its own sentinel surveillance sites (some of which overlap with the infectious disease surveillance sites). The programme claims that all health facilities report to them. In order to generate such a high response rate they use both supervision and negative incentives such as withholding ACT malaria drugs or salary of staff, if reports do not come in. Reports are only shared with the NHIC once a year. They are aware that there is duplication in information collection between the programme and the general HIS, which also includes data collection on malaria, and are also aware of the new manual. They organise regular feedback through reports and meetings and some states are starting to use the data for their own planning. The malaria M&E Unit (5 staff) prepares all required reports for the numerous donors that support the programme. The programme collaborates with several research and training institutes.

The **TB** programme does not have a separate M&E unit. They routinely collect 11 indicators from the 300 TB management units and 900 DOTS centres, for which they have a data dictionary. These indicators are used to report both to the FMoH and the GFATM. They quarterly send info to the NHIC, but were not aware of new HIS manual, possibly because the present director is relatively new in the job. The TB programme is planning a survey for GFATM round 8. The programme seems to be somewhat more integrated into the FMoH than the HIV/AIDS and the malaria programmes.

The still young **MCH** programme, including EPI, nutrition, reproductive health, IMCI and school health, has as its objective to integrate all MCH activities into one package and set up a (vertical) M&E system for MCH, for which they want to use the EPI information system, which is performing very well, as a model. Each health facility already has a well trained EPI

information focal person, whose task the MCH programme wants to extend to other MCH components. The MCH programme does not have much confidence in the ability of the NHIC to improve the general HIS.

The M&E systems of the big three infectious disease programmes and EPI are well developed, regular feedback is organised and information seems to be increasingly used at lower levels. The amount of funding these programmes receive have undoubtedly contributed to this, but the programmes are also more pro-active, using carrots and sticks, in following up data collection with health facilities. There is very little regular contact between the M&E focal points and the NHIC, despite the duplications in data collection. The new manual including agreed formats to decrease this duplication does not seem to be much supported by the vertical programmes. The programmes have their own surveillance systems and organise their own prevalence surveys. It might pay off to look into the possibilities to integrate these specific disease surveillance and surveys into the general surveillance system and SHHS-2011. On the other hand integrating the routine data collection into the general HIS could compromise the present quality and response rate. The possibility to leave out information on these diseases from the general HIS should be discussed. The relatively young MCH department is planning to streamline the data collection among their five sections. The HIV/AIDS and malaria programme seem to be the most vertical programmes, while TB and MCH are more horizontally integrated.

The HRH Observatory

WHO has supported the FMoH to set up a National Human Resources for Health Observatory, as part of the HRH Directorate to set up a database on human resources and keep it up-to-date. The Observatory has 6 staff. Since end 2007 they publish a quarterly newsletter, called the Observatory Eye.

In 2006 a nationwide health workforce survey was done, which resulted in a database. To keep it up-to-date the Observatory presently mostly relies on HIS data with some inputs from the private sector (Sudan Medical Association), the army and the police health services. Branches of the HRH Observatory are planned in each state, with Khartoum State presently being set up as the first one.

The HRH Observatory can potentially evolve to be a powerful tool for HR projections and medium-term planning of the health workforce, if regular workforce surveys are done, for example as part of the health facility mapping, rather than relying on the HIS for updating the database, as this will give an incomplete picture.

Facility mapping

Another important input into the health system, is the hardware, that is infrastructure, equipment, water, electricity, transport and communication. In mid-2008 the Department of Health Systems Strengthening of the PHC Directorate of the FMoH conducted a facility mapping exercise, covering the 15 northern states, in order to prepare an investment plan for health services development. The survey included assessing coverage with health facilities, in particular access to the essential package, rehabilitation requirements, availability of water and electricity supply and waste disposal means, and availability of drugs and logistic support. Gaps and shortages were assessed in comparison to a basic set of standards. The

availability of human resources, including administrative capabilities, was also assessed. It is not known whether this information on HRH was compared with the data from the health workforce survey and/or whether the Human Resource Observatory used the data to update their database.

Although there has been some critique on methods used and the reliability of the data, it seems that the survey provides a reasonable baseline, against which the investment plan for health services development can be monitored in the future.

The following are some conclusions from the facility mapping study, relevant for the context in which M&E takes place.¹⁰

- Institutional capability of localities is very weak. Most of the localities don't have a complete organizational structure and the required staff. Some of the localities don't even have offices, let alone computers, etc. Few localities have a vehicle that would enable regular monitoring of health facilities. Supervision on a regular basis of HFs for further improvement and guidance is not a regular function of many localities and higher authorities.
- The physical facilities are not at the same level of structural status. Some of them need minor or major repair, while others need reconstruction, provision of additional supplies and equipment and logistic support. Logistic support in the form of provision of a good source of water supply or electricity, waste and excreta disposal system varied from state to state and between localities. On the whole the situation in the four states is not at all satisfactory and need review during the planning stage.
- Emergency care facilities and mobility in the form of ambulance services could be considered as very weak and need thorough assessment considering the unreliable public transport in all four states.
- Accessibility to the health facilities considering the 5 Km distance standard is within the normal limits, standard for all states and localities. However bad roads, lack of means of transport and inaccessible facilities are a big problem during the rainy season.
- The HRH situation in the four states is such that there is a lack of adequate health cadre, and maldistribution of health cadre between different localities, particularly between urban and rural areas.
- The package of PHC Services provided by each type of facility does not comply with the set standards and norms and could be considered as unsatisfactory and is not available at all in many health facilities particularly in most basic health units. The package itself needs to be revisited to match the resources available and the changing epidemiological picture. Coverage with emergency care services (essential and comprehensive) is available only in hospitals and is very weak; so is the referral services that don't exist in many health facilities.

National Health Insurance Fund (NHIF)

Insurance companies collect a lot of data on their insured: age, sex, household composition, the diseases they claim benefits for, utilisation of health services, costs of benefit package that is covered etc. They can therefore be a valuable source of information for some indicators.

In Sudan the NHIF was set up in 1994 as a social health insurance (to be), and is now responsible to the Ministry of Social Welfare, Women and Child Affairs. Government

¹⁰Facility mapping survey – English summary by Dr. Omer Imam Haq Omer, DHSDP.

employees (except all but one federal ministry¹¹) are mandatorily insured with the NHIF, private companies have a choice (there are also private insurance schemes). Self-employed individuals can only join the NHIF as a group, for example through unions. The unit of insurance is the household, but every member has his/her own card. Government employees pay 10% of their net salary for coverage for their whole household (4% self – 6% employer). The informal sector pays a flat rate (equity implications)¹². For PHC services the NHIF contracts with some 530 health centres, but also runs 240 health centres itself (no separation of provision and financing). For secondary care hospitals are contracted and no secondary or tertiary services are supplied by the NHIF itself. The 240 health centres have their own HIS system. The NHIF has done an actuarial study to calculate the necessary premium per household to break even, which is higher than what they are now levying. Of course the NHIF also keeps track of coverage (presently 24% for all of Sudan, but lower level percentages are also available). They are presently piloting community-based insurance in Al-Gezira state, in order to increase coverage.

Insurance companies should not be forgotten as potential sources of information. In particular the NHIF has information, which is useful for monitoring some financial and equity indicators, such as insurance coverage, the percentage of subsidised cards, percentage of budget used for paying providers etc. It would be worthwhile to also routinely collect a few indicators from other public and private insurance schemes. The NHIF HIS system should be studied and aligned with the national HIS system. Health data from NHIF centres should be routinely collected.

Research

Although usually not included as a source of M&E information, specific studies can provide important information for planning and priority setting and can also be useful in the context of evaluation.

In Sudan this is clearly recognised, as is evident from the importance given to it in the Five-Year Plan, the 25-year Strategic Plan for the Health Sector, the National Health Policy and the 5-year Health Sector Strategic Plan. However, there is no FMOH budget for health system studies, operational or behavioural research, or for the commissioning of specific evaluation studies. Most research done is on clinical topics, driven by researchers' interests and availability of external funds, not by the needs of the sector. With external support an overview of studies was made many years ago, which is now outdated. A form exists requesting researchers to fill in some key data on their studies, but an overview of past and ongoing studies is not available.

Research, relevant for policy and planning is not well developed, although the creation of an evidence-base is an important objective in all plans and policies. Much more work is needed to compile a useful database and analyse the results of studies, in order to make them useful for planning. To this end the budget for health systems, operational and behavioral research should be increased and more staff should be employed.

¹¹ Except for the Ministry of Social Welfare all federal ministries have joined a breakaway insurance in Khartoum after some problems. The military and the police forces have their own insurance.

¹² The interim constitution stipulates that health care will be provided for free to the citizens of Sudan. In order to still be able to operate insurance schemes, for which people have to pay a premium, the interim constitution is usually interpreted to mean free PHC for certain essential services, such as vaccination, care for under-5 and caesarian sections.

Other sources

This situation analysis did not look into progress reports, bookkeeping, supervision reports etc. as these are obviously all in Arabic. Nevertheless these kind of reports can provide valuable information about inputs and activities, important to monitor progress towards outputs, in particular when monitoring annual plans. Another issue that warrants more attention is the health activities that other ministries undertake, as the FMoH should coordinate the monitoring of all health-related activities in the country.

Evaluation

Evaluation is the systematic and objective assessment of a policy, programme or project as to the relevance of its design, effectiveness and efficiency of implementation, its impact and sustainability. It usually includes lessons learned and recommendations for improvements in a subsequent phase or next 5-year strategic plan. The most common forms are mid-term reviews and end-of-project or final evaluations. Evaluations address higher levels of the logframe (outputs/outcomes, objectives and impact), have a longer timeframe (3-5 years) and use multiple tools and sources of information, such as monitoring of indicators, interviews, studies, surveys, focus group discussions, triangulation of information etc. They try to assess causal relationships between inputs and impact and look into the reasons why objectives have or have not been achieved. Evaluations can be done internally (by the organisation also responsible for planning and implementing the plan or programme under evaluation), externally (by experts contracted from outside, who have had no responsibility for planning or implementing the programme) or joint (internal and external experts together).

There is no culture of internal or external mid-term reviews or end-evaluations of programmes or plans in the FMoH. A mid-term review of the 5-year Health Strategy has not been planned. It is not known whether any of the big disease programmes have done MTRs or evaluations. There is no specific evaluation experience/capacity in the FMoH.

Stakeholders and actors – assessment

There are many different sources of information that feed into the Health Sector M&E system and likewise as many different organisations or departments/sections in the FMOH/SMoH and health facilities that are responsible for producing this information. Below the different organisations and their roles and responsibilities are described.

National Council for Strategic Planning

The National Council for Strategic Planning is responsible for the follow-up of the implementation of the Five-Year Plan, as well as for collecting all monitoring data regarding the sectoral and state 5 year plans, which are used to assess progress on the overall Five-Year Plan. It reports to the Council of Ministers through the High Committee for Strategic Planning. The Council for Strategic Planning has some 350 members and meets three times per year. Recently it has been decided that the Ministry of Finance cannot re-allocate budget (from one ministry to another) without the consent of the Council. Ministries also have to stick to their 5-year plans and implement the interventions that are on-plan and on-budget. They cannot internally re-allocate budget or add new outputs or activities without filing a special request, including the justification for the change.

An executive office, the General Secretariat is responsible for the day-to-day activities. They have trained a substantial number of staff in ministries and states on how to monitor and report on their 5-year plans, but have noted that almost of all these M&E officers have been moved to other positions. They also have an internal system of checks and balances to monitor the M&E offices in the field, as well as the work of the Council itself.

The High Committee evaluates overall progress half-yearly, on the basis of reports and field visits. Once a year UNDP and other donors are involved in this exercise. No external mid-term review or final evaluation of the Five-Year Plan is foreseen, due to lack of funds.

The National Council for Strategic Planning is making a good effort to streamline M&E for the whole public sector. Unfortunately many detailed documents (such as those listing the indicators) are only in Arabic. The project will have to translate some key information from these documents, in order for the key requirements by the central government vis-à-vis M&E to be included in the M&E strategy.

Central Bureau of Statistics

In relation to the health sector the CBS is responsible for Health and Social Surveys, as well as for the Census. A population census took place in 2008. They also conduct poverty surveys, Household Budget surveys and prepare National Accounts. They have conducted (in cooperation with the FMOH and external technical assistance) the DHS in 1990, the SMS in 1999, the MICS in 2003 and the SHHS in 2006. In the context of the NHA they presently conduct a Household Health Expenditure Survey.

Capacity at the CBS seems good, confirmed by high scores on the HMN assessment as to content of the census and surveys. They have been long term partners of the FMOH in conducting health surveys. But the FMOH could possibly benefit more from other kind of data

the CBS collects, such as demographic data, household budget data, income data etc. The cooperation with the Health Economics Department on the NHA is positive.

Federal Ministry of Health - Directorate of Planning

The FMoH is responsible for monitoring and evaluating the 25 and 5-year health sector Strategy, as well as the National Health Policy. An **M&E Section** (only one staff) has been established a few years ago within the Planning Directorate, under the Policies and Planning Department. This section is responsible for collecting all information necessary to monitor the annual plans of all FMoH departments and sections as well as the 5-year Health Sector Strategy, and to prepare the quarterly and annual reports for the National Council for Strategic Planning. The section is presumably also responsible for monitoring the 25-year plan. Very recently, the National Council for Strategic Planning has prepared a decree which will place the M&E function in any Ministry immediately under the Minister, headed by a DG (at least class 3), with 6 staff and guaranteed access to all information. It is not yet clear when and if the decree will come into force. The latest information says that implementation has been postponed, due to lack of funds.

The **Policy Section**, also in the Policies and Planning Department under the Planning Directorate, is responsible for monitoring the National Health Policy (according to the Health Policy itself). However, so far no indicators for the 18 strategies have been formulated and systematic monitoring of the health policy is not taking place.

Within the hierarchy of the FMoH the **National Health Information Centre (NHIC)** is a Section, located in the Health Economics and Research Department, under the Planning Directorate. It is expected to deliver information on health status and health services utilisation from the field through its network of State Health Information Centres (SHIC). The NHIC is well-staffed. At the federal level around 25 technical staff are employed (including some seconded to the surveillance department), at state level 7-10 per state. Each hospital and urban health centre has at least one statistical technician, while bigger hospitals have more. Lower level facilities might have a statistical assistant. Throughout the country a total of some 1600 staff is employed, most of them statistical technicians, trained in the HIS Training Centre.

The **Health Economics Section**, located in the Health Economics and Research Department, under the Planning Directorate, is responsible for collecting periodic financial information, costing the basic benefit package, evaluation of coverage and costs of the National Health Insurance Fund. They also cooperate on the FMoH annual budget. The FMoH does not have a Medium Term Expenditure Framework. At present they are conducting the first round of NHA. They are also planning to conduct a PER.

The **Research Section** is also located in the Health Economics and Research Department, under the Planning Directorate. Its task is to contribute to the evidence-base for planning and clinical decision-making. The Section encourages research through advocacy and capacity building, as well as looking for funding opportunities. It has a role in coordination, as it functions as the secretariat for the National Health Research Council and its committees.

The M&E section is clearly understaffed, with only one junior Head of Section. The place in the hierarchy and the staffing does not presently give the M&E function sufficient authority and importance to do its work properly. Information from all sources should come together in

the M&E section, be compiled, analysed and disseminated, but at present the section does not liaise with all information sources. In practice, the section now monitors performance of different departments and sections in the FMoH. An upgraded and expanded M&E Section should be responsible for monitoring the 25- and 5-year health sector strategies, as well as the National Health Policy. Besides they should be responsible for organising and preparing internal (joint) annual reviews, external mid-term reviews and final evaluations.

Although this situation analysis did not conduct an in-depth review of the NHIC, it appears that the centre could be much more service oriented and view production of data not as an end in itself, but as a means to a higher purpose. While the statistical capacity of the staff is considered to be good, their analytical capacity leaves to be desired. Coordination with other sources of information is still weak, in particular with the vertical programmes and the surveillance section, but also with the M&E section. Given the huge number of staff, the HIS could be a potentially powerful instrument, if managed better. The hierarchical position of the NHIC as a section under the Health Economics and Research Department is not easily comprehensible, but seems to have a historical reason.

The Health Economics Section is well capacitated, with sufficient staff, all of whom have a relevant degree. They have embarked on key studies, very relevant for M&E.

The research section is understaffed and weak, although the present staff is motivated. Support would probably fall into fertile soil.

Federal Ministry of Health - Directorate of Preventive Medicine and PHC

The **Surveillance Section** falls under the responsibility of the sub-department of Epidemiology, located in the Department of Infectious Diseases, under the Preventive Medicine and PHC Directorate. They are responsible for the daily and weekly reporting of notifiable infectious diseases, but also provide on-location assistance to states and localities in containing outbreaks anywhere in the country.

The large **Vertical Programmes on HIV/AIDS, Malaria and TB**, also located in the Department of Infectious Diseases, under the Preventive Medicine and PHC Directorate, are important actors in the spider web of information generation, because they have their own information systems, through which they collect data from the field. They share some of this information with the NHIC and the SHICs.

The population surveys that have been done by the CBS in cooperation with the FMoH have been supported by the Directorate of Preventive Medicine and PHC, likely because all big surveys focus on **MCH**, which is one of the departments in this Directorate.

The surveillance section is well organised, has good capacity and performs well. They regularly coordinate with the large vertical programmes on immunisation, malaria, TB and HIV/AIDS, but much less with Planning and the NHIC.

The vertical programmes perform very well on M&E. Many of their achievements can serve as examples for the general M&E system.

Although all surveys have benefited from external financial and technical support, both by development partners/donors and by the CBS, the Directorate seems to have done a very good job in coordinating the process and giving technical inputs.

Federal Ministry of Health - Directorate of Human Resources for Health Development

The HR Observatory is part of this Directorate and endeavours to keep a HRH database up-to-date. The Directorate has worked on updating its 5-year strategy, including an M&E framework to regularly monitor HRH indicators.

The Directorate seems to be well organised and managed, and able to produce useful information, relevant to monitoring and planning the workforce.

An organogram of the FMOH, showing the position of most M&E actors and their hierarchical relationships is attached as Annex 1. As shown above the responsibility for data collection and information generation is scattered over all directorates of the FMOH, necessitating a high degree of coordination and guidance. While some vertical programmes do their own analysis, there is no overall compilation and analysis of information, relevant for planning and M&E. This should be the task of the M&E section, but this section does neither have the quantitative and qualitative capacity nor the necessary clout and authority to undertake this important task.

The States

In the context of the DHS DP the M&E Expert and the Head of the M&E section in the FMOH conducted field visits to assess the M&E situation in two of the four states the DHS DP is active in: Kassala and South Kordofan. In each state interviews and discussions were held with the Director General of the SMOH, directors of Planning, PHC, Preventive Medicine and the SHIC. Field visits were conducted to Al Daling Locality in South Kordofan and Aroma Locality in Kassala. In these localities the rural hospital, the locality health team and a HC were visited. As preparation the state health profiles, made in the context of the DHS DP, were consulted. However, these profiles were only partly filled, despite ample support by project staff. The section below is divided in a part in which we give our findings on the health system in general, which forms the relevant context for M&E, and a part in which the findings specifically related to M&E and HIS are elaborated.

We would like to stress that the findings are based on a few HFs, which cannot be considered representative for the two states. In fact many people told us that we had not seen the worst.

General findings

Poverty is pervasive. Even taking into account the post-conflict status of both states, the degree of poverty is unexpected in the context of the fact that Sudan is a lower middle income country with an estimated GDP per capita of US\$1595 in 2008 (calculated from GDP and latest census data), or GNI per capita of US\$950 in 2007 (World Development Index).

Government expenditures on health are extremely low; HFs receive no operational budgets and revenues from user fees and the NHIF have to be transferred to the State. Given the low

salaries of health workers this means that there are no financial incentives to perform better. This, together with badly maintained facilities, often no running water and electricity, lack of drugs, communication and transport, as well as unhygienic circumstances, result in very bad working conditions and thus lack of motivation among the first line workforce. Under these circumstances it is admirable that health staff are still trying to help patients, while the outside temperature is over 50 degrees Celsius.

The Government of Sudan has devolved power and budget to the state level. It has the intention to devolve to the locality level in the (near) future, but this has not happened yet. Although both localities have salaried health teams of around 8-10 staff, they do not have an operational budget and therefore cannot function, resulting in severe lack of support to and supervision of HFs. Al Daling locality used to be supported by Save the Children, but since the NGO had to leave the country, the car has been confiscated by the HAC. The DHSDP will provide cars for the localities¹³. In the mean time the locality health staff do some administrative work, make a few phone calls (usually at their own expense) and can only engage in activities, when external funds are available (such as from the VPs or donors).

Likewise the SMOH only receives a very small government budget and is mostly dependent on donor funds for the implementation of their annual plans.

In all facilities and localities visited there is a clear oversupply of human resources, resulting in inefficiencies. Examples:

- SK: Al Daling locality: 10 health staff on payroll – no budget for activities
- SK: Al Kuweek HC: 3 paid staff see 10 patients /day
- SK: Al Kurgul HC: 8 staff see 12-15 patients /day
- Kas: Yehia El Hussein HC: 29 staff see 35-40 patients /day
- Kas: Aroma HC: 17 staff see 25-30 patients /day
- Kas: Aroma locality: 8 health staff on the payroll – no budget for activities
- Kas: Aroma hospital: 2-3 nurses per occupied bed (OR only 12%)

At the same time there seem to be many more rural facilities that are understaffed or are not functional at all, because no staff is available. This maldistribution of staff is known to the human resource department in the FMOH.

Leadership capacity in health at state level (Director General and Directors) is good in both South Kordofan and Kassala. Capacity at locality level is reasonably good in Al Daling (thanks to Save the Children), but less so in Aroma.

Findings on M&E and HIS

The CBS and the CRO both have presence at State level. Each SMOH has a SHIC, an epidemiology department for the surveillance of notifiable infectious diseases, and vertical programme staff, responsible for data collection and M&E. Some States already appointed general M&E officers as well.

Both states monitor their annual plans (in logframe format) through departmental reports, similar to the FMOH. South Kordofan does not have its own 5-year strategy, but uses the federal 5-year strategy and monitors its indicators for the state level. How reliably this is done is questionable, as none of the M&E officers could explain how infant mortality is calculated.

¹³ We were told the DHSDP will provide 12 cars for South Kordofan. We did not check this in Kassala, but assume they will also receive vehicles.

The M&E Officer in Kassala has been appointed Director of Planning, leaving an M&E vacancy.

Localities have trained statistical technicians, have a computer and Internet access. However, they do not (yet) have transport to supervise HIS at HF level, support them in data transfer, analysis and utilisation of information. Hospitals are also computerised and have statistical technicians.

All hospitals have one or more statistical technicians. Bigger HCs also have a statistical technician or assistant. The official policy is that all HFs, also small BHUs, should have a statistical technician or assistant. However, this would be a very inefficient use of human resources, because it was calculated that transfer of the different registry books onto the monthly form takes between 1-3 days, depending on how many patients are seen at the HF.

HFs have many different registers to keep track of services provided: the outpatient register, the inpatient register, the reproductive health register, the EPI register, the incoming drug register, laboratory forms, birth and death registers; some HFs have to keep separate malaria, TB and HIV/AIDS registers etc. HFs who belong to the sentinel surveillance network for notifiable diseases also have to keep separate registers for those. The information of all these registers is transferred monthly (weekly in the case of the surveillance reports) onto a big form, of which two different versions were used in the visited HCs: the old form (a big folded A2 size paper) containing about 200 diagnoses, pre-coded according to ICD-10, and a newer form, which provides an open space to enter diagnoses and many tables summarising procedures and interventions, such as ANC visits, number of immunizations, health education sessions etc. The old form has the problem that many of the diagnoses cannot be established at HC or BHU level, due to lack of laboratory facilities for example. Why this form is still used at lower levels three years after it was replaced, is not clear. It also clarifies why there is underreporting on many interventions, as HFs who still use the old form cannot report interventions, as there is no provision for that on the old form. At the Aroma hospital the mission listed 12 different reports, which are sent to the SHIC monthly. At the SHIC itself 21 different forms were collected (and there might be more).

Completeness of HIS data collection has increased to 50% in South Kordofan and 80% in Kassala. However, completeness is compromised by the fact that in hospitals only patients that are seen during the first shift are recorded. While the the quality of HC and BHU information is considered to be reasonable, the reliability of hospital data is questionable, due to health workers refusing to fill registry books and leaving this to administrative assistants, who have no knowledge about diagnosis and treatment. But also at HC level some errors in data entry were discovered, due to simple misunderstanding of the requested indicators.

Timeliness continues to be a problem. In order to address this, in Kassala health workers do not receive their salary, unless the monthly report is submitted. This raises a quality problem, because HFs only get 5 days to produce and turn in monthly reports (linked to salary payment on 5th or 6th of month). The use of a negative incentive (stick) rather than a positive incentive (carrot) also needs to be reconsidered.

There still is very little analysis and utilisation of data, even at State level and capacity to analyse and use data at all levels is insufficient, even among those staff that have been trained specifically in M&E. Almost all heads of HFs sign off the forms without looking at the content. Directors do not keep a copy of the forms in their office. In Kassala the SMOH

organises monthly meetings with locality health officers, where data are discussed, when necessary. Similarly locality health teams organise monthly meetings with heads of HFs to discuss any problems. Some HFs compare data from one month to the other to see if any changes occur in frequency of diagnoses. Comparisons with other HFs, localities or states are not made.

In general it is understandable that data are not used, because HFs and localities do not have a plan, nor budget to implement any activities or changes. So what would they use data for? We therefore conclude that utilisation of data will only happen, once localities have been capacitated, have a plan and a budget and can undertake supportive supervision to the HFs. And only when HFs, localities and even SMOHs will experience the usefulness of information, derived from the data they collect, will the quality of the data improve, as HFs, localities and even SMOH now have hardly any or no incentive to correctly, timely and accurately record data.

The above findings are in general agreement with the findings of the PHC facility mapping survey, as mentioned on page 20. States have annual plans which are regularly monitored. Capacity for M&E is very low at all levels. While hospital data are almost complete, serious doubts about correctness of initial recording make them not reliable. And while HC and BHU entries are believed to be rather reliable, they are incomplete. There are no positive incentives to produce correct and timely data. How representative the HFs who do report are for the whole state, is unknown. Because devolution to locality level has not yet taken place, supervision of HFs is scanty, depending on available funding through donor funded vertical programmes. Data are hardly analysed and used, which is no surprise, as state, locality and HFs have no or very small operational budgets, and therefore cannot undertake any activities, for the planning of which they would need information. Due to the severe underfunding of the health services it seems that only very limited outputs can be expected. Statistical technicians or assistants cannot be efficiently employed at HC and BHU level.

Donors

Support to the Health Sector (and Sudan in general) is still given in the form of projects. There is no sector-wide approach and no sector budget support.

The UN seems to be firmly in the lead in supporting the FMOH technically, in particular WHO and UNFPA, likely because very few bilateral and multilateral donors are present in the health sector and in Sudan in general. WHO has a long term TA in the Planning Directorate and supports the HIS through the HMN. UNFPA funds 15 different projects in Sudan on Reproductive Health, Gender and Population & Development, implemented by several governmental and non-governmental partners¹⁴. The Multi-Donor Trust Fund, managed by the World Bank, funds the Decentralised Health System Development Project. DFID supports the malaria programme. The GFATM is a large donor, supporting the three big disease control programmes over several rounds. Their funds are managed by UNDP. GAVI funds a health system strengthening project, including some funds for M&E.

Donors have their own M&E system to monitor progress on the implementation of projects they fund (quarterly progress reports). The malaria programme for example produces around

¹⁴ For the DHSDP it is relevant that UNFPA funds projects in Kassala and South Kordofan on reduction of maternal morbidity and mortality.

10 different progress report for different donors each quarter. The UN agencies mostly rely on existing data from surveys (which they help fund) to monitor progress in the health sector overall. The M&E Section does not have an overview of all donor requirements on M&E of the projects funded by them.

NGOs

There are many international NGOs working in Sudan, but most of them are active in humanitarian aid in Darfur and other conflict-affected areas¹⁵. Very few NGOs are structurally present in the health sector. One example is Save the Children UK that had a memorandum of understanding with the SMoH in Red Sea to implement nutrition activities (capacity building; survey to estimate causes of malnutrition; and construction of a feeding centre and rehabilitation of 3 others) with funds (USD 193.000 for 1 year) from the Common Humanitarian Fund (CHF). They are looking into the possibility to expand into PHC in general (primarily capacity building). They report to the Humanitarian AID Commission (HAC) at the State level. If the SMoH wants information, they have to request HAC.

Save the Children US was active in South Kordofan, and supported for example Al Daling locality with essential drugs and means to implement supervision of health facilities and other tasks in the health sector. The field visit to South Kordofan found that this support has recently come to an end, because Save the Children has had to leave the country.

There is an NGO forum, which conducts monthly meetings of all NGOs working in Sudan (all sectors). There does not seem to be any relationship to speak of between NGOs working in the health sector and the FMoH, let alone that they regularly report any data to the NHIC. But the FMoH might be able to get more information from the HAC. The M&E Section does not have an overview of all data NGOs collect or studies they do.

¹⁵ However, early 2009 13 large international NGOs, together accounting for the largest share of humanitarian aid, have had to leave the country over allegations that they were involved in conveying information to the ICC, which has indicted President Bashir.

Previous work done on M&E

WHO is supporting the HIS through its Health Metrics Network (HMN) initiative (biennial programme 2007/2008). A standard HMN assessment has taken place during the first months of 2007, published in May 2007. This is a highly structured, participatory exercise in which all aspects of the NHIS are scrutinised and scored, resulting in the following overall scores for the 6 main categories: HIS Resources (42%), Indicators (69%), Data sources (39%), Data management (17%), Information products (61%) and Dissemination and use (37%). Of the specific data platforms (sources), included in the tool, vital statistics, health & disease records, administrative records, infrastructure & health services, financing of health services and equipment, supplies & commodities all scored “*not adequate at all*”, while the census and health service records scored “*present, but not adequate*”, and only population based surveys and human resources scored “*adequate*”.

Other HMN planned activities are:

- (Capacity building) Implementation of the modified HIS in 10 pilot localities (USD 103.500)
- Developing HIS comprehensive plan (USD 45.400)

However, up till January 2009, no funds were received to implement these activities.

Through its long term technical assistant in the FMOH WHO has supported M&E. A document was produced together with the M&E and Planning sections: *Putting in Action: Monitoring the implementation of the 5-year strategies for the health sector 2007-2011*. It generally describes many features of an M&E system, focusing on monitoring high-level performance indicators at the outcome/impact level. In a separate file a matrix has been made which re-organises the strategic objectives and outputs in the 5-year health sector strategy in a different way, using health system functions (according to WHO’s so-called building blocks of the health system) as the main organising mechanism. Because these functions coincide with the responsibility of a specific unit in the FMOH, the document states that “...*the proposed M&E plan will also serve as a tool for measuring the performance of different sections or departments in the FMOH*”.

Several years earlier another long term WHO technical assistant in the FMOH produced a draft Operational Manual for a M&E system. It includes general information about M&E systems, steps to develop a system, a checklist of features of a good M&E system etc. It also includes terms of reference for an M&E Department and its staff.

The HMN assessment of data sources is very informative, but follow-up is meagre and financing delayed. Important topics as utilisation of data, feedback to lower levels, including private sector and NGO information etc. are not included in the support. The WHO support to M&E has been rather theoretical, and the re-organisation of the 5-year plan in a different and unusual format is not very helpful for M&E of the health strategy as such. The existing 5-year plan, improved on details, should be the starting point for the M&E function, but the work done on the matrix could be used to sharpen up the indicators.

Conclusions and Recommendations

Plans

1. Generally speaking the 25- and 5-year strategic plans as well as the national health policy are of good quality. There could have been more synergy between the 5-year health sector strategic plan and the national health policy and some improvements are needed in the internal logic of the 5-year health sector strategic plan. Most indicators of the 5-year health sector strategic plan correctly measure the outputs, have a baseline and a target, but no clear means of verification (MOV): some sharpening up of indicators and MoV is needed.

Census and Vital Events

2. New census data will be available in 2009, enabling reliable calculations of denominators for indicators. Unfortunately registration of vital events in Sudan is very problematic and by far not reliable enough to provide more accurate data in between censuses than extrapolation of the census data itself will.

Surveys

3. All the internationally standardised surveys done in Sudan are now outdated. The SHHS, however, incorporates a good number of questions from international surveys, is very recent, has been used as a baseline for the 5-year health sector strategic plan, and seems to be well conducted and reported. Many indicators correspond with the WHO essential indicator list. A second round of SHHS should be planned for latest mid 2011, towards the end of the present 5-year plan. It would be advisable to include information on more infectious diseases, on risk factors for non-communicable diseases, on injuries and accidents and as well as on client satisfaction with services, as the survey is now heavily slanted towards fertility and MDG-related indicators.

Surveillance

4. The surveillance system seems to be well organised and able to produce reliable data. The response rate is around 80%, which is acceptable. For surveillance purposes each state is divided into sectors, which do not coincide with the administrative divisions into localities. For monitoring purposes in the future this could pose a problem, once localities become the unit of decentralisation. The objective to include all health providers in the notifiable infectious disease surveillance system (although laudable) might lead to the same difficulties with compliance and response rate as now encountered by the HIS (see below).

Vertical Programmes

5. The M&E systems of the big three infectious disease programmes and that of the EPI Programme are well developed, regular feedback is organised and information seems to be increasingly used at lower levels. The ID programmes have their own surveillance systems and organise their own prevalence surveys. There is very little regular contact between the vertical programmes and the NHIC, despite the duplication in data collection. Integrating the routine data collection of these VPs into the general HIS could compromise the present quality and response rate. The possibility to leave out information on these diseases from the general HIS should be discussed instead.

Human Resources

6. The HRH Observatory can potentially evolve to be a powerful tool for HR projections and medium-term planning of the health workforce, if regular workforce surveys are done, for example as part of the health facility mapping, rather than relying on the HIS for updating the database, as this will give an incomplete picture.

Health Financing

7. The number of financing studies underway or planned is highly commendable as they will be very useful for proper financial monitoring and evaluation of the 5-year plan. It is unfortunate that for the first round of the NHA it has been decided that the private sector will not be included. The FMoH should consider to do a PETS instead of a PER, since the PER will be somewhat duplicating the NHA. The NHIF also has information, which is useful for monitoring some financial and equity indicators. It would be worthwhile to routinely collect a few indicators from public and private insurance schemes.

Health Information System

8. The HIS produces a wealth of data, but unfortunately a dearth of information. The annual report contains hardly any compilations, comparison or analysis and there is no relationship with plans and policies. It is not very user-friendly. The incompleteness of the data also renders the usefulness of the HIS questionable. Because this is well known at the national level among potential users, the HIS is hardly utilised, making it a costly and inefficient system. Production of data should not be regarded as an end in itself, but as a means to a higher purpose. While the statistical capacity of the staff is considered to be good, their analytical capacity leaves much to be desired. Coordination with other sources of information is weak, in particular with the vertical programmes and the surveillance section, but also with the M&E section. Rather than trying to integrate several sources into one system, it might be more practical to fully utilise those sub-systems that are producing reliable and timely results (such as the surveillance system, the vertical programmes and the human resources observatory) and to strengthen the general HIS to only collect additional information, needed and demanded at the different levels of service provision. Given the huge number of staff, the HIS could be a potentially powerful instrument, if managed better. The extensive human resources capacity of statistical technicians could be better utilised. On the other hand medical staff should also be sensitised on the importance of proper data collection and be trained in utilisation of information at the facility or local level. A plan should be made how data from health facilities operated by other ministries, the private sector and NGOs can be included in the HIS. Designing a system of incentives by carrots would be more desirable than by sticks.
9. The FMoH should consider to use a sentinel network of primary care providers, representative at state level, to collect the necessary data on burden of disease, rather than continue to try and collect all patient data from all HFs. The costs saved could be used to design a positive incentive scheme for the sentinel sites, which would increase motivation to accurately collect data and timely transfer information to a higher level.

Research

10. Research, relevant for policy and planning is not well developed, although the creation of an evidence-base is an important objective in all plans and policies. Much more work is needed to compile a database and to analyse study results, in order to render them useful for planning.

Monitoring and Evaluation

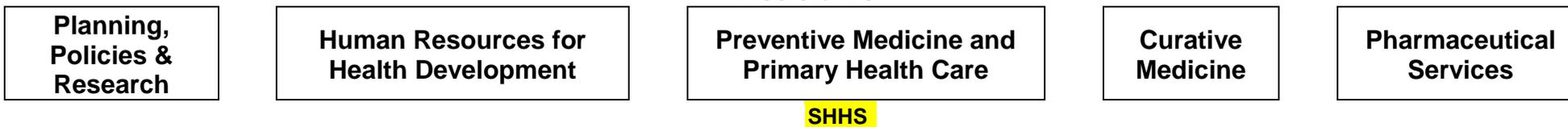
12. There are many sources of information for monitoring plans and policies, within and outside the FMOH, increasing the need for guidance, coordination and minimising duplication. The fragmentation also necessitates one focal point where all information comes together and is analysed in depth. This point should be the M&E Section, but this section neither has the quantitative and qualitative capacity nor the necessary clout and authority to undertake this important task. With only a Head of Section, M&E is clearly understaffed. An upgraded and expanded M&E Section should be responsible for monitoring the 25- and 5-year health sector strategies, as well as the National Health Policy and the health-related activities other partners undertake (other ministries, NGOs and donor projects). The same is true for the situation at the SMOH.
13. There is no evaluation culture in the FMOH. Mid-term reviews and end-term evaluations of large programmes or the 5-year Health Strategy are not routinely undertaken. M&E should be responsible for organising and preparing internal (joint) annual reviews as well as commissioning external mid-term reviews and final evaluations.
14. The first priority in the states should be to build the (general) capacity of the locality health teams and to ensure they have a budget to regularly visit HFs for supportive supervision. Without this capacity building/training will not generate sustainable results, because no follow-up and hands-on corrective interventions can be undertaken.
15. It might be more useful to focus future planning at the state level and below on improving inputs first, before monitoring of outcomes and impact of health services can be expected to show any progress.
16. At the state and locality level, staff responsible for calculating any indicators should receive very basic training in mathematics and statistics, before training on more sophisticated M&E can be expected to fall into fertile soil.
17. A special training module, using ample examples should be designed to show staff at HF level how the data that they routinely collect could be used for management decisions and improving performance.
18. A number of selected statisticians with high potential, basic knowledge of public health and health systems as well as an interest in health planning, together with planning officers should receive a well-designed training in analysis of data and utilisation of information for planning and M&E of strategic plans.

Annex 1 FMoH Hierarchy with special reference to M&E

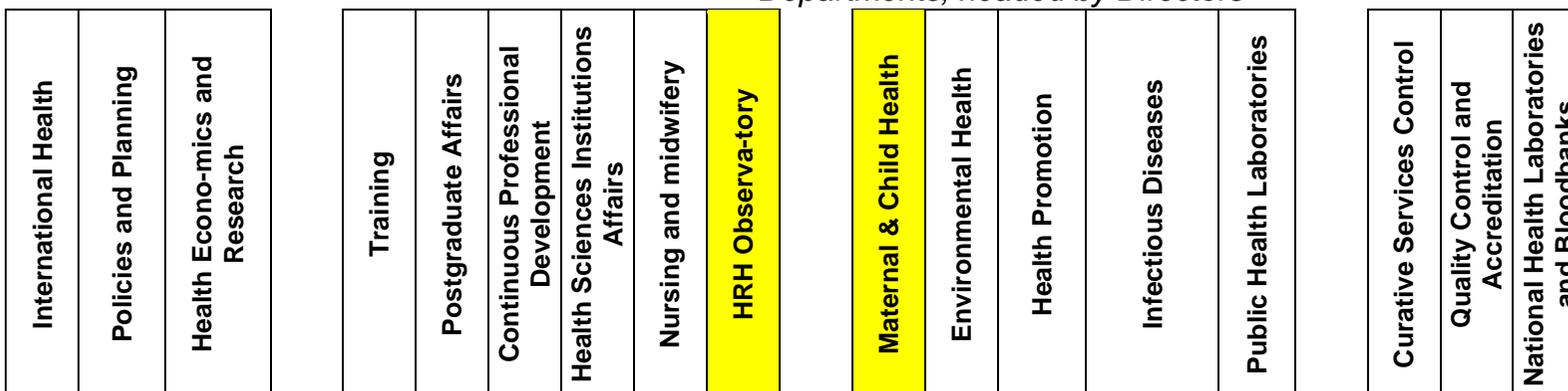
Federal Minister

Undersecretary

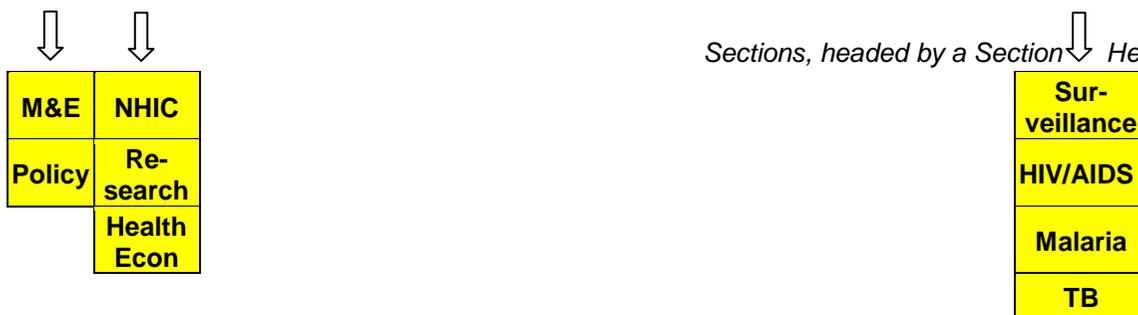
Directorates, headed by Undersecretary Assistants



Departments, headed by Directors



Sections, headed by a Section Head



Dr. Samah M. Awad, 2008

Adapted by Maria Paalman

Annex 2 Indicators in Annual Statistical Report + comments

Indicator	Source	Comment
Total population by state (+%)	CBS	
Demographic info: CBR; CDR; annual growth rate; natural increase rate; % pop<15; % pop >60; TFR; % urban pop	Census CBS/UNFPA pop data sheets	<ul style="list-style-type: none"> Info needed for denominators Title on page is mistakenly called: Main health indicators 2007
Socio-economic data: 15+ literacy rate; % econ active pop>10; dependency rate/1000; GNP p/c USD; GDP p/c USD;	MICS 2000 Census	Very old –there should be more recent estimates, e.g. for GDP
Health expenditure: P/HE % of GDP; P/HE p/c USD	FMOH	
Tot Fed HE approved/actual + breakdown by Ch 1 Salaries, Ch 2 Soc. Support and Oper costs, Ch 3 Dev	HEcon dpt FMOH	<p>Only expenditure at federal level? Excluding state transfers?</p> <p>Tot Fed HE excluding army and polic health exp.</p> <p>Is Dev Exp domestic + external funds?</p>
Tot Fed HE as % of Tot Fed E approved/actual	HEcon dpt FMOH	
Breakdown of Dev Exp over projects approved/received	HEcon dpt FMOH	Huge increase in malaria received – GFATM?
% budget execution Tot Fed HE	HEcon dpt FMOH	62%
Tot Fed HE in USD	HEcon dpt FMOH	
Tot Fed HE p/c in USD and SDG	HEcon dpt FMOH	Amount seems to be divided by pop whole Sudan, while GoSS has its own health budget
Tot Fed HE as % of GDP	HEcon dpt FMOH	
Health activities		= Health Outcomes
% pop for whom HC is available	Papchild 1992	
% pop w/safe drinking water	SHHS	All of Sudan or North?
% pop adequate excreta disposal fac.	SHHS	
% pregnant women attended by trained personnel	SHHS	Should be % of deliveries attended by....
% of infants attended by trained personnel	Papchild 1992	Delete?
% pregnant women given +2 doses TT	EPI/FMOH	2004? Why not later?
% of children immunised DPT	SHHS	Compare/update with EPI data!
% of children immunised OPV	SHHS	Compare/update with EPI data!
% of children immunised Measles	SHHS	Compare/update with EPI data!
% of children immunised BCG	SHHS	Compare/update with EPI data!
Health status		
% newborns weighing at least 2500 g	MICS 2000	

% children w/acceptable weight/age	SHHS	
<5 mortality/1000 live births	SHHS	
Infant mortality		No source, no data
Maternal mortality	SMS 2000	SMS was in 1999, why not use SHHS 2006?
Life expectancy at birth	Census 1993	
% of children vaccinated OPV, DPT, Hep B, BCG and measles (per dose)	EPI?	All between 80-100%. Why much higher than SHHS?
Idem per state (15)	EPI?	
% pregnant women 2+ TT per state (15)	???	
% CBAW 2+ TT per state (15)	???	CBAW are what??
Health inputs (public sector)		Excluding army/police?
Nr of PHC Units by state + total		Divided by operational/non-operational
Nr of dressing stations per state + total		Divided by operational/non-operational
Nr of BHUs per state + total		Divided by operational/non-operational
Nr of HCs per state + total		Divided by urban/rural
Nr of hospitals per state + total		
Nr of beds per state + total		Hospital beds only, or including HCs that have beds?
Availability of spec. PHC services by state (MCH, ORS, Nutr Units, Immun)		Only absolute numbers, not % of HFs that have these services
Availability of spec. other services by state (dialysis, EEG,ECG, U/S, endoscopy, lab, X-ray, blood bank)		Only absolute numbers, not % of HFs that have these services Mostly hospitals (some labs in HCs?)
Hosp distrib by admin level, gen/spec and by state		5 'sectoral' hospitals army and police?
Hosp Bed distrib by specialty by state		
Total number of hosp, beds, HCs, dispensaries, dressing stations, PHC Units, blood banks and X-ray units by last 5 years		Where are the BHUs?
Nr of hosp and beds/100,000 pop by state, North/South and total Sudan		For South only by region, not by state
Nr of private health sector units by state (veterinary, pharmacy, X-ray, lab, dental clinics, GP, Specialist clinic, hosp/HCs, beds)		Upper Nile included in total as only Southern state
Total Nr of all cadres HR expected to graduate 2004-2013, compared to required (g+gap/surplus)		Big surpluses of MDs, village midwives and pharmacists
Nr of med specialists by specialty (univ/ministry) by state		Employed by govt? same question for all HR indicators below
Nr of MDs by state (Gen MD, registrars, med spec, dentist, pharm)		
Nr of technicians by state (16 diff spec)		
Nr of MAs by state (11 diff spec)		Why CHW included here (only 8)?

		Not MA
Nr of nurses by state (diff levels)		
Nr of environm health staff (11 diff kinds) by state		
Nr of RH staff by state (9 kinds & levels)		
Nr of non-med personnel by state (drivers, storekeepers, clerks, personnel, accountants etc.)		
Total nr of MD, dentist, med spec, technician, MA, nurse, PH off, midwife, health visitor/100,000 by state		Why not pharmacists?
Nr of MD, med spec, dentist, pharm, techn, MA, nurse /100,000 over 5 years for Sudan		
Nr of med spec by specialty over 5 years for Sudan		
Total nr of med spec, MD, dentist, pharm, MA, techn, nurse, PH, Sanit, HV, midwife, nutr and soc worker over 5 years for Sudan		
Health Training Institutes		All in Arabic
Important diseases		
Top 10 diseases treated in health units (outpatients) / 1000 pop and % of total; for Sudan		Which health units – including outpatients in hosp? What is BS en EG? What is M.C. for O.CON.PRED.R. to PREG
Top 10 diseases treated in health units for <5; % of total; for Sudan		
Top 10 diseases treated in outpatient clinics by state; absolute + % of total + /1000 pop		
Top 10 diseases hosp admission; absolute + % of total; for Sudan		Title admission, but in table discharge Does this pertain to all rural, state and national hosp?
Top 10 diseases hosp admission; absolute + % of total; by state (15)		Title admission, but in table discharge Total death (10) and total of death??? Should probably be discharged
Top 10 causes of hosp deaths; absolute + % of total; by state (15)		Total of death should be 'other' (than top 10 causes)
Top 10 disease spec hosp death as % of disease cases; by state (15)		= Case fatality rates for top 10 causes of hosp deaths
Top 10 diseases hosp admission <5 absolute + % of total, for Sudan		Title admission, but in table discharge
Top 10 causes of hosp deaths <5 absolute + % of total, for Sudan		
Number of cancer cases by ICD code and % of total, for Sudan		No grouping
		Check graphs on page 98-103 - Arabic
Comparison over 5 years of nr of outpatients, in-patients, hosp deaths, % of outpatients and in-patients of all patients, % of death for disease of admission and		Malaria, diarrhoea, bilharziasis, dysentery, typhoid, viral hep, TB, Leishmaniasis, pneumonia, nutritional

nr of outpatients/1000 pop for major diseases, for Sudan		deficiency, anaemia How have these been chosen?
Nr of cases and deaths for ID (ICD-10) by state (15)		
Nr of outpatient visits / 1000 pop by state (15)		
		What is the fourth column from right?
Nr of total hosp admissions and discharges by state and for Sudan		Very large differences for some states
Average length of stay by state		How was this calculated?
Bed occupancy rate by state		How was this calculated?
% of hosp deaths by state		How was this calculated?
Bed turn over		How was this calculated?
Auxiliary medical services		
Nr of lab investigations by state (15) + Sudan for blood, urine, stool and other, by state (15)		
Nr of blood quantities for each bloodgroup received and distributed by bloodbanks, by state (15)		
Comparison over 3 years of nr of blood quantities for each bloodgroup received and distributed, for Sudan		
Nr of X-rays in hosp for different parts of body, for Sudan		Breakdown by type of picture and by size of film
Nr of surgical operations by sub-specialty, by state (15)		
Nr of fysiotherapy activities for different conditions, by state		
Nr of different dental procedures, by state		
Nr of activities by eye clinics, by state		Nr of ophthalmic consultations?
Nr of live and still births (f/m), by state		From registered deliveries in and outside health facilities Seem to be severely underreported outside Khartoum
Nr of normal, caesarian and forceps deliveries (single/twin), by state		No %
Nr of discharged patients (alive and dead) for each ICD-10 code by age group and gender, for Sudan		No totals for (sub)groups Page 131-167
		Page 168-197 Arabic only

General comments

- All data for the South are from 1980s – probably included for political reasons, but not informative – might give completely wrong impression. Advisable to leave out.
- Too many detailed tables, while it is not clear how all this ‘information’ can be used for planning, and by whom. Some illustrative graphs and pies.
- Many of these data should be used at the programme level, while there is no need to include them in detail in the annual FMoH report (for example the Hospital ICD-10 data)
- Very little analysis and hardly any summary narrative (some text in arabic)
- No breakdown by gender
- Nothing on response rates

Annex 3 Summary List of Main Indicators SHHS Sudan



Indicators	Value
I. General Information	
Number of interviewed households	24046
Number of interviewed women (15-49)	26923
Percentage of population less than 15 years	45
Percentage of population 65 years +	3.2
II. Housing Characteristics	
Percentage of households using piped supply for drinking water	35.1
Percentage of households using improved sanitation	31.4
Percentage of households using flush toilet connected to sewage system	0.6
III. Characteristics of Ever-Married Women Aged 15-49 Years	
Number of interviewed women	26923
Percentage of illiterate women	49.8
Percentage of women in polygamous unions	27.5
IV. Family Planning	
Percentage of married women who currently use contraception:	
- any method	7.6
- any modern method	5.7
V. Fertility Preferences	
Percentage of women who desire to have another child	32.5
Percentage of women who want to stop childbearing	63.9
VI. Maternal Care during the two years preceding the survey	
Percentage of mothers who did not receive prenatal care	24
Percentage of mothers who received iron tablets or syrup during pregnancy	40.8
Percentage of mothers who received Vitamin A after giving birth	18.5
Percentage of mothers who received at least one anti-tetanus shot	48.8
Percentage of births attended by qualified personnel	49.2

Maternal Mortality Ratio (for 100000 live births)	1107
VII. HIV/AIDS	
Percentage of women who know about AIDS	70.4
Percentage of women who know at least one method for preventing HIV/AIDS	40.2
Percentage of women who know that HIV/AIDS can be transmitted from mother to child	54
Percentage of women who know that HIV/AIDS can be transmitted from mother to child (all three ways)	26.4
VIII. Child Health	
Infant and child mortality during the five years preceding the survey (per 1000):	
- Neonatal mortality rate	41
- Infant mortality rate (0q 1)	81
- Under five mortality rate (0q 5)	112
Nutritional Status for children under five	
- stunted	31
- wasted	32.5
- underweight	14.8
Breastfeeding	
Exclusive breastfeeding rate (0-5 months)	33.7
Timely complementary feeding rate (6-9 months)	55.8
Salt Iodisation	
Iodised salt consumption	11.4
Child Morbidity (for children under five)	
Under fives with fever in the last two weeks preceding the survey	20.9
Under fives with diarrhea in the last two weeks preceding the survey	28.2
Under fives with diarrhea in the last two weeks preceding the survey who were treated by use of ORT	58.3
Immunization(for children aged 12-23 months)	
Tuberculosis immunization coverage	74.9
Polio immunization coverage	61.9
Immunization coverage for diphtheria, pertussis and tetanus (DPT)	54.8
Measles immunization coverage	66.4
Fully immunized children (children aged 12-23 months receiving BCG, DPT1-3, OPV1-3 and measles vaccines)	41.4
IX. Child Protection	
Birth Registration	
Percentage of registered births during the five years preceding the survey	32.6

Early Marriage	
Birth registration	12.4
Marriage before age 15	36
Orphanhood	
Children's living arrangements (not living with a biological parent)	6.9
Prevalence of orphans	9.7
Support to orphaned and vulnerable children	
School attendance of non-orphans (10-14 years)	53.5
School attendance of double orphans (10-14 years)	66.8
Double Orphan to non-orphan school attendance ratio	0.78
X. Education	
Net intake rate in primary education	29.5
Net attendance rate of primary school-age children	53.7
Gender parity index (primary school)	0.93
Secondary school net attendance rate	18.9
Children reaching grade five	90.3
Primary completion rate	19.4
Transition rate to secondary school	64.5
XI. Malaria	
Household availability of insecticide-treated nets (ITNs)	18.4
Under-fives sleeping under insecticide-treated nets	27.6
Antimalarial treatment (under-fives)	54.2
Antimalarial treatment -under-fives (within 24 hours of onset of symptoms)	2.6
XII. Circumcision	
Percentage of circumcised women	69.4
Percentage of women aged (15-49) who approve circumcision	44.9
Percentage of ever-married women aged (15-49) who approve of circumcision	50.9
Percentage of women who intend to circumcise their daughters	53.6
XIII. Food Security	
Percentage of households with poor food consumption	17.2
Percentage of households with lower limit of food consumption	82.2