Saving the Lives
of Mothers & Children
Rising to the Challenge

Sudan

I. Introduction

With land area of 1.8 million square kilometers, traversed by the Nile and its tributaries, Sudan shares its borders with South Sudan, Central African Republic, Chad, Libya, Egypt, Eritrea and Ethiopia. The country is composed of 17 states and 184 localities. It has access to the Red Sea with a long coastline. Its terrain is generally flat, with mountains in the north-east and west, while desert dominates the north. It has a population of 34 million[1], 88% of which is settled. The population is distributed as follows: 32.7% in urban areas, 67% in rural areas while 8% are nomads. Almost 6.9% of the population is internally displaced. The country has undergone a trend of increasing urbanization with natural disasters, civil conflict and poor conditions in rural areas being factors that have contributed to this.

Socio-demographic characteristics

The 34 million population is young: 45.6% of the population is younger than 15 years including 16.4% under 5 years[1]

Total estimated under-5 population (000) [2012][1]	5 440
Population growth rate [2008][2]	2.8%
Estimated number of births [2010]	----
Percentage of population that is rural[1]	58.0%
Birth registration coverage[3]	59.0%

[1] Sudan Central Bureau of Statistics (projections from Sudan Population census 2008 for 2012).
[2] Sudan Population Census 2008, Central Bureau of Statistics Khartoum
[3] Sudan Household Survey 2nd round (SHHS) 2010

There is no information available on the human development index and percent population below US$ 1.25/day PPP (purchasing power Parity)[2]on Sudan after separation of the South. Poverty remains widespread with Sudan and 46.5% of the population lives below the poverty line according to the national definition of poverty (US$ 1.5 per person/day). Those who are most affected by poverty are the rural dwellers, particularly women and internally displaced people.[3]

The country ranks seventh among the countries in the Eastern Mediterranean Region in terms of total fertility rate. It is also among the 10 countries in the Region with highest child and maternal mortality rates. Despite the efforts of the authorities, Sudan is falling behind the Millennium Development Goals (MDGs) which the international community fixed for 2015.

This document is meant to provide an analysis of the current status of maternal, newborn and child health in the country to highlight the reasons why the country is not on track to achieve the MDGs 4 and 5 if current trends continue, and suggests possible solutions and the way forward to accelerate the progress towards MDGs 4 and 5.

II. Maternal and child health situation analysis

II-1 Health system

The Sudan health system is a three-tier system: The federal level, the state and the localities levels with specific terms of reference for each[4]. Health services in Sudan are provided by the public sector, private sector both for profit and not for profit, sectors allied to health e.g. army, police, ministry of higher education etc. and traditional sector.

Within the public sector, service delivery is organized at primary, secondary and tertiary levels. Primary care is provided through 5084 health facilities (family health centres and family health units) and by

[1] Health Sector Strategic Plan 2012 – 2016: projections from Census 2008 for 2011
[2] Human Development Report, UNDP 2012
[3] African Development Bank & Central Bureau of Statistics, Sudan National Household Baseline survey 2009
[4] Health Sector Strategic Plan 2012 - 2016

community health workers (1508) and village midwives (12 253) at the community level.[5] Family health centres (FHCs) are staffed by a medical officer and paramedics (i.e. medical assistants, health visitor, nutrition educator and vaccinator) in urban areas, and by paramedics only in rural areas. Family health units (FHUs) are outpatient facilities providing basic primary health care services. These facilities are staffed by a medical assistant and/or a nurse.

The rural hospitals (locality hospital) are the first referral care with indoor and diagnostic facilities with at least one in each locality.

Within the public sector, curative services include the secondary and tertiary hospitals. The number of hospitals has increased to 416 hospitals with about 8.4 beds per 10,000 populations, while the overall hospital/population ratio is 1: 80 000.[6]

Excluding Khartoum, West Darfur and Sennar states, less than 30% of primary health care facilities provide the primary health care essential service package. Fourteen percent of primary care facilities are not fully functional mainly due to staff shortages or poor physical infrastructure[7] Physical accessibility to primary health care facilities varies substantially between States, with a national average of 1:6816 compared to the planned 1:5000 population.

The private for-profit sector has expanded, focusing mainly on curative care and is concentrated in urban areas, especially Khartoum and Gezira States.

The not-for-profit sector, i.e. nongovernmental organizations and faith-based organizations, is mainly concentrated in Darfur, the war affected areas of Red Sea, Kassala, Blue Nile and South Kordofan States, and to a lesser degree in Khartoum in camps for internally displaced people.

Fourteen percent of the population has no access to health facilities within 5 km. But, this figure masks the huge disparity between states ranging between 0.1% with no access in the Northern State compared to 42% in West Darfur State[8].

II-2 Maternal, neonatal and child health policies and strategies

Health of women and children is the key to progress on all development goals; investing more in their health will help in building peaceful, productive societies and reduce poverty. With this vision, the country has adopted a number of policies and strategies in favour of maternal and child health including:

- national health sector strategic plan 2012-2016 (costed).
- primary health care service universal coverage 2012-2016 (costed)
- reproductive health strategy (2009)and policy(2010)
- road map for reduction of maternal and newborn mortality 2010-2015 (costed)
- national immunization policy 2007 ,updated 2012
- national nutrition policy 2008
- national implementation plan for MNCH (Saving the lives of mothers and children, Sudan) (costed)
- International Code of Marketing of Breast-Milk Substitutes 2009
- national strategy for scaling up of midwifery 2010
- free-of-charge treatment for under-5 children and free-of-charge caesarean section (Presidential decree 2009)
- expansion of social health insurance for poor families by Ministry of Social Welfare
- Child Act 2010
- maternity protection in accordance with Convention 183: 1997 Labour Code including an article on maternity leave and Presidential decree on extension of maternity leave 2009.

[5] PHC mapping 2011
[6] NHHSP 2012-2016
[7] PHC mapping 2011
[8] PHC mapping report 2011

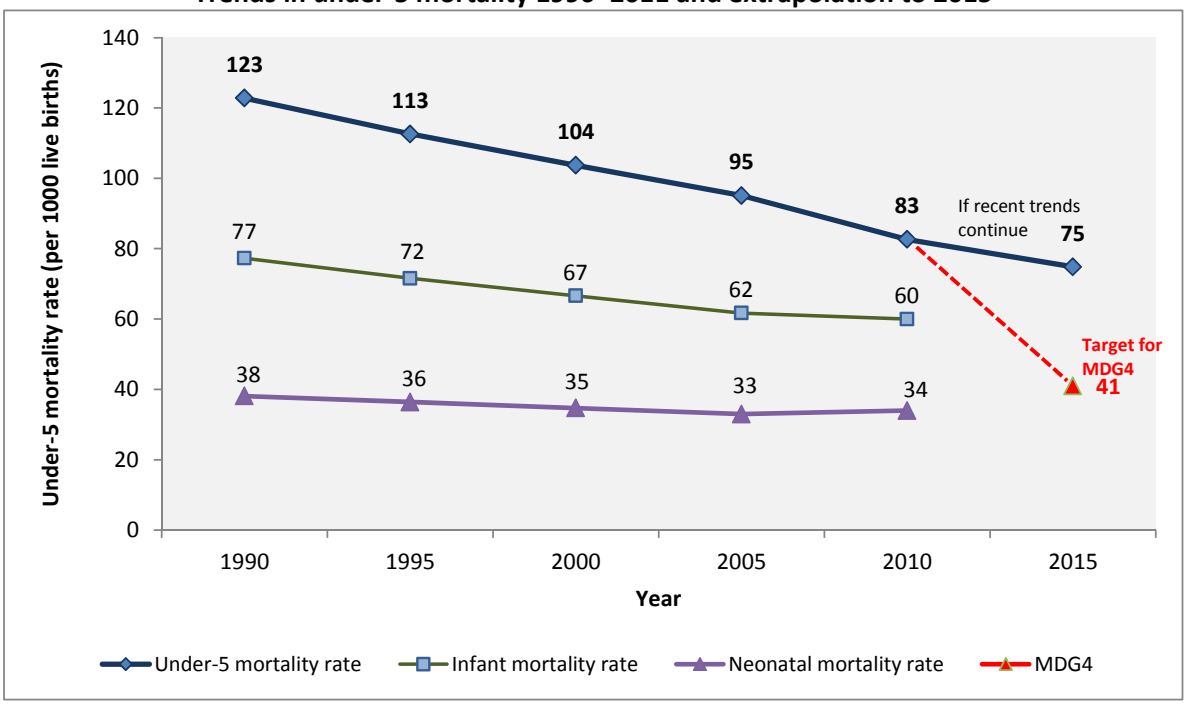
Despite the adoption of these policies, strategies and interventions, some of them are inadequately implemented such as the International Code of Marketing of Breast-Milk Substitutes and notification of maternal deaths.

II-3 Maternal, neonatal and child health (MNCH) current status

II-3.1 Maternal, newborn and child mortality

There has been a significant decrease in the under-5 mortality rate (U5MR) in Sudan over the years. U5MR declined by 33% between 1990 and 2010. The neonatal mortality rate has declined by 11% in the same period.

Trends in under-5 mortality 1990–2011 and extrapolation to 2015

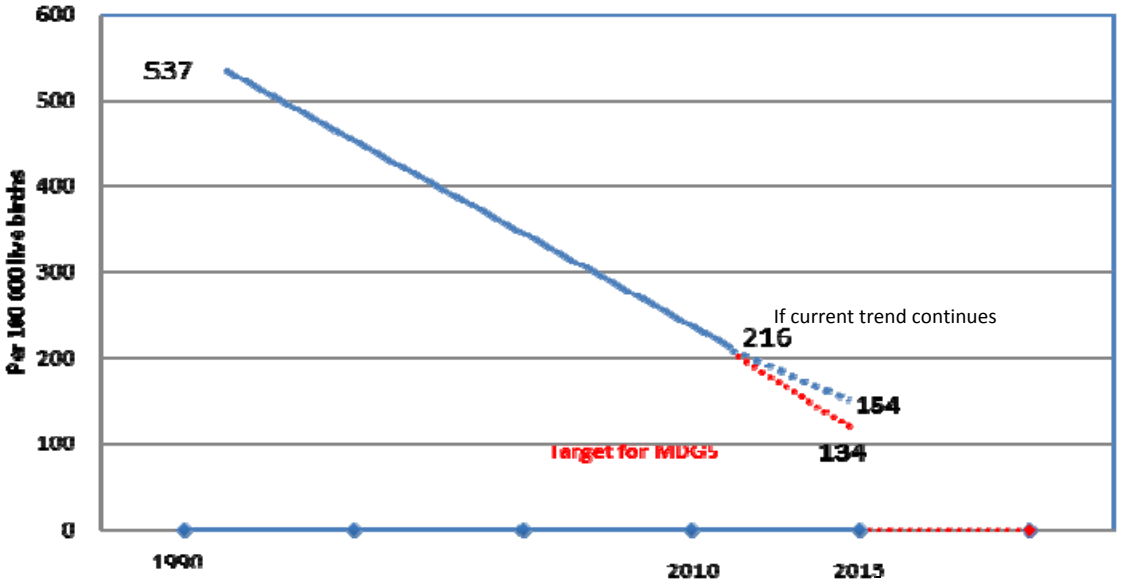


Source: calculated based on data from United Nations Inter-agency group for child mortality estimation (IGME)- *Levels and Trends in Child Mortality, Report 2012* - WHO / UNICEF / World Bank/ UNDP and independent experts. These figures are computed by the United Nations agencies and are not necessarily the official statistics of the Member State, which may use alternative methods of estimation of mortality. All Member States have undergone an official country consultation on these estimations.
Data for 2010 values are provisional and adjusted data from SHHS, Sudan 2010

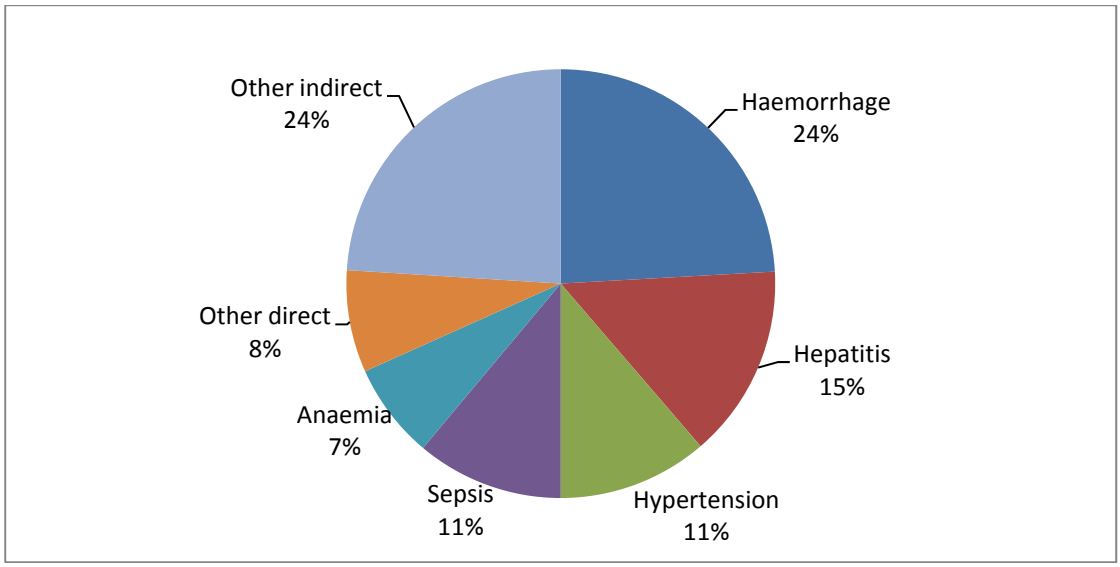
In Sudan, most deaths (58%) occur in the post-neonatal period, while 42% of under-5 deaths occur in the neonatal period. Equal focus should be given to addressing deaths in both periods of life. Furthermore, according to the Sudan household survey of 2010 the under-5 mortality rate was very high in both urban and rural areas. According to Federal Ministry of Health annual statistical reports, septicaemia, pneumonia, diarrhoea and malnutrition and malaria are the major causes of under-5 deaths in hospitals.

According to data available in the country (DHS 1990 and SHHS Sudan 2010) Sudan has demonstrated a 60% decrease in maternal mortality per 100 000 live births from 537 in 1990 to 216 in 2010 over the past two decades

Trend in maternal mortality between 1990 and 2010 and extrapolation to 2015



The main direct causes of maternal death in Sudan are haemorrhage, pregnancy-induced hypertension, obstructed labour, infection and complications of unsafe abortion, while anaemia, malaria and hepatitis contribute early.



Causes of maternal death

Source: MDR Report 2011

II-3.2 Maternal, newborn and child morbidity

Malnutrition among under-5 children is one of the main health problems in Sudan and presents a high risk for mortality. About one in three children under 5 years is stunted (35%) and underweight (32%), while 16% of under-5 children are wasted, according to the SHHS 2010. The majority of pregnant women suffer from anaemia which also represents a high risk for mortality.

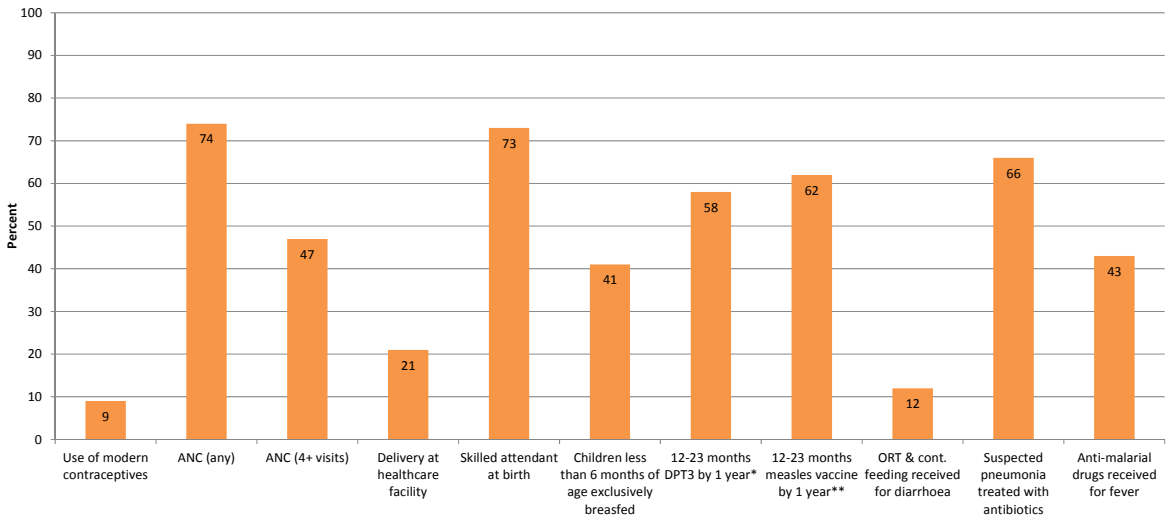
Maternal:	
Anaemia in pregnant women (2010)[1]	---
Newborn:	
Low birth weight in newborns	----
Child:	
Children under 5 with suspected pneumonia (2010)[1]	19.0%
Children under 5 with diarrhoea (2010)[1]	27.0%

Nutritional status in children under 5 (2010 data)[1]	
Stunting	35%
Wasting	16%
Underweight	32%

[1]SHHS2, 2010 Summary report.

Fistula, uterine prolapse, reproductive tract infections and infertility are among the common morbidities in pregnant women[2].

II-3.3 Coverage indicators across the continuum of care (SHHS 2010)

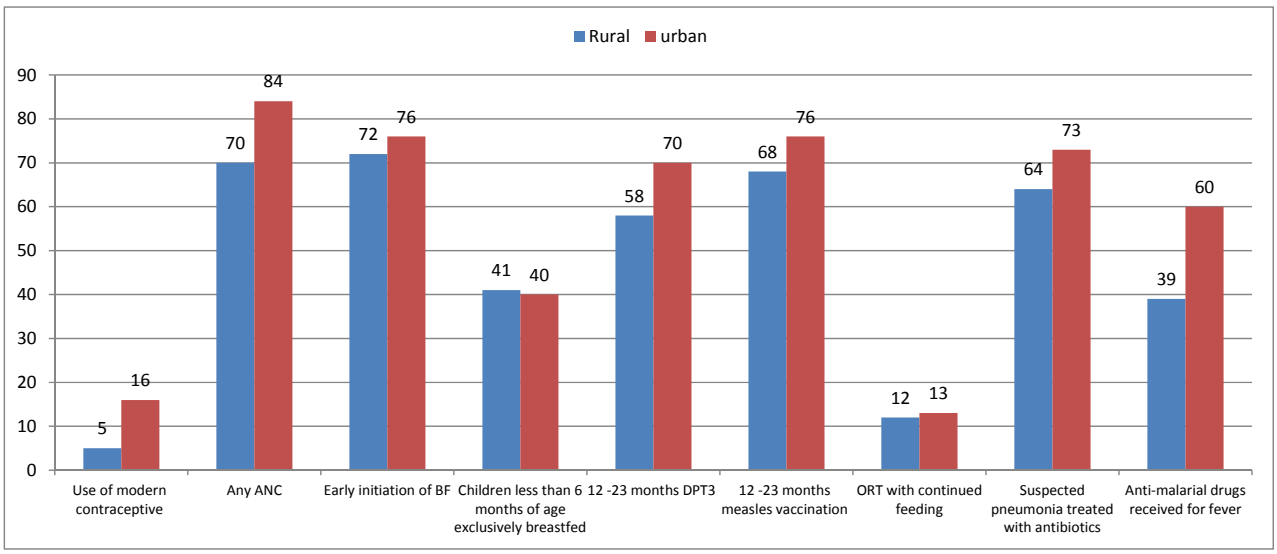


Pre-pregnancy | Pregnancy | Birth | Childhood

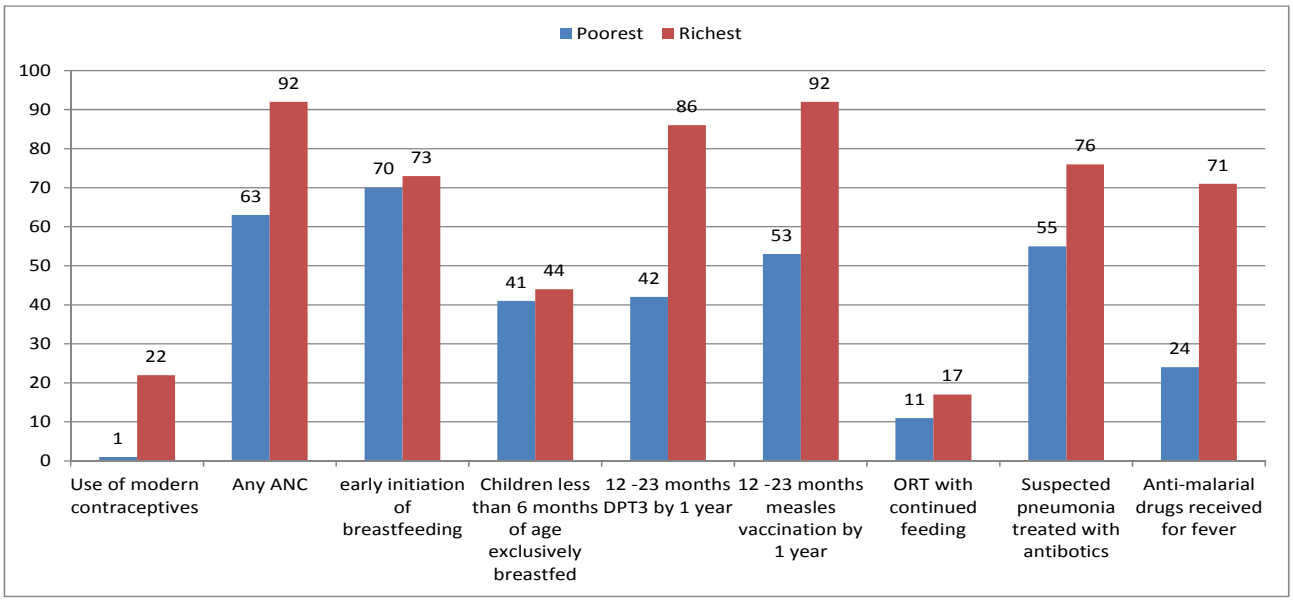
In the most recent SHHS, 2010, coverage of maternal, neonatal and child health interventions in the continuum of care varied, ranging from 9% for use of modern contraceptives to 74% for pregnant women receiving any antenatal care.

II-3.4 Inequities in coverage of indicators across the continuum of care

Sudan Household Survey 2010 has shown inequity in coverage of most of the interventions where it is, in general, higher in urban than rural areas. The use of modern contraceptive is 3-fold higher in urban than rural areas.



There are also clear inequities between the poorest and richest households. The coverage of interventions in general is higher in the richest households than the poorest ones. It reaches a difference of 22 fold higher in richest households than the poorest households in coverage of the use of modern contraceptives, while children who received antimalarial drugs for fever are three times higher in the richest households than those in the poorest.



II-4 Towards MDGs 4 and 5

Sudan has made efforts to respond to the existing MNCH situation in the country. These include:

- a high level of political commitment to maternal and child health;
- signatory to the MDGs;
- maternal and child health as the main components of the joint plans between the Federal Ministry of Health with United Nations organizations (WHO, UNICEF and UNFPA);
- adoption and implementation of a package of interventions targeting the main causes of child and maternal deaths based on the global cost-effective and evidence-based interventions, delivered in an integrated way. Research has shown that those interventions have the highest impact on mortality.

II-4.1 Child health

A set of interventions targeting the main causes of under-5 mortality in Sudan has been packaged and implemented under the umbrella of the Integrated Management of Childhood Illness Strategy (IMCI). This strategy addresses not only the main causes of under-5 mortality but also the key health promotive and preventive elements. The three components of the IMCI strategy aim at improving the quality of child health care services at primary health care level, the health system-related elements and child health-related family and community practices.

Package of child health key cost-effective interventions implemented at primary health care level

- Case management of neonatal sepsis, pneumonia, diarrhoea and jaundice.
- Child case management:
  - pneumonia case management and prevention
  - diarrhoea case management and prevention
  - malaria case management and prevention
  - malnutrition case management
- Early initiation of breastfeeding
- Promotion of exclusive breastfeeding
- Promotion of sound complementary feeding
- Improving care seeking
- Increasing immunization coverage
- Vitamin A supplementation.

Different implementation approaches were adopted to overcome the problem of the access to primary health care:

- at primary health care facilities: implementation coverage at 40% of primary health care facilities was achieved;
- at community level through the community health workers.

In general, the implementation coverage of these interventions is still low which has limited the access to them and limited the reduction in under-5 mortality. The high turnover of trained staff further reduces the implementation coverage.

To address the problem of access to primary health care services, the country adopted a policy of using community health workers to provide community case management and counselling. Courses for community health workers have been established within the curricula of the Academy of Health Sciences and state level medical assistant schools. The regional package for child health management by community health workers has been adopted as the community health workers' curriculum. However, community case management for children has not yet started.

Sudan has focused on the immunization programme as a major intervention to address causes of under-5 mortality and morbidity. The country succeeded in reaching routine coverage of 93% with Penta3 in 2011 although the coverage is still less than 80% in 10% of the districts (a large outbreak of diphtheria was reported from Darfur in 2012). Routine coverage of measles-containing vaccine (MCV1) increased from 80% in 2007 to 87% in 2011. Routine second dose of measles-containing vaccine was introduced in 2012.

In order to strengthen and further scale up the routine coverage, follow-up supplementary immunization activities targeting children below 5 years of age are implemented every 3-4 years. However, a large outbreak of measles has been ongoing since 2011 which is affecting a wide age range. The main reasons for this outbreak were the delayed implementation of the follow-up vaccination campaign and sub-optimum routine measles vaccination coverage.

With GAVI Alliance support and government commitment to co-financing, Sudan successfully introduced Hib vaccine in 2008, rotavirus vaccine in 2011 and pneumococcal vaccine is expected to be introduced in 2013. This commendable success in introduction of the new life-saving vaccines will have significant impact on reduction of under-5 mortality caused by pneumonia and diarrhoea and consequently will have a major input in accelerating progress towards MDG4.

II-4.2 Maternal health

The road map for reducing maternal and newborn mortality advocates for: the four pillars of safe motherhood; 1) family planning, 2) focused antenatal care, 3) skilled birth attendance (skilled health professional – midwife – and commodities, drugs and equipment, and 4) emergency obstetric and neonatal care.

These services are delivered through the integrated primary health care package. The delivery of services is accompanied by awareness-raising efforts through community heath promoters, voluntary midwives (VMWs) at community level and health cadres at facility level.

Sudan has also adopted several interventions for improving maternal and neonatal health. These include:

- increase of VMW production: production increased from 7575 in 2000 to 12 253 VMWs in 2011;[9]
- improvement of the quality of VMW training: a midwifery scale-up strategy was developed in 2010; a two-year midwifery technician programme has been initiated in the midwifery schools across the country, aiming at improving quality of service provision; a four year BSc midwifery programme has been initiated at the national level; basic obstetric care in-service training modules were reviewed and updated;[10]
- increasing the maternal and child health service coverage: to enhance coverage, medical assistants are trained in maternal and child health services through the integrated primary health care package. At the locality (rural) hospitals medical officers are trained on emergency obstetric and neonatal care;[11];
- establishment of national maternal death review (MDR): a maternal death review system was established in 2009. However the system needs a lot of strengthening;
- prevention of mother-to-child transmission of HIV through establishment of PMTCT centres.

II-4.3 Can Sudan reach the targets set by MDG4 and 5 by 2015?

The average annual rate of reduction (AARR) of under-5 mortality between 1990 and 2011 was 2%. With this reduction rate, the expected mortality rate by 2015 would be75 per thousand live births which is almost double the rate targeted by MDG4 which is 41 per 1000 live births. In order to achieve MDG4, an AARR of 14% between 2011 and 2015 would be required, which is a rather high rate. Due to the slow decline and marked disparities in basic indicators of child health, Sudan is unlikely to achieve MDG4.

The average annual reduction rate of maternal mortality was 3% between 1990 and 2010 which has led to 60% reduction. However, given the challenges facing maternal health, MDG5 might not be easy to attain. The average annual percentage change in maternal mortality is -1.6% between 1990 and 2010. With the current pace of reduction of maternal deaths, Sudan is most unlikely to achieve MDG5.

III. Feasibility analysis

- Unlike other countries with similar indicators, few donors have showed an interest in investing in maternal and child health in Sudan.
- Sudan is committed to achieving MDGs 4 and 5, and this is evident in prioritizing the expansion of primary health care services. This prioritization requires a huge investment in expanding the establishment of infrastructure to ensure access by women and children to quality primary health care services. A mapping was conducted for primary health care facilities and locations and needs for new facilities were identified, however not all required funds were allocated.
- Community-based interventions, including community case management can contribute to increasing services, although it requires a long time to reach wide coverage. Adequate financial support is

[9] PHC mapping 2011
[10] Road map for reducing maternal and newborn mortality in Sudan 2010-2015
[11] Road map for reducing maternal and newborn mortality in Sudan 2010-2015

needed to provide required supplies and supervision to ensure good quality. Moreover, this approach requires a policy decision before implementation.

- Substantial investments are required to strengthen key related health system elements, in particular the serious shortage of essential medicines for mothers and children, non-functioning health information system, and weak supervisory system, which affect both the quality and the scaling up of service delivery.
- Inadequate numbers of qualified human resources and the extremely high turnover of trained staff do not enable implementation of good quality services to mothers and children. Many health facilities are run by health workers and not physicians, and investment is needed in building their capacity.
- The estimated level of scaling up requires substantial funds. Advocacy, strong collaboration and coordination among the different partners will ensure the flow of funds to the country.
- Maintaining the high national coverage and improving coverage in low-performing districts (those with Penta3 and measles coverage of <80%) requires an additional effort through implementation of the Reaching Every District (RED) approach.
- Sustaining the timely co-financing of the new vaccines to avoid interruption of GAVI Alliance support requires additional effort by the government.
- Lack of community awareness in relation to maternal and child health is a major factor that affects the progress in improving maternal and child health indicators.

IV. Is it achievable?

With the current trends of reduction in mortality, funds and human resources allocation, Sudan is most unlikely to achieve MDG4 and 5. However, if the country makes a high-level commitment and concerted efforts to accelerate the implementation of the cost effective evidence based packages of interventions in full collaboration with partners allocating the required human and financial resources, the country will be able to accelerate progress towards MDGs and more lives of mothers and children will be saved.

V. Conclusions: key drivers

With the active support of the international community, the country should aim at accelerating the pace of reduction of under-5 and maternal deaths by scaling up interventions in light of the coverage target set by MNCH programmes at the Ministry of Health. The accelerated pace of reduction of mortality will bring the country closer to the set MDGs targets and will more lives of mothers and children will be saved.

This acceleration requires:

- Sustaining the high level of political commitment to child and maternal health considering it at the top of the country's priorities and as a major indicator of national development.
- Putting the related policies and strategies into effect.
- Providing the required financial resources to implement the national MNCH plans.
- Strengthening partnerships and coordination among concerned stakeholders to contribute to one national plan for MNCH and to achieving the national related targets.
- Focusing on populations most in need: geographic, economic and social.
- Moving towards universal access to primary health care services by expanding the network of primary health care facilities and adopting innovative approaches to accelerate the provision of MNCH services at community level.
- Providing high quality health services to children and mothers.
- Building capacities to produce an adequate qualified workforce to meet the service needs of the population (in-service and basic education).
- Ensuring adequate numbers of qualified workforce.

- Strengthening the key health systems elements such as the health information system and supervision.
- Strengthening the monitoring and evaluation system.
- Ensuring the continued supply and availability of medicines and vaccines as key elements to reduce mortality.