



Republic of Sudan
Water, Sanitation and Hygiene Sector
National Strategic Plan
(2012 – 2016)



December 2011

Supported by
unicef 

Acknowledgements

The 5 year National Strategic Plan (2012-2016) for the Water, Sanitation and Hygiene Sector in Sudan represents a major step forward towards sustainable delivery of equitable water, sanitation and hygiene services to Sudan's citizens. It is the result of a participatory and integrated multi-sectoral planning effort that also strengthened the Sector Information Management System.

This Plan has been elaborated over a period of about 18 months. It was initiated by Public Water Corporation (PWC) of the Ministry of Water Resources and Irrigation (MWRI).

At the state level, in all 15 states, multi-departmental teams have been established to collect data and facilitate the formulation of the planning process.

Support was provided by the UNICEF Water, Sanitation and Hygiene Programme - a long term supporter of the Water, Sanitation and Hygiene Sector in Sudan - and the IRC International Water and Sanitation Centre (IRC), contracted by UNICEF Programme to provide conceptual and methodological support and facilitation to the strategic planning process.

The National Support Team (NST), based at the Public Water Corporation (PWC) in Khartoum, provided overall coordination and support to the initiative at both national level and at the level of the 15 states.

This technical work would not be possible without the political endorsement and support provided by the various Government institutions, sector stakeholders and decision makers at national and state level.

In terms of guidance, funds and logistics, the PWC and UNICEF's Water, Sanitation and Hygiene Programme have provided tremendous assistance to ensure the objective of the exercise.

Ministerial Foreword

The National Strategic Plan (2012-2016) sets out the Government's plans for the Water, Sanitation and Hygiene Sector for the coming five years. It also establishes our vision for each of the major areas of the sector and actions required to realize that vision.

The Water, Sanitation and Hygiene Sector National Strategic Plan looks ahead to 2016 and describes the water supply and sanitation systems we want to see, and the practical steps that we will take to make certain that safe water and adequate sanitary facilities are available for the rural and urban population as well as for other purposes.

I would like to emphasize that improved water supply, adequate sanitation and hygiene are crucial for the sustainable development and we need to value and use them more wisely and all stakeholders at all levels should take their responsibilities for promoting and protecting these unique essentials.

Drinking water, safe sanitation and hygiene remain the most essential and the highest priority issue for our people in the country and therefore, I would like to urge all concerned ministries to take the lead and take the necessary actions to implement this plan accordingly within the time frame.

A genuine effort is also required from the relevant government institutions, communities, Localities (local government) to join hands and collectively address the sector issues at national and state level.

Strong political will and commitment at all levels of government is required for the realization of this plan based on the recently formulated national Water, Sanitation and Hygiene sector policy. Just as the Sector Policy, the Strategic Plan will be subject to annual review and update to take into account current national and state level developments regarding the overall status of water supply and sanitation in Sudan.

I would like to declare that this strategic plan will guide the Water, Sanitation and Hygiene Sector for the period 2012–2016. I am confident that we have sufficient political will and determination to succeed in achieving the sector objectives according to the established time frame.

Finally I would like to thank all those who supported the formulation of the National and the States Strategic Plans, particularly the State Governments, Public Water Corporation, National Support team, UNICEF; and IRC International Water and Sanitation Centre.

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December, 2011

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References relevant to this document

Websites

Title	Location
Government of Republic of Sudan	http://www.sudan.gov.sd/en/
PWC-WES unit website	http://wes-sudan.org/
Sudan Millennium Development Goals (2008)	http://www.sd.undp.org/mdg_fact.htm
WASH Sudan blog and related sites	http://washesudan.wordpress.com/

Documents

Title	Author / Agency
Strategic Plans for 15 states in Sudan for the period 2010-2016	PWC /SWC
National 5 year Plan 2007-2011	National Council for Strategic Planning
Twenty Five Year National Strategy 2007-2031	National Council for Strategic Planning
Draft National Water, Sanitation and Hygiene Sector Policy	Government of Sudan
Water supply and sanitation in Northern Sudan: turning finance into services for 2015 and beyond	AMCOW Country Status Overview
Sudan Household and Health Survey (SHHS) 2006	Federal Ministry of Health
5 th Sudan Population and Housing Census 2008	CBS
Sudan Household and Health Survey (SHHS) 2010	Federal Ministry of Health

Introduction

The 5 year National Strategic Plan (2012-2016) for the Water, Sanitation and Hygiene Sector represents a major step forward in participatory and integrated multi-sectoral planning at State and National levels towards sustainable, adequate and equitable water and sanitation services to the entire population of Sudan.

This plan bases itself on a thorough participative situation analysis, resulting in a sector information management process as a basis for strategic objectives oriented planning and operationalization into a 5 year indicative Strategic Water, Sanitation and Hygiene Sector Plan 2012-2016.

This 5 year national strategic plan for the sector in Sudan is an indicative plan consistent with the National Water, Sanitation and Hygiene Sector Policy, the launched Five-Year Development Plan (2012-2016) and the Quarter Century Strategic Plan (2007-2031). It provides guidance for the continued enhancement of the sector services provided to all citizens in the country. This national plan is based on and provides an overall framework for the 15 states Water, Sanitation and Hygiene Sector plans.

The plan does not cater for only construction of new and maintenance of existing infrastructure, but considers strengthening of institutional, organizational and human capacities in the sector to ensure improved and sustained Water, Sanitation and Hygiene services to the Sudanese people.

This national overarching sector plan is meant to complement and highlight the more detailed local government based state level Water, Sanitation and Hygiene Sector plans. This is in particular true for the national plan components that aim to strengthen sector coordination and management through sector learning and sharing, and capacity development.

The first part of this document provides the context and the strategic framework, including vision, mission and objectives. The second part presents the actual indicative 5 year plan; indicative because at the publication of the plan, not all proposed projects have secured funding.

This document serves as a public relations and advocacy document for funding agencies to assist the country in securing resources for (clusters of) projects included in the plan.

Budgets in this document do not include the regular institutional budgets of PWC and SWCs, but refer only to project and activity related budgets.

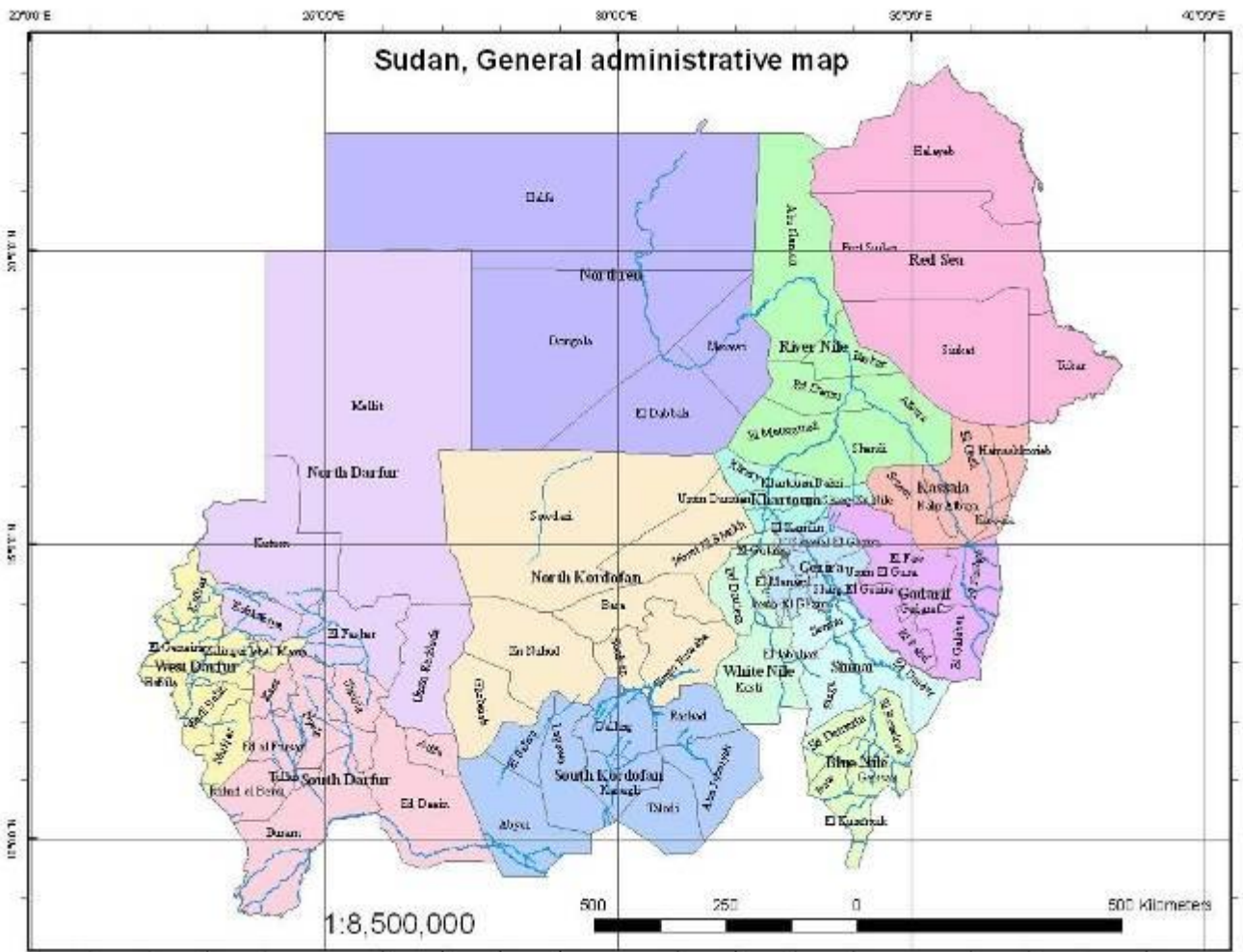


Figure 1 Administrative boundaries of Sudan

Table of Contents

Acknowledgements.....	2
Ministerial Foreword	3
Contacts about this plan	4
References relevant to this document	5
Introduction	6
Table of Contents.....	8
List of figures and tables	11
List of figures and maps	12
List of acronyms and abbreviations	13
Purpose and nature of this plan.....	14
The purpose of the plan	14
An indicative Water, Sanitation and Hygiene Sector plan until end 2016	14
Advocacy for support.....	14
Sector management instrument.....	14
Sector coordination and collaboration	14
The nature of this plan	14
Context of this plan.....	15
Profile of the Republic of Sudan	16
The Water, Sanitation and Hygiene Sector, current situation.....	18
Economic, Social and Political Development	18
Political Context	18
Socio-Economic context.....	18
Health Related Water, Sanitation and Hygiene Sector Situation	18
Overview of Sector Organisation	19
National Level	19
State Level.....	21
Mahalia Level	22
Community Level	22
NGOs and Private Sector.....	23
Water Resources in Sudan	23
Rain	23
River Nile.....	23
Dams	24
Tributaries of the River Nile.....	24
Seasonal Valleys.....	24
Groundwater.....	24
Nubian groundwater basin	24
Younger sediment basins.....	25
Reservoirs of base rocks	25
Coverage and Access to Water, Sanitation and Hygiene Sector services.....	27
Technology Options	31
Appropriate Water, Sanitation and Hygiene Sector technologies	31
Water, Sanitation and Hygiene services at public institutions.....	32
Capacity Development and Innovation	32
Natural Disasters and Emergency Operations	33

Financing of the Sector.....	33
Financial and administrative mechanisms managed by PWC	33
WASH Sector Vision and principles.....	35
Vision	35
Mission for Water, Sanitation and Hygiene Sector Development.....	35
Guiding principles	36
Rural Sanitation and Hygiene Sector approach	36
Urban Water, Sanitation and Hygiene approach	36
Urban Water, Sanitation and Hygiene in Sudan	36
Sector funding and cost sharing.....	37
Roles and responsibilities.....	37
Water Resources principles.....	37
Water service provision principles	38
Sanitation & Hygiene service provision principles.....	38
Additional principles in Water, Sanitation and Hygiene Sector.....	39
National Water, Sanitation and Hygiene Sector Plan 2012-2016 components.....	40
National Water, Sanitation and Hygiene Sector plan components	40
Coherence with State Water, Sanitation and Hygiene Sector Plans.....	40
Logical Framework.....	42
Component 1: Policy Review, Development and Sector Review.....	44
Rationale for component 1	44
Water, Sanitation and Hygiene Sector guided by IWRM	44
Water Resources Policy and Guidelines.....	44
Water, Sanitation and Hygiene Sector Policy and Guidelines	44
Facilitating the process of sector regulation.....	45
Drinking water standards.....	45
Choice of construction materials	45
Sector reform	45
National level	46
State level.....	46
Plan Estimates.....	47
Component 2: Sector coordination, Planning, Implementation and Communication.....	52
Horizontal coordination	52
Vertical coordination.....	52
Water, Sanitation and Hygiene Sector coordination	53
Background	53
The role of these coordination forums.....	53
The Planning Cycle	58
Planning process recommendations	58
Implementation of National Water, Sanitation and Hygiene Sector Plan of Sudan.....	59
National WASH Sector Plan implementation	59
State WASH Sector Plan implementation	59
Communication strategy.....	59
Component 3: Capacity Development and Innovation	61
Rationale for component 3	61
Towards sector capacity development and innovation.....	61
A capacity development strategy.....	62
Training programmes	63

International networking on innovation	63
Research strategy	63
Component 4: Monitoring and Sector Learning	69
The rationale for component 4	69
Planning for monitoring and sector learning	69
Objective 1	69
Objective 2	70
Objective 3	70
Objective 4	70
Objective 5	70
A National Water, Sanitation and Hygiene Sector Resource Centre	70
Monitoring framework.....	70
Development of MIS	71
Component 5: Water, Sanitation and Hygiene Sector funding mechanisms	74
National Water, Sanitation and Hygiene Sector Policy guidance	74
Facilitating and securing investments in the Water, Sanitation and Hygiene Sector.....	74
Cost factors in developing the provision of Water, Sanitation and Hygiene services.....	75
International procurement and contracting	76
Component 6: National and external funded projects	77
Cost factors in developing the provision of Water, Sanitation and Hygiene services.....	77
Capital Investment (CAPEX) Water and Sanitation Services.....	78
Recurrent Costs of Water and Sanitation Services	78
Capital Investments of Support Services	78
Recurrent Costs of Support Services	79
Component 6a Estimates funded from national resources.....	80
Component 6b Estimates of foreign funded investment	80
Summary Estimates Sector Plan 2011-2016	85
Introduction.....	85
Consolidated national planning estimates.....	85
Consolidated State Level Estimates	86
States WASH Sector Main Challenges	86
Total of all States Strategic Plans 2011-2016	86
Specific Objectives	86
Expected Results at State Levels	86
Rural water services.....	86
Urban water services	87
Sanitation and Hygiene	87
Emergency Preparedness and Response	87
Institutional Development and Capacity Building	87
State sector plan estimates for the 2011-2016 Strategic Plan	87
Annex 1 Principles framework sustainable water services delivery	106
Annex 2 Life-cycle cost for water services	107
Annex 3 States 2011-2016 Strategic Plans Components	108

List of figures and tables

Table 1	Fluctuations in levels of water services over 20 years	19
Table 2	Fluctuations in levels of sanitation services over 20 years	19
Table 3	PWC human resources and grades (officials).....	21
Table 4	Access to water and sanitation in Sudan.....	28
Table 5	Water access in States (2008 Census)	29
Table 6	Access to sanitation in States (2010 estimates)	30
Table 7	Population and water related health statistics	30
Table 8	State WASH sector plan components.....	41
Table 9	Logical Framework of the WASH sector strategy 2011-2016	42
Table 10	Programmes, projects, activities	48
Table 11	Gantt chart scheduling over 2010-2016 planning period	50
Table 12	Projects 2012-2016 plan.....	56
Table 13	National Capacity Development (PWC & States)	64
Table 14	Gantt Chart Capacity Development (SWC, PWC) 2011-2016.....	65
Table 15	Capacity Development and Innovation (PWC Training Centre)	67
Table 16	Gantt Chart Scheduling PWC Training Centre 2010-2016.....	68
Table 17	Monitoring and sector learning.....	72
Table 18	Gantt Chart Monitoring and Sector Learning 2010-2016	73
Table 19	CAPEX in WASH sector 2012-2016	78
Table 20	OPEX in WASH sector 2012-2016	78
Table 21	CapManEx in WASH sector 2012-2016.....	79
Table 22	ExpDS in WASH sector 2012-2016.....	79
Table 23	ExpIDS in WASH sector 2012-2016.....	80
Table 24	National funded project 2012-2016 (Component 6a).....	81
Table 25	Foreign funded projects and programmes (Component 6b)	83
Table 26	National Plan Summary Investment Estimates by component.....	88
Table 27	National Plan Total Investment Estimates by states	89
Table 28	National level summary Investment Estimates by component	90
Table 29	White Nile Plan Summary Investment Estimates by component	91
Table 30	South Kordofan Plan Summary Investment Estimates by component	92
Table 31	Sennar Plan Summary Investment Estimates by component	93
Table 32	River Nile Plan Summary Investment Estimates by component.....	94
Table 33	Red Sea Plan Summary Investment Estimates by component.....	95
Table 34	West Darfur Plan Summary Investment Estimates by component.....	96
Table 35	South Darfur Plan Summary Investment Estimates by component.....	97
Table 36	North Darfur Plan Summary Investment Estimates by component	98
Table 37	Gezira Plan Summary Investment Estimates by component	99
Table 38	Gedaref Plan Summary Investment Estimates by component	100
Table 39	Kordofan North Plan Summary Investment Estimates by component	101
Table 40	Kassala Plan Summary Investment Estimates by component.....	102
Table 41	Blue Nile Plan Summary Investment Estimates by component	103
Table 42	Northern Plan Summary Investment Estimates by component	104
Table 43	Khartoum Plan Summary Investment Estimates by component	105

List of figures and maps

Figure 1	Administrative boundaries of Sudan	7
Figure 2	Settlements in Sudan.....	16
Figure 3	Population in Sudan.....	17
Figure 4	Water, Sanitation and Hygiene Sector structure (in 2010)	20
Figure 5	Hydro-geological map 2006.....	26
Figure 6	Urban and rural access to WASH services (2008)	31
Figure 7	Proposed WASH sector coordination structure	55

List of acronyms and abbreviations

AWD	Acute Watery Diarrhoea
CAPEX	Capital Expenditures
CBS	Central Bureau of Statistics
CBO	Community Based Organization
CPA	Comprehensive Peace Agreement
DG	Director General
ExpDS	Expenditures for Direct Support
ExpIDS	Expenditures for Indirect Support
FAO	Food and Agriculture Organization
GoS	Government of Sudan
HAC	Humanitarian Aid Commission
HH	Household
HP	Hand Pump
IDPs	Internally Displaced People
lpcd	Litres Per Capita Per Day
IWRM	Integrated Water Resources Management
Mahalia	Lowest tier of government, equivalent to municipality or locality
MoE	Ministry of Education
MoF	Ministry of Finance
MoH	Ministry of Health
MWRI	Ministry of Water Resources and Irrigation
NGO	None Governmental Organization
NWC	National Water Corporation
O&M	Operation and Maintenance
ODF	Open Defecation Free
OPEX	Operational Expenditures
OTP	Outdoor Therapeutic Program
PWC	Public Water Corporation
PWSC	Public Water and Sanitation Corporation (proposed)
RWC	Rural Water Corporation
SC-US	Save the Children - United States
SDG	Sudanese Pound (3 SDG = 1 US\$)
SHHS	Sudan Household and Health Survey
SRC	Sudanese Red Crescent
SWC	State Water Corporation
UNDP	United Nation Development Program
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNMIS	United Nation Mission In Sudan
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNOPS	United Nations Office for Services
WASH	Water Sanitation and Hygiene
WATSAN	Water and Sanitation
WES	Water and Environmental Sanitation
WFP	World Food Program
WHO	World Health Organization
WV	World Vision
WY	Water Yard

Purpose and nature of this plan

The purpose of the plan

The National Strategic Plan for the Water, Sanitation and Hygiene Sector serves several purposes:

An indicative Water, Sanitation and Hygiene Sector plan until end 2016

It provides a comprehensive and consistent five year outlook especially on how the sector at the federal level intends to improve on the overall management of the sector services provision to the citizens of Sudan, based on analysis of key issues and a set of comprehensive Water, Sanitation and Hygiene Sector objectives.

Advocacy for support

The plan, and its summary, serves for advocacy and awareness raising about the need for national and external support and a justification for whenever project proposals are developed or opportunities for funding arise.

Sector management instrument

The document serves as a base for improved sector management and monitoring, based on formulated objectives and indicators.

Sector coordination and collaboration

This plan has been developed by a multi-stakeholder and multi-sectoral core planning team at PWC in consultation with other departments, and endorsed by the line ministries. It provides an overview of all federal level interventions to guide and support the development of the Water, Sanitation and Hygiene Sector at federal and state levels. It therefore provides a good overview of key areas to strengthen and facilitate efficient and effective sector coordination and collaboration.

The nature of this plan

The 2012-2016 Water, Sanitation and Hygiene Sector Strategic Plan has the following characteristics:

- It is guided by the most recent Water, Sanitation and Hygiene Sector policy.
- It is elaborated in a multi-disciplinary and participatory way.
- It is based on (i) sector analysis; (ii) identification of main issues and; (iii) a set of objectives for each of its main components, including enhanced Water, Sanitation and Hygiene Sector infrastructure and enhanced sector capacity to provide and sustain these Water, Sanitation and Hygiene Sector services.
- It provides indicative scheduling in terms of projects and budget estimates over the five years, specifying explicitly the 2012-2016 National 5 Year Planning Cycle period for consistency.

Context of this plan

The National Water, Sanitation and Hygiene Sector Development Plan 2012 - 2016 has been developed within the context and framework of the current National Water, Sanitation and Hygiene Sector Policy:

“Improve the health status and living conditions of the population of Sudan and contribute to positive economic growth of the nation by providing all of the population with adequate and sustainable access to basic sector services and promote good hygienic practices”.

The **purpose** of the Water, Sanitation and Hygiene Sector Development Plan 2012 - 2016 is to:

“Contribute towards ensuring adequate and sustainable domestic Water, Sanitation and Hygiene Sector services and hygienic practices for all rural, urban and nomadic people of Sudan, taking into consideration environment conservation and sustainable resources management”.

This five Sector Plan which is guided by the National Water, Sanitation and Hygiene Sector Policy, aims to facilitate the increase of **access to safe water** for urban and rural population as follows:

Rural population will be provided by at least 20 litres per capita per day (l/c/d) within 500 meter walking distance from the dwelling;
Water supply to urban population will be designed to provide at least 90 l/c/d within 100 meter walking distance from the dwelling.

Over the same planning period and in line with the Millennium Development Goals (MDG) target 7c, the people currently without access to basic sustainable sanitation will halved.

Profile of the Republic of Sudan

Sudan is one of the largest country in Africa, covering an area of 1.882.000 km² between latitudes 03:00 and 23:00 North and longitudes 21:45 East and 38:30 West with a total population of 33.419.625 million people in 2011 (source: 5th Sudan Population Census 2008) with an annual growth rate of 2.8%. It has international borders with Egypt, Libya, Chad, Central Africa, Ethiopia, Eritrea, and South Sudan. It shares the water resources of the Nile basin and ground water aquifers with twelve countries. More than half of the population lives on only 15% of the total land area along the River Nile and its tributaries.

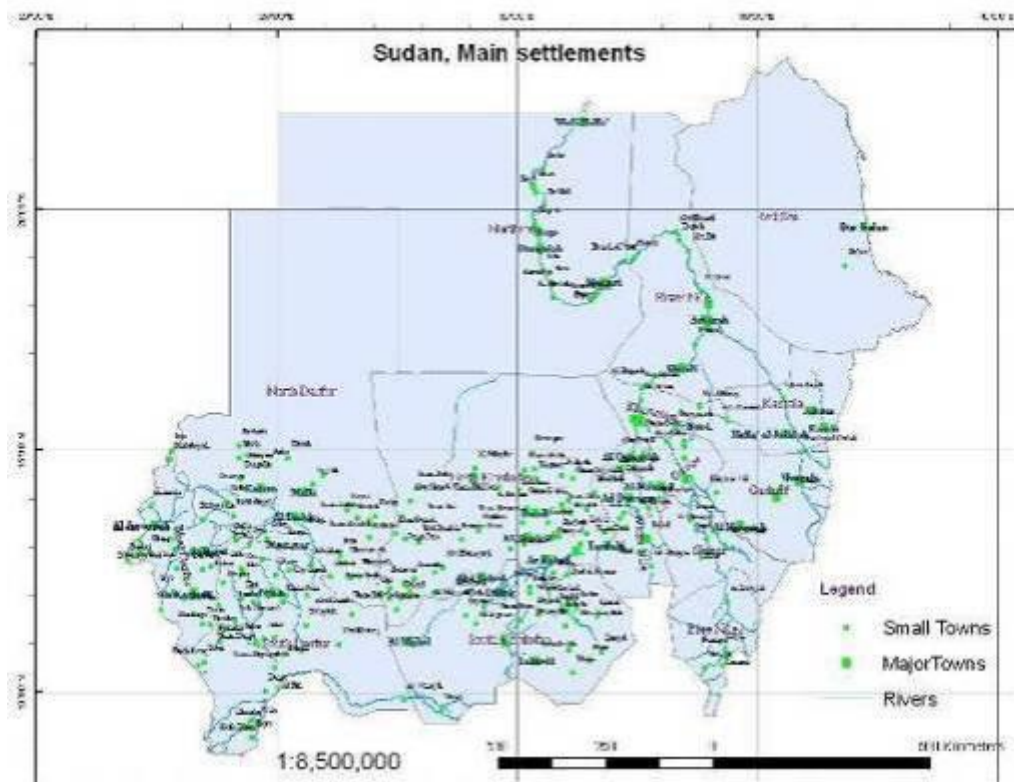


Figure 2 Settlements in Sudan

The country is, located within the arid and semi-arid part of Sub-Saharan Africa, which characterized by a hot and dry weather that makes water scarcity a major problem for population living far away from the River Nile basin, the course of other rivers and seasonal valleys.

The poor water supply and sanitation situation is attributed to many factors, including lagging water development works, inadequate awareness for the need of sanitary living, poverty, unavailability of water supply and sanitation policy, planning and management difficulties, inadequate funding and the huge population displacement and disruption due to successive emergencies and political instability.

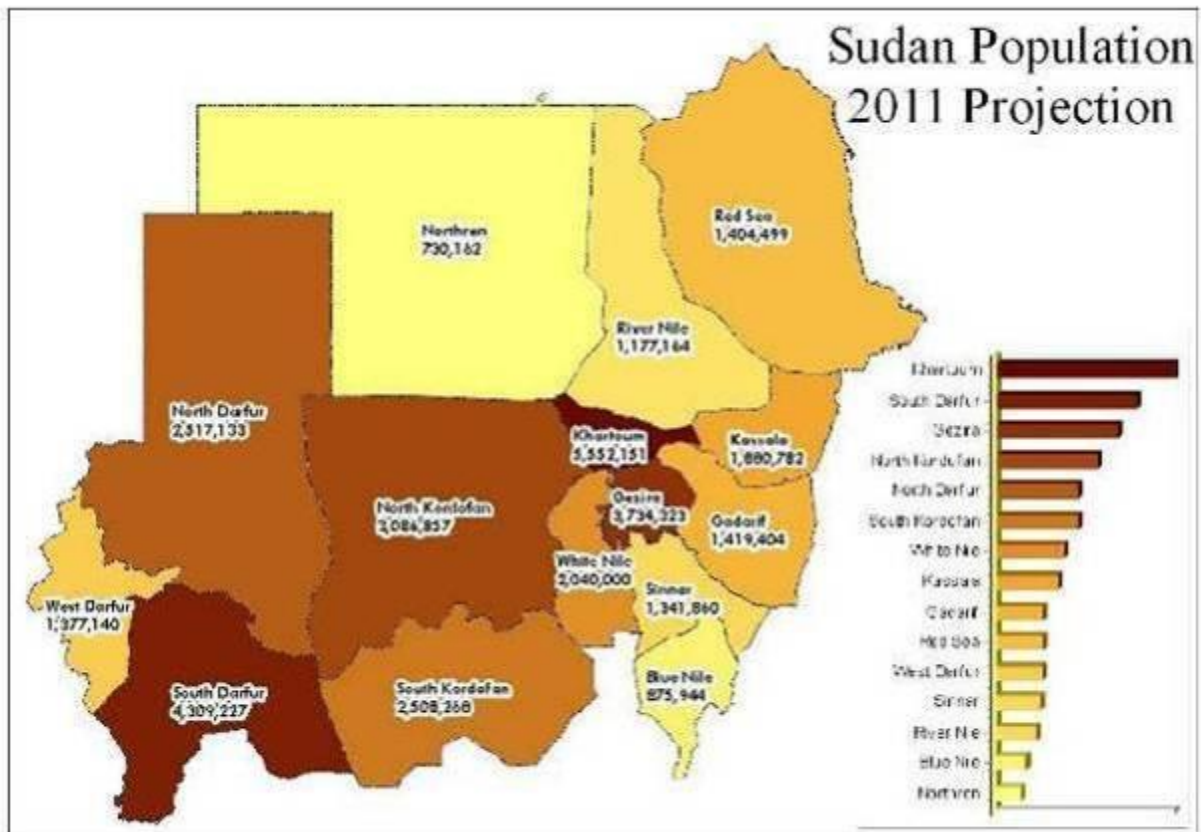


Figure 3 Population in Sudan

The Water, Sanitation and Hygiene Sector, current situation

Economic, Social and Political Development

Political Context

The complex political situation in the Middle East and Africa, and the escalation of international conflict over interests placed the Sudan with its vast area, its location in the heart of the African continent and the strength of its influence on the neighbouring states in addition to its huge natural resources, in the midst of the international conflict of interests. The protracted wars and national disputes which the Sudan witnessed caused big social and economic deformities the most important of which are seen in the huge destruction of infrastructure and the great numbers of displaced persons and refugees.

National dialogues with the different armed and political factions resulted in signing the Comprehensive Peace Agreement (CPA) in 2005. Signing the peace agreements created a suitable environment for political stability and the best way to exploit resources to achieve sustainable social and economic development. A decentralized system dividing the country into 15 states, gives wide authorities to the state government bodies in the country.

Socio-Economic context

The Sudan is characterized by its huge natural resources, among others, petroleum, which provides a potential to become an international economic power. Since the signing CPA however, the socio-economic development has picked up, in particular through the exploitation of petroleum and the related foreign investments resulting in increased purchasing power especially for the urban population. This development had taken place despite the on-going sanctions by western countries, which have a particular impact on the financial sector and the restricted access to scholarships and education at western education institutes.

In Sudan itself but also further upstream the Nile, the country's lifeline, economic and demographic growth in combination with climate change, result in increased stress on water resources in the region. This is exacerbated by the absence of multilateral agreements regulating the rights of the Nile Basin countries.

Global economic growth, in particular in Asia, leads to increased demand for agricultural land and production, reflected by increased foreign investment in this sector in Sudan. Its potential impact on water resources in general and drinking water supply in affected areas of the country will require close monitoring and possibly adjusted regulation.

Health Related Water, Sanitation and Hygiene Sector Situation

Due to years of political instability, government and private sector investment choices, foreign sanctions and, large movements of internally displaced persons (IDP), the Water, Sanitation and Hygiene Sector coverage and level of service provision has been stagnant or even deteriorated. Sector institutional, organizational and human resource capacity has suffered from policy priorities and strategic plans.

Table 1 Fluctuations in levels of water services over 20 years

Indicator	1990	2000	2006	2008	2015
	(base)	(MICS)	(SHHS)	(Census)	(MDG Target)
Access to sustainable improved water sources	64.0%	59.8%	58.7%	70.4%	82.0%

Table 2 Fluctuations in levels of sanitation services over 20 years

Indicator	1990	2000	2006	2010	2015
	(base)	(MICS)	(SHHS)	(Estimated STP)**	(MDG Target)
Access to improved sanitation facility.	33.0%	59.7%	39.9%	35.1%	67%

Since the signing of the CPA and returning stability, this critical situation has been recognized and addressed by sector policy formulation and central and decentralized capacity development through, among others, strategic sector planning, of which this national plan and its equivalent 10 state level Water, Sanitation and Hygiene Sector plans are a reflection.

Overview of Sector Organisation

National Level

At national level the Public Water Corporation, reporting directly to the Minister for Water Resources, has the overall responsibility for providing guidance, technical and financial support to the investment, implementation and provision of sustained Water, Sanitation and Hygiene Sector services of the 15 states and their respective Mahalias (2nd tier local government level also referred to as Locality). PWC was created in 1995.

National policy promotes the development of the role of the private sector. In the water, sanitation and hygiene sector three national companies were established within the MWRI, dealing with drilling, equipment manufacturing and rural water supply development. Two of companies were dissolved due to big losses and failure to comply with their mandates. De facto, the private sector plays a minor role in the sector at national level.

Water, Sanitation & Hygiene Sector in North Sudan Overall Institutional Framework

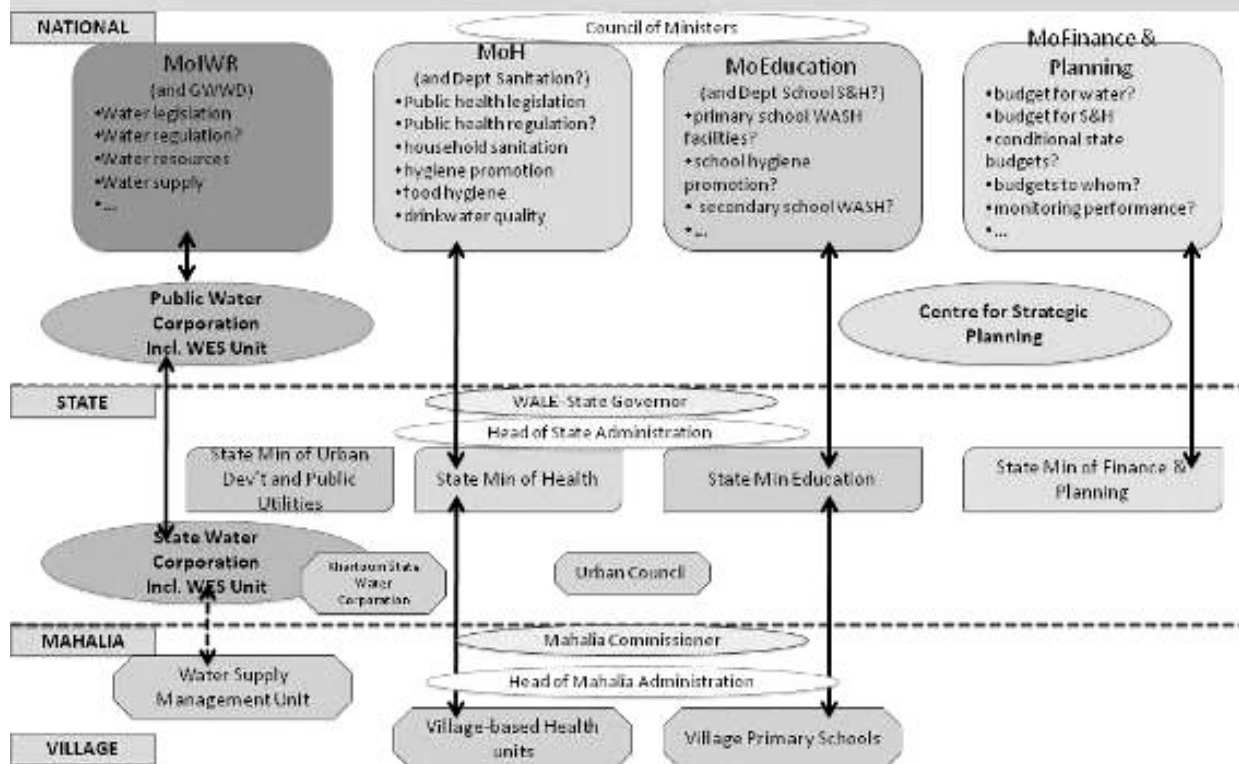


Figure 4 Water, Sanitation and Hygiene Sector structure (in 2010)

After the CPA was signed, UNICEF continued to support and strengthen the PWC WES Unit (Water, Sanitation and Hygiene Sector). The Unit's mandate is to coordinate and guide support to rural sector development and management in the states. Among others the WES Unit initiated the development of a centralized MIS / GIS facility, which however is still in its early stage and producing only limited planning and monitoring support outputs.

The new Water, Sanitation and Hygiene Sector policy recommends a much closer collaboration between PWC and the Ministry of Health's Environmental Sanitation Departments. During the 2010 support to the strategic planning exercise a senior planner from the Federal Ministry of Health was seconded to the WES Unit and became part of the National Support Team (NST) for strategic planning.

Parallel to the adoption of the new National Water, Sanitation and Hygiene Sector Policy and the sector strategic plans development, negotiations are on-going towards reorganizing PWC into a PWSC (Public Water and Sanitation Corporation) and hence becoming the sole responsible in terms of country wide development of the water, sanitation and hygiene sector.

Currently there is no explicit interaction and collaboration between the MWRI's departments for Water Resources Management and Irrigation, and the PWC, in charge of Water, Sanitation

and Hygiene Sector. The following table provides insight in the current staffing of PWC. Taking into account the size of the country and the high needs of technical and effective support required at state level, the PWC may be considered understaffed and has insufficient expertise in sector coordination and capacity development, such as: developing policy implementation guidelines; monitoring; managing an effective (geographic) information management system; providing planning and monitoring support to state level sector agencies; socio-economic sector planning and; developing and managing sector funding mechanisms.

Though the PWC has a Training Centre, it is strongly biased to enhancement of technical skills and underdeveloped in terms of providing the necessary capacity development on the various management tasks in the sector. Its annual training capacity does not match the needs of the sector. Capacity development at higher levels is further limited by the on-going sanctions of in particular western countries, which seriously limits access to scholarships and training abroad.

Table 3 PWC human resources and grades (officials)

Ranking Grade	Engineer	Adjunct Staff	Accountant	Procurement	Typist	Secretary	Logistics Officer	Technician	Total
Contractual	3	1	1	-	-	-	-	-	5
Group 1	-	-	-	-	-	-	-	-	-
Group 2	3	1	-	-	-	-	-	-	4
Group 3	5	4	-	-	-	-	-	-	9
Group 4	10	8	2	1	-	-	-	-	21
Group 5	10	7	2	5	-	-	-	-	24
Group 6	1	6	2	1	4	-	2	2	18
Group 8	8	7	1	1	3	1	3	3	27
Group 9	1	1	-	-	-	-	-	-	2
Group 10	-	4	3	-	1	1	-	-	9
Group 12	-	4	3	2	1	-	-	-	10
Group 14	-	4	3	1	1	-	-	-	9
Total	41	47	16	11	10	2	5	5	134

State Level

The decentralization move after the establishment of the federal system in 1994 and implementation of the CPA led among others to the creation of State Water Corporations (SWC), reporting hierarchically to the State Ministry of Housing and Physical Infrastructure (MHPI). In practice however sector guidance, funding streams and reporting are done directly with PWC.

The State Government is responsible for:

- Planning water supply and sanitation services in the States and securing financial resources for the development of water supply and sanitation systems in both rural and urban areas.
- Issuing necessary state legislation and regulations to ensure protection of water resources in the state in consultation with Federal MWRI.
- Ensuring the provision of safe, adequate and reliable water supply and sanitation services to all citizens of the state without discrimination.

The State Water Corporation (SWC) is responsible for:

- Planning, implementing and monitoring water supply and sanitation projects in the state.
- Selecting appropriate technologies under national level guidance.
- Following efficient and effective administrative and financial management systems for water supply and sanitation services in the state. Initiate projects for external funding.
- Coordinate with PWC to ensure adequate capacity and staff skills and provide communities with technical and managerial capacity they need to play their role.
- Monitoring of all Water, Sanitation and Hygiene Sector projects at Mahalia level and facilitate support and coordination among all actors in Water, Sanitation and Hygiene Sector at both State and Mahalia level.

As at national level, procedures are underway to expand the SWC's role to include sanitation and hence become the State Water and Sanitation Corporation (SWSC).

Mahalia Level

Mahalias are responsible for:

- Preparing in a participatory way Water, Sanitation and Hygiene Sector development proposals for the Mahalia settlements including investment and management budget details in close coordination with SWC.
- Establishing and maintaining a Water, Sanitation and Hygiene Sector unit at Mahalia level, which supports village Water, Sanitation and Hygiene Sector committees to participate in planning, implementation and management of water and sanitation services.

Community Level

Communities are responsible for:

- The initiation of development or rehabilitation of Water, Sanitation and Hygiene Sector schemes and actively participate in planning, implementation, M&E, operation and management of these schemes.
- Bear all costs related to the management of the Water, Sanitation and Hygiene Sector services and participate in the capacity building offered to properly manage the services including the financial costs.
- Protect Water, Sanitation and Hygiene Sector services and the supplying water resources and the surrounding environment.

NGOs and Private Sector

While the various government levels have the key responsibility of ensuring sector services that comply with the national Water, Sanitation and Hygiene Sector policy, government may outsource some of the sector development, management and capacity building to either (International) Non-Governmental Organizations (INGOs) or private sector. In practice NGOs primarily work in areas with high levels of emergency and IDPs, particularly in the Darfur states but also in other areas such as Eastern Sudan, in the Kassala area and also in the high-density marginal informal urban settlements around the big towns.

Though coordination mechanisms have been set up at the various government levels (Federal, State and Mahalia), coordination and exchange of information is often weak resulting in poor overview of the actual state of affairs and inducing risks of duplication of work.

Private sector, of which little information is available, seems to play a minor role, essentially limited to the sales of ad-hoc services and inputs (such as transport, spare-parts, fuels, etc.). The few companies that have been set up in the sector are without adequate capacity to contribute effectively in the sector. Some development agencies had some engagement with rural local level private enterprises for the provision of management and O&M services of Water, Sanitation and Hygiene Sector systems, but again little data are available.

Water Resources in Sudan

Water resources in Sudan are varied and include rainwater, the River Nile water, valleys, groundwater and potentially non-conventional water (an option). The Water Strategy (2007-2032) estimates the volume of water needed for about 40 million inhabitants at 31.5 billion m^3 /year (or per capita 787.5 m^3 /year). Sudan is currently classified among the countries, which have a shortage of water according to the classification of the United Nations (less than 1000 m^3 /year/capita).

The following sources of water can be distinguished in the country:

Rain

Water is rare in the far north and but exceeds (500 mm/year) in the extreme south and south-west. Precipitation rates in the north and centre are also characterized by high variations according to place and time of each year. Torrential rains can cause serious land erosion and seasonal flooding. Rainfall is the main source of replenishing groundwater in valleys. Rain also represents a considerable source of the Nile water. The importance of rain increases in areas where the average annual rainfall is low (400 mm) and more so where rain-fed agriculture exists.

River Nile

The average annual discharge of the River Nile amounts to 84 billion m^3 at Aswan, of which Egypt's share is 55.5 billion m^3 and the share of Sudan 18.5 billion m^3 and the rest (10 billion m^3) evaporates (source: Nile Water Agreement 1959). The share of Sudan in the central regions is about 20.5 billion m^3 /year calculated at Sennar. The Ethiopian Highlands contribute for about 85% of the total water in the Nile. Branches of the White Nile contribute in

maintaining flow of the Nile because the period of flooding in the Great Lakes region lasts long.

Dams

The volume of current storage capacity in Sudan's dams (Al-Roseires, Sennar, Jebel Aulia and Khashm Al-Girba) amounts to 9.4 billion m³ according to their original design capacity. Currently this storage dwindled to 6 billion m³ due to increase of sludge in the Blue Nile and River Atbara. It is worth mentioning that Jebel Aulia Dam has maintained its design capacity. The storage capacity of the Merowe Dam reaches 12 billion m³, primarily utilized for producing hydroelectric power, while the priority is given to agriculture in other dams.

Tributaries of the River Nile

- Group of the Blue Nile (Blue Nile, Dinder and Rahad): drainage of this group amounts to 48 billion m³, characterized by bringing large quantities of silt during the flood time.
- Group of the White Nile (Bahr al-Jabal, Bahr el-Ghazal and the Sobat): drainage of this group amounts to 24 billion m³. Nile grass hinders navigation, increases the amount of evaporation and closes entries of pumps.
- Group of Atbara River (Atbara and Sitete): drainage of the Atbara River Group is about 12 billion m³. It is characterized by having seasonal and inconstant flow in the period between June and November. Besides, this group brings large amounts of silt in the time of flood.

Seasonal Valleys

Basins that include seasonal valleys are the Red Sea Heights, Jebel Marra, the Nuba Mountains, Angasana Mountains, Bayouda, Al-Managel Hill and Al-Butana Hill. The quantity of water provided by the valleys is about 6.5 billion m³ per year. Such valleys are considered the most important water resources to provide drinking water and water for agricultural purposes currently and in the future. They also contribute in annually providing water to underground reservoirs of new sediments such as Gash, Arbaat and Neyala. It is noted that there is a lack of coverage of monitoring stations in these valleys.

A number of the neighbouring countries share with Sudan some valleys such as Gash and Tokar which meet outside the Sudan in Eritrea. While the valleys of Azum, Kja, Cariari and Barry gather inside Sudan and cross the western borders heading to Chad, Central Africa.

Groundwater

Renewable groundwater is about 4.5 billion m³, and contributes for about 63% of the drinking water produced in the Sudan, of which 60% for Khartoum. It has been proven that utilization of relatively shallow underground reservoirs has economic potential for agriculture (drilling sutures) by establishing reservoirs in the north and centre of the country. Investment in Sudan could make it a major global food provider. However, exploiting these aquifers in the states of Khartoum, the River Nile and Northern State, will require uniting efforts of stakeholders and coordinated management among them to ensure sustainability in the long term.

Nubian groundwater basin

Nubian Sandstone reservoir is considered the largest groundwater reservoir in Sudan, and covers large parts of Libya, Egypt and Chad basins and includes basins of deserts, the Nile

deserts, Blue Nile, Atbara River, Baggara, mid Darfur, Nohoud, Shagra and Sag AlNaam.

Studies have shown poor extraction potential of this reservoir.

There is an on-going regional project supported by the International Atomic Energy Agency (IAEA) and the Global Environment Facility (GEF); and also a joint panel was established by the four basin countries in order to reach a formula for the management of this reservoir.

Younger sediment basins

These include sediment basins of Gazira and Um Rawaba which are the most important basins following the Nubian sediment basins. Besides, there are other basins such as Al-Gash and Wadi Nyala on which Kassala and Nyala depend for drinking and irrigation water. In addition, there are the valleys basins of the Red Sea Mountains range and range of Jebel Marra in the Greater Darfur and Nuba mountains and Butana and the sediment basins of the Nile.

Groundwater basins of younger sediments are characterized by having limited capacity and being more vulnerable to pollution. Besides, there is high pressure on them that requires protection measures.

Reservoirs of base rocks

Such Reservoirs are important in areas where basic complex formations crack and water is provided from annual rainfall (more than 300 mm) or from channels of valleys. They represent an important water resource in the areas of the Nuba Mountains, Ingasna and South Sudan where there is a density of hand pumps.

Sudan's lifeline is the Nile, in the southern parts of the country splitting up in the Blue Nile and the White Nile. The use of these waters are regulated by international agreements on the Nile Basin, though recent developments show that member states further south and hence upstream wish to increase their current low share (notably Uganda and Ethiopia), to which Egypt and Sudan so far have not agreed. Increasingly Sudan aims to better exploit the Nile waters, by constructing dams, like the Meroe dam, downstream of Khartoum, for the generation of hydropower and irrigation. Other than the Nile, there are evidence of large underground aquifers and seasonal streams.

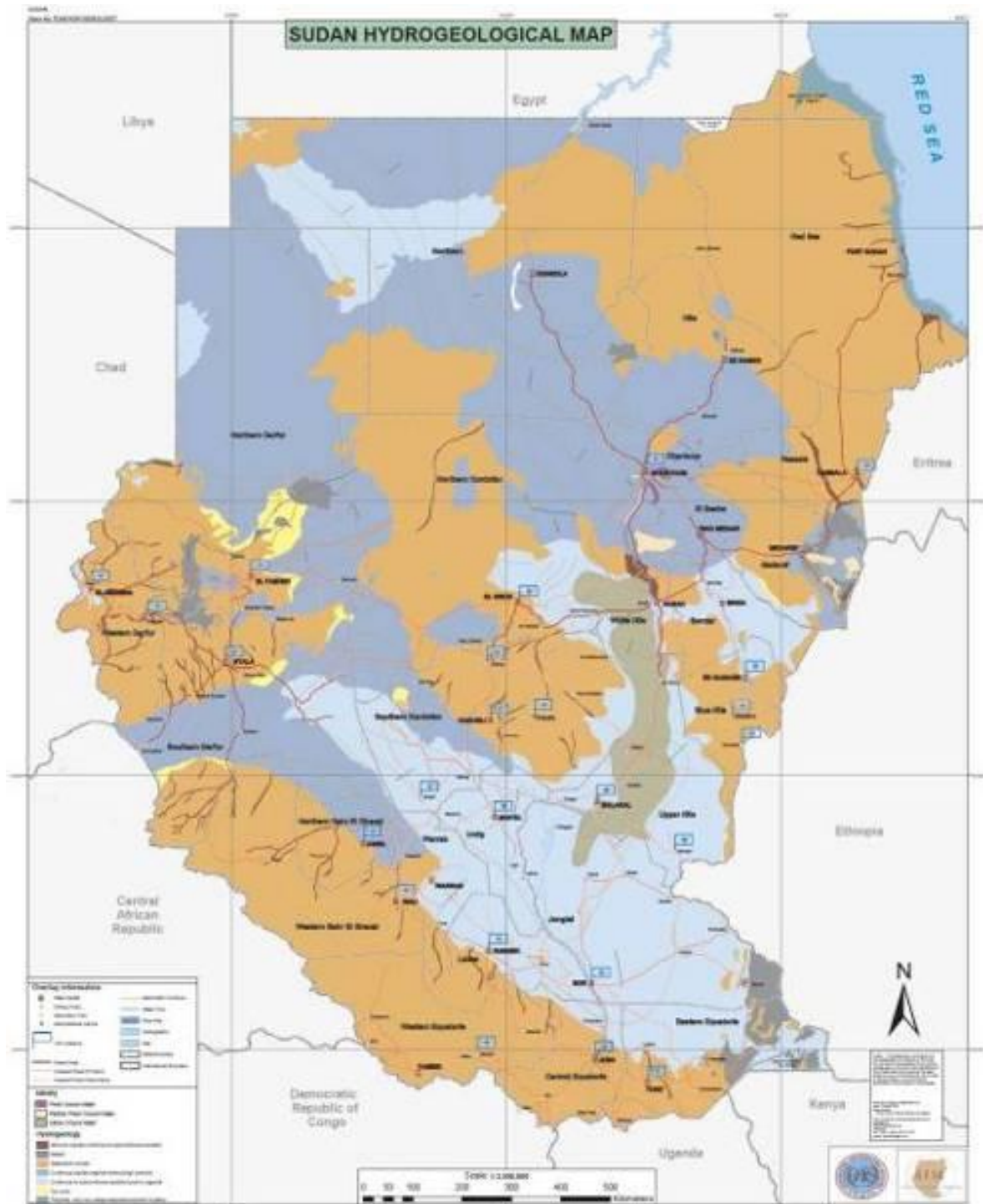


Figure 5 Hydro-geological map 2006

The status of water of the Nile Rivers is such that to date no very serious contamination of water is taking place. However with the increase in population and economic activities along the Nile (among the highest population densities in the world) and the lack of drinking water and sewerage / agriculture drainage water treatment, the water related health risks are rapidly increasing.

Further upstream, south of the Gezira scheme, in the plains at the foot of mountains and Nile river in-land floodplains, the risks of seasonal flooding, also of urban settlements, is increasing with population pressure and increasing climatic and weather fluctuations.

A recent development is the increasing foreign interest in exploiting both ground and surface water resources for agricultural purposes to cater for rapidly increasing demand for food and agro-business products in, notably, the Asian markets. The effects on water quantities and quality along the Nile and in the aquifer regions will require close monitoring to understand the impact of the growing exploitation on the Water, Sanitation and Hygiene Sector services and growing demand in settlements along the rivers. This monitoring is especially required if we consider the fact that the National Water, Sanitation and Hygiene Sector policy and MDGs related to the sector are very ambitious in terms of significantly increase the amount of water to be made available per inhabitant per day.

Coverage and Access to Water, Sanitation and Hygiene Sector services

The overall goal of the water supply and environmental sanitation policy is to contribute in improving the health status and living conditions of the population and the economic growth of the nation by providing all of the population with adequate and sustainable access to basic sector services and hygienic practices.

The objective of the policy is to increase the rates of access to safe water supply in rural areas by 20 litres per capita per day and 90 litres per capita per day in urban areas as well as increasing access to environmental sanitation services to 67% of the population of Sudan in rural and urban areas by the end of 2015 to achieve the objectives of MDGs.

This policy also aims at achieving the Government Quarter Century Strategic Plan of 2007-2031, that intends to increase the level of access to reach 50 litres per capita per day in rural areas and 150 litres per capita per day in urban areas, in addition full coverage of all schools, public health facilities and religious premises by the end of this Quarter Century.

Water related health statistics are scarce, but the following tables provide an indication of a critical water related health situation in the country, both in high density urban areas as well as rural contexts. Particularly in high density urban areas, i.e. in Khartoum and most of the 14 state capitals, where drinking water and waste water treatment are very poorly developed and maintained, the health impacts are serious and endemic. This is evidenced among others by regular local outbreaks of diarrheal diseases.

Though access to water, in terms of quantity, is high in urban areas, its quality is poor and fluctuating according to seasons. Particularly in rural areas access to sanitary facilities is still very low and its impact on health, coupled with low levels of hygiene education and resulting poor hygienic behaviour.

Table 4 Access to water and sanitation in Sudan

Area	Total				Urban				Rural + Nomads			
	Population	With access	Without access	Access total	Population	With access	Without access	Access total	Population	With access	Without access	Access total
Total Sudan	28219850	9903139	18316711	35.1%	10038520	9489622	503754	94.5%	20465646	11971207	8439870	58.5%
State												
Northern	730162	243162	487000	33%								
Nahr El Nil	1177163	577530	599633	49%								
Red Sea	1469654	320959	1148695	22%								
Kassala	1884086	485712	1398374	26%								
Al Gedarif	1419404	467730	951674	33%								
Khartoum ¹	?	?	?	?								
Al Gezira	3732798	2068092	1664706	55%								
White Nile	2040000	865278	1174722	42%								
Sinnar	1092013	418752	673261	38%								
Blue Nile	875943	208218	667725	24%								
North Kordofan	3086857	920568	2166289	30%								
South Kordofan	2508268	606960	1901308	24%								
North Darfur	2517134	931320	1585814	37%								
West Darfur	1377140	415422	961718	30%								
South Darfur	4309228	1373436	2935792	32%								

¹ Khartoum State document under development.

Table 5 Water access in States (2008 Census)

Area	Total				Urban				Rural + Nomads			
	Population	With access	Without access	Access total	Population	With access	Without access	Access total	Population	With access	Without access	Access total
Total Sudan	30504167	21460835	8943616	70.4%	10038520	9489622	503754	94.5%	20465646	11971207	8439870	58.5%
State												
Northern	686098	608908	73885	88.7%	112915	108861	2515	96.4%	573183	500047	71370	87.2%
River Nile	1097356	746983	350142	68.1%	317229	294093	23136	92.7%	780127	452889	327007	58.1%
Red Sea	1368330	796068	550422	58.2%	531800	497897	25851	93.6%	836529	298170	524571	35.6%
Kassala	1769887	956282	810803	54.0%	462454	382863	78850	82.8%	1307433	573420	731952	43.9%
Al Gedarif	1334947	799948	533409	59.9%	377753	363896	13512	96.3%	957194	436054	519895	45.6%
Khartoum	5181186	5052382	107516	97.5%	4194719	4154339	20383	99.0%	986467	898045	87132	91.0%
Al Gezira	3549026	3239104	304984	91.3%	670172	663180	4037	99.0%	2878854	2575924	300947	89.5%
White Nile	1713360	1046672	664501	61.1%	571017	480905	89137	84.2%	1142343	565763	575368	49.5%
Sinnar	1272766	1046177	224633	82.2%	273256	253757	18939	92.9%	999510	792419	205694	79.3%
Blue Nile	816048	414846	399475	50.8%	197694	161581	35025	81.7%	618354	253264	364451	41.0%
North Kordofan	2888969	2034645	850932	70.4%	568296	554410	12637	97.6%	2320673	1480235	838296	63.8%
South Kordofan	1389076	984386	402998	70.9%	324436	318003	5931	98.0%	1064640	666381	397069	62.6%
North Darfur	2089801	1042888	1035920	49.9%	351887	283296	65471	80.5%	1737914	759593	970449	43.7%
West Darfur	1292714	578196	709111	44.7%	220386	172572	46338	78.3%	1072328	405622	662775	37.8%
South Darfur	4054603	2113350	1924885	52.1%	864506	799969	61992	92.5%	3190097	1313381	1862894	41.2%

Table 6 Access to sanitation in States (2010 estimates)

Area	Total			
	Population	With access	Without access	Access total
Total Sudan	28219850	9903139	18316711	35.1%
State				
Northern	730162	243162	487000	33%
River Nile	1177163	577530	599633	49%
Red Sea	1469654	320959	1148695	22%
Kassala	1884086	485712	1398374	26%
Al Gedarif	1419404	467730	951674	33%
Khartoum ²	?	?	?	?
Al Gezira	3732798	2068092	1664706	55%
White Nile	2040000	865278	1174722	42%
Sinnar	1092013	418752	673261	38%
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North Darfur	2517134	931320	1585814	37%
West Darfur	1377140	415422	961718	30%
South Darfur	4309228	1373436	2935792	32%

Table 7 Population and water related health statistics

POPULATION AND HEALTH STATISTICS	
Population (2006)	37.7 million
Population of population living in urban areas	42 %
Urban/Rural population growth rates (1980 – 2000)	2.3 / -2.0 %
Diarrheal deaths/year (2004)	17,200
Under age 5 mortality rate	91/1000 live births
Under age 5 mortality rate due to diarrheal Disease (2000)	12.9 %

² Khartoum State document under development.

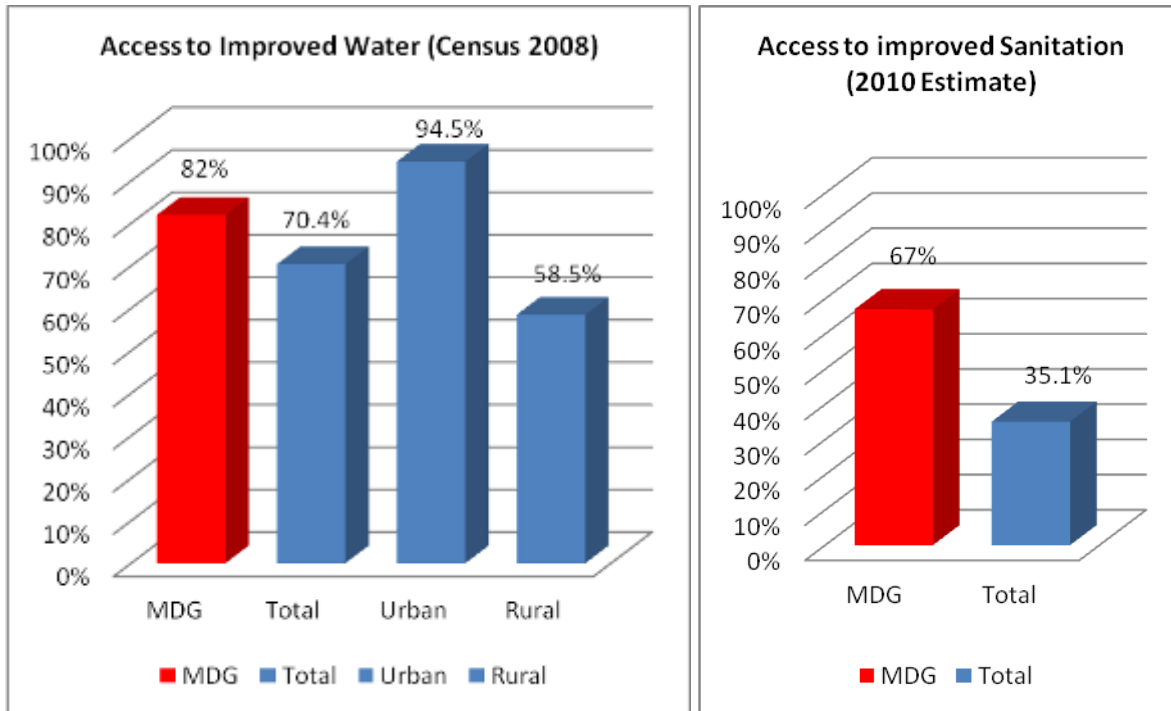


Figure 6 Urban and rural access to WASH services (2008)

Technology Options

The National Sector Policy provides the following guidance and standards regarding the Water, Sanitation and Hygiene Sector technology choices in urban and rural contexts.

Appropriate Water, Sanitation and Hygiene Sector technologies

Appropriate technology for rural and urban sanitation systems shall be examined and used to ensure sustainability and affordability of the services.

The acceptance and success of sanitation facilities in rural areas, particularly household latrines, shall depend on the technology used in that specific area. Sanitation options shall be cost effective and designed in consultation and agreement with the community. Use of local materials without undermining the environment shall be emphasized.

The technology choice shall focus on cost-effectiveness for urban sanitation. The sewerage system, which is suitable for built-up urban areas, shall be of the right economic scale, affordable and manageable. In the peripheral sections of urban areas where sewerage network system is not available, appropriate technologies shall be explored and used.

Solid waste collection and disposal system shall be designed for cost effectiveness.

Adequate protection of the environment especially the water resources shall strictly be considered in the selection of the area where the solid and liquid wastes are to be disposed. In urban areas, proper landfill systems and recycling of solid waste management shall be used wherever feasible.

Current monitoring data do not provide sufficient insight to what extent current technology choices adhere to the national recommendations.

Water, Sanitation and Hygiene services at public institutions

Public institutions include schools, health facilities and religious premises. Accessibility to adequate and safe water supply and satisfactory sanitation for schools, health facilities, religious institutions and markets shall be indispensable at all time. The importance of water, sanitation and hygiene shall be promoted through the relevant communication system both public and private media in addition to community radio, religious education and cultural centres shall be considered and used. Priority shall be given to provision of water supply services and sanitation for hospitals and primary health centres.

Public and private institutions including government agencies, religious institutions, public centres such as parks and recreation areas shall have adequate improved sanitation facilities including urinals, latrines and hand washing facilities with soap. The primary responsibility of management shall remain with respective institutions. Technology and designs should be sound, user friendly and relevant to the environmental context. Portable or reusable structures shall be used as relevant.

School children shall have a healthy learning environment, including access to and use of clean child-friendly sanitation facilities, hand Water, Sanitation and Hygiene Sector and water supply. Children shall develop skills, knowledge and attitudes for effective hygiene practices at school and at home. There shall be separate toilets for girls and boys in the schools. The standard norms shall be not more than 50 boys or 30 girls to use one drop hole. Water, sanitation and hygiene education shall be one of the essential teaching components in schools.

School clubs shall be established for participation and learning of schoolchildren on hygiene and sanitation. New schools, health facilities and other institutions yet to be constructed shall have reliable water supply, sanitation and hygiene facilities as part of the initial construction components.

Cost for the water supply, sanitation and hygiene services in schools, health facilities and premises and public institutions including operation and maintenance costs shall be covered by adequate budgetary allocations by the respective institutions.

Capacity Development and Innovation

Currently most institutional capacity development and of human resources takes place in a rather informal on-the-job way, mainly by NGOs within their areas of operation and the UNICEF WES units and regional offices in their areas of operation.

Sector related education is offered by a number of national universities and training courses mainly by the PWC Training Centre (with a focus on technical skills) and UNICEF (for rural Water, Sanitation and Hygiene related topics). The PWC Training Centre, supported with foreign funding, has a current capacity that doesn't meet the country wide needs. The UNICEF training efforts are limited to those regions covered by the UNICEF Water, Sanitation and Hygiene programme.

No recent organizational or human resources development needs assessment exist for the Water, Sanitation and Hygiene Sector hence estimates for actual needs are hard to quantify.

Feedback through occasional monitoring and evaluation reports indicate a high need of capacity development in the field of:

- (Participatory / strategic) planning.
- Hygiene awareness and changing hygiene behaviour.
- Sanitation technology and funding options.
- Management skills at all levels.
- Monitoring and (Geographic) Information Management and Use.

Expanding the sector capacity development is currently seriously hampered by on-going sanctions of mostly western nations, which considerably limits access to scholarships and permits to follow training abroad or organize additional in-country training services.

Natural Disasters and Emergency Operations

Natural disasters: flooding and outbreak of diseases are the results of natural disasters in the states during the rainy seasons in addition to drought that has been experienced in many regions over the last three decades.

Man-made emergencies: large scale displacement of population due to internal conflicts has been experienced in Darfur, South Kordofan, Blue Nile and East Sudan over the last decades.

The strategic plan considers the fact that the demographic map of the three Darfur States has been significantly changed with sizable number of Internally Displaced People (IDPs) in different localities particularly around the big towns such as Nyala, Fasher, Zalengi, Geneina and Kass camps. The majority of the villages have been deserted and over 2,000,000 people are internally displaced, living in more than 70 camps. The plan is based on the 5th Sudan Population Census 2008 where the population of the three states of Darfur was estimated at 7,515,505 persons with annual growth rate of about 2.6%. Accordingly, the population is expected to be about 9,850,882 in 2016 plan.

Insecurity has been a major concern, which resulted in displacement of population and restriction on access to many places. The number of IDPs continues to increase in Darfur due to continuing conflict, which puts additional pressure on the available water, sanitation, health and education services. The humanitarian assistance provided by various organizations and groups is very significant in the areas of qualified staff, equipment, supplies on the ground.

Financing of the Sector

Currently PWC has the lead role in financing the sector. PWC in consultation with the Ministry of Finance and the major sector Development Partners has to ensure sufficient funding to allow implementation of the National and State sector development investment plans. Further guidance on sector funding mechanisms is provided under plan component 5.

Financial and administrative mechanisms managed by PWC

Federal and state government financial commitments need to secure sufficient funds for WASH services development. The water tariff shall be set on a cost recovery basis to cover the operation, maintenance and replacement cost to ensure sustainable services. For urban

water supply and where feasible for rural water systems, the concept of Building, Operation and Transfer (BOT) will be encouraged. Commercial financing of the sector from national and foreign funding will be stimulated to finance water supply services at concessionary terms, both through longer concession periods and lower interest rates to enable the benefiting parties to pay back the debts timely and at the specified amounts. The existing revolving fund established with limited resources to purchase hand pumps will be strengthened and similarly funds will be set up to finance major water supplies including equipment and materials. More opportunities will be created for capacity building and training of professional and technical sector staff both in-country and abroad.

WASH Sector Vision and principles

Vision

Short term and long term needs of all the Sudanese people for water and sanitation in rural and urban areas including the nomadic communities are fully addressed by 2020 with due considerations of the environment.

Mission for Water, Sanitation and Hygiene Sector Development

The importance of access to at least basic Water and Sanitation services to all, in particular the poor, for health, wellbeing of the people of Sudan, needs to be fully recognized by all segments of society; hence also the importance of Hygiene education and changing hygienic behaviour. The need for a comprehensive Water, Sanitation and Hygiene Sector policy is emphasized by the prevailing poor health conditions in rural and urban areas, and the need to realize the Millennium Development Goals (MDGs) on water and sanitation and the Government of Sudan Quarter Century Strategy.

The objective of the sector policy is to ensure adequate and sustainable domestic water supply and sanitation services and hygienic practices by all urban, rural, and nomadic people of Sudan. Government intends to achieve the water supply and sanitation policy objectives entirely by 2031 and is in the process of achieving water and sanitation related MDGs that target increased access to improved water supply to reach 82% of the population and at least basic sanitation for 67% of the population. The policy includes coverage at schools, health facilities and religious institutions.

Guiding principles

Effective water supply, sanitation and hygiene strategies shall be followed to respect these principles. Adhering to these principles will be supported by an approach based on:

- Water supply and sanitation given high priority in the development programmes of the nation.
- Use of community based and demand driven and integrated approach towards Water, Sanitation and Hygiene Sector development programs.
- Use of appropriate and affordable technologies.

Water Supply main guiding principles of the policy are:

- The importance of water for life.
- Water as a human right.
- Social conditions necessary for the delivery of water.
- Protection and conservation of water.
- Involving increasingly private sector.

Sanitation and hygiene main guiding principles of the policy are:

- Access to sanitation as human dignity.
- Focus on hygiene promotion as a major vehicle for preventive health.
- Accountability to prevent water pollution and protect water sources.
- The community and households play leading roles in sanitation.
- Priority given to vulnerable community groups.
- Involving increasingly private sector.

Rural Sanitation and Hygiene Sector approach

The sanitation and hygiene strategies for rural communities shall concentrate on six components:

- Package approach, that is addressing sanitation for all based on the Open Defecation Free settlements (ODF) concept, and hygiene simultaneously in households, schools and health units.
- Community based hygiene and sanitation promotion.
- That includes safe water handling and use.
- Latrine access and use.
- Hand washing.
- Food hygiene and keeping a clean home environment.

Urban Water, Sanitation and Hygiene approach

Urban Water, Sanitation and Hygiene in Sudan

In terms of Urban Water and Waste Water treatment, the situation is more complex and less defined than in rural areas. Khartoum State Water Corporation (KSWC) operates as a semi-autonomous parastatal entering into direct contracts with foreign companies for

investment and management of Khartoum city water provision, biased to formal settlements and hence under-servicing the large informal settlements that have grown and still growing rapidly around the city.

All other major cities, mainly state capitals, run their own often old water supply systems, most without properly functioning water treatment provisions. Little new investment is currently taking place, other than addressing bulk water supply needs in some parts of the country, notably for Port Sudan and Kassala. Most towns do not have a proper sewerage system and rely on individual septic tanks and traditional improved latrines.

Urban sanitation shall aim to use on-site disposal through septic tanks as well as sewerage network systems where viable, for collection and safe disposal of wastewater from urban areas. Solid waste management shall also be an urban sanitation priority.

Sector funding and cost sharing

Water supply and sanitation development programs shall be given high priority in funding by the government. In rural water development programs, the government, communities and other stakeholders shall cover the capital investments costs, while beneficiary consumer groups will cover operation and maintenance costs through the introduction of appropriate tariff systems. In urban water supply, the capital investment (CAPEX³) shall be covered by government and other stakeholders, whereas operation, maintenance (OPEX) and replacement costs (CAPMANEX) shall be borne by the urban consumers through equitable tariff structures and service tax.

Roles and responsibilities

The roles and responsibilities of sector stakeholders shall be clearly delineated to avoid duplication and inconsistency in roles. The local communities shall manage the rural systems and shall be responsible for system sustainability. The government shall be responsible for supporting and enabling the communities. The government shall also be responsible for institutional and legislative arrangements, capacity building of government staff and communities, and implementation of the policy.

Water Resources principles

Water supply and sanitation policy shall be interlinked with various other water use policies including Integrated Water Resource Management (IWRM) policy and the Environmental Health policy; the water for life; water as a human right; social conditions necessary for the delivery of water; protection and conservation of water.

³ See components in life-cycle cost of water services- <http://www.washcost.info/page/753>.

Water service provision principles

Water is life and a fundamental human necessity as indicated and mentioned in all religions. Access to safe water is a fundamental human right and a requirement for animals in line with the Interim National Constitution of Sudan.

Water has an economic and social value, accordingly the State bears the responsibility in the provision of safe water fairly distributed to all segments of society, and users will bear the costs of production, distribution and management of the facilities. The poor segment of the society shall not be deprived from the services on the pretext that they are unable to pay its value; hence adequate subsidy mechanisms will be adopted. Vulnerable social groups (children, women and the elderly) shall be given a priority and attention in water supply and sanitation services.

Under normal circumstances the priority for water use shall be accorded to the personal use of water for drinking, cooking food, and personal hygiene, while in the case of drought and emergency situation supply of water for drinking shall be given the highest priority among other water uses. The provision of safe, adequate and sustainable water supply in equitable basis helps to maintain and build social peace and shared prosperity among communities.

Government is the custodian of all water resources in the Sudan in terms of protection from pollution and overuse, ensuring sustainability and to achieve an equitable distribution among communities. All consumers who use the public water systems for drinking and other uses shall pay the water tariff, without exception.

The principle of 'the polluter pays' indicates that surface and groundwater shall be kept free from contamination that result from uncontrolled sewage flows, solid and liquid waste disposal, industrial waste discharges, chemical fertilizers and pesticides and introduction of other pollutants into the surface water bodies and groundwater aquifers. And that polluters, whether individuals or organizations, shall be responsible for all the damage and required clean-up.

Sanitation & Hygiene service provision principles

Hygiene Promotion is an effective preventive means in public health management. Hygienic living is the best means of preventing adverse public health conditions. It is much less expensive and easy to manage in the day-to-day life of the people, once it is an accepted way of life. Hygiene promotion is an essential strategy in water supply and sanitation development activities and needs to be rigorously applied to be successful in improving hygienic behaviour and hence public health conditions, at individual households, communities, schools and health institutions levels.

Rural Sanitation is primarily the responsibility of each household in the community. Each community shall shoulder the responsibility of maintaining an open defecation free (ODF) environment through collective decision-making. Each household shall be responsible for the sanitation tasks in its yard. However the government shall have the responsibility for creating awareness and demand in the community for all sanitation measures. Community-based and demand-responsive approaches shall be applied at household, community and

government levels to fulfil their respective responsibilities in the drive toward total rural sanitation.

In all communities the “Package Approach” will be used in planning for and implementation of sanitation and hygiene services. Having a latrine in the household does not guarantee a healthy environment and families may get sanitation-related diseases from their neighbourhood, schools and health units not having an adequate sanitation facility that is used by all, and proper hygiene behaviour practised. Therefore, the package approach addresses the situation at household, schools and health units simultaneously.

Urban Sanitation is primarily the responsibility of local government and individual households. As the urban sanitation facilities are usually expensive (sewerage and/or septic tank emptying services) and require specialized technical skills to establish, the state and local authorities shall take initiatives to plan and establish such facilities with the community’s involvement. An appropriate mechanism shall be established to sustain such facilities by introducing cost recovery from consumers/users. In doing so, the government shall ensure that the need of the poor segment of society is addressed by making suitable arrangements. Vulnerable sections of the community, i.e. children, women and the elderly, shall be given priority attention in sanitation promotion. When vulnerable sections of the community have a genuine inability to carry out sanitation measures, they shall be supported by the community and others, and receive priority help to enable them carry out all necessary sanitation tasks within their yards. Sanitation facilities shall not be allowed to pollute the environment. When sanitation facilities are being established by households or private sector or any other eligible entity, it shall ensure that the waste from such sanitation facilities do not pollute the environment and water bodies, including ground water aquifers.

Additional principles in Water, Sanitation and Hygiene Sector

Private sector shall be encouraged and facilitated for active involvement in the provision of water supply and sanitation services to communities. The government shall empower and facilitate private sector initiatives with required legal instruments including exemptions and creating enabling environment. In doing so, the government shall ensure the needs of vulnerable groups in rural and urban areas are sufficiently met through suitable arrangements.

In encouraging the private sector to strengthen water supply and sanitation services, the government shall act as the promoter rather than the sole provider and implementer. The government shall be primarily responsible for setting policies, strategies, laws, regulations, guidelines, standards and developing sector plans, as well as monitoring and regulating service providers. A crucial role to be strengthened will be that of enforcement of adopted rules and regulations.

All water supply and sanitation facilities shall respect environmental legislation and take measures for conservation of the environment.

National Water, Sanitation and Hygiene Sector Plan 2012-2016 components

National Water, Sanitation and Hygiene Sector plan components

This national sector strategic plan 2012-2016 aims to provide a conducive, capacity development oriented context for the 15 state governments to take the lead in developing appropriate context and sensitive Water, Sanitation and Hygiene Sector investment, implementation and management.

Where the 15 state plans focus on developing and ensuring sustainable Water, Sanitation and Hygiene services that comply with national sector policies, the national plan focuses more on providing the enabling environment of this decentralized approach. Hence the national plan components of the National Water, Sanitation and Hygiene Sector Plan include the following:

1. Policy Review and Development and Sector Reform;
2. Sector coordination: Planning and Implementation Process and Communication;
3. Capacity development and innovation;
4. Monitoring and Evaluation and Sector Learning;
5. Funding mechanisms;
6. National and foreign funded projects.

Of the six components of the national plan, the first five aim in particular to provide support and develop capacity at state and sub-state levels to manage and implement the Water, Sanitation and Hygiene Sector policy objectives and targets in terms of increased and sustained equitable services provision. Component six is meant to complement state development programmes there with typically large scale (infrastructure) programmes that are beyond the states capabilities.

Coherence with State Water, Sanitation and Hygiene Sector Plans

The national sector plan and the 15 State Water, Sanitation and Hygiene Sector plans differ in structure and focus. The state plans focus on the investment in construction and support to management of water and sanitation services and the accompanying hygiene awareness and education. They also address specific emergency situations, whether of natural or socio-economic origin. In a less comprehensive way they also address the required sector capacity development to be able to ensure a sustainable provision of services (see table 8 below showing the components of the state sector plans). The national plan is meant to provide the overall framework in which the states implement their sector plans, e.g. sector policy and guidance; principles; capacity development; monitoring and information management and; sector funding mechanisms.

The State sector development planning processes addresses a set of three main components to achieve an integrated comprehensive development plan. The first set of components A – D deal with WASH **services** both in rural and urban contexts. The second

addresses the specific and important issue of **emergency** (component E) situations and those of Internally Displaced Persons (IDP). The third set of components address the capacity development the sector requires. This last set of components constitute an innovation in the sector, making explicit the need to invest and provide management budgets to ensure governance and comprehensive management of an efficient and effective sector across all tiers of government and including the roles of all (non)government stakeholders.

For the current set of 5 year state WASH sector development investment plans these components have been further condensed into 6 as indicated in the state and national development plans. Indeed the sector capacity development components have for now been condensed to one capacity development component consisting of sector coordination and capacity development. It is envisaged that future planning documents will increasingly acknowledge and address specifically the sub-components proposed in table 8.

Table 8 State WASH sector plan components

Component categories	Code	Component
Water, Sanitation and Hygiene services	A	Rural Water supply
	B	Rural Sanitation and Hygiene
	C	Urban Water supply
	D	Urban Sanitation and Hygiene
Emergency	E	Emergency areas
Water, Sanitation and Hygiene sector capacity development	F	Institutional matters
	G	Sector Coordination
	H	Organizational capacity
	I	Information & Knowledge
	J	Sector learning
	K	Human Resources Development

Logical Framework

The national Water, Sanitation and Hygiene Sector Logical Framework provides an overview of the strategic approach to the development and management of the Water, Sanitation and Hygiene Sector service provision. Indicators at objectives levels provide a means for on-going monitoring and eventual adjustments of the planned approach.

Table 9 Logical Framework of the WASH sector strategy 2011-2016

Objectives	Objectively verifiable Indicators	Means of Verification	Assumptions
Overall Goal			
Sudan's citizens have access to sustained effective Water, Sanitation and Hygiene services	-	-	-
Plan purpose			
WASH sector related MDG and the government launched 5 Year Development Plan (2012-2016 objectives have been met	<ul style="list-style-type: none"> MDG water target met by > 75% in 2015 MDG sanitation target met by > 70% in 2015 	<ul style="list-style-type: none"> UNDP MDG report NCSP reports 	Political and socio-economic circumstances are conducive
Results per component			
WASH sector reform and sector policy implemented	<ul style="list-style-type: none"> WASH sector policy adopted PWC becomes PWSC SWC become SWSC WASH sector policy operationalized through sector guidelines at federal and state levels 	<ul style="list-style-type: none"> Government Documents PWSC statutes SWSC statutes Relevant federal and state sector guidelines 	<ul style="list-style-type: none"> Sanctions reduced Foreign sector investment picks up Motivated sector leadership
Effective sector coordination and communication	<ul style="list-style-type: none"> Annual participative sector review Documented mechanism for bottom up and top down coordination and exchange Pilot interactive, web based, communication channels, supported by non-web based where required 	<ul style="list-style-type: none"> Annual sector review reports web based communication documentation 	

Objectives	Objectively verifiable Indicators	Means of Verification	Assumptions
On-going process of effective sector capacity development and innovation	<ul style="list-style-type: none"> • Sector capacity development and HRD needs assessment available • Sector capacity development strategy developed and adopted 	Needs assessment report Sector Capacity Development report	
Efficient and effective M&E system feeds knowledge and management decisions at all levels	<ul style="list-style-type: none"> • Decentralized web / non-web based MIS/GIS system functional and accessible & usable in a bottom-top-bottom way 	Users satisfaction survey	
A coherent federal and state level Water, Sanitation and Hygiene Sector funding system is operational	<ul style="list-style-type: none"> • Sector funding mechanisms guideline developed and approved, introduced and used at all levels 	Approved sector funding guideline	
Efficient and effective implementation and management of Federal funded Water, Sanitation and Hygiene projects	<ul style="list-style-type: none"> • Monitoring reports show satisfaction rates of > 70% among all stakeholders 	Survey report	
Efficient and effective implementation and management of Foreign funded Water, Sanitation and Hygiene projects	<ul style="list-style-type: none"> • Monitoring reports show satisfaction rates of >70% among all stakeholders 	Survey report	

Component 1: Policy Review, Development and Sector Review

Rationale for component 1

Socio-economic development and environmental and climate change require regular checks on sector policies, priorities and implementation modalities. Adjustments may be required to address changes and allow the introduction of new managerial and technical innovations that contribute to render the provision of services more efficient and more effective.

Where national sector stakeholders have deficiencies in expertise and experience, their capacities may have to be strengthened at various levels and temporarily complemented by external (national or foreign) expertise. Components 3 and 4 address the capacity development and sector learning aspects, this component 1 provides the framework and opportunities to identify weaknesses to be addressed, strengths and potentials to be built upon.

Water, Sanitation and Hygiene Sector guided by IWRM

State water resource legislation that allows states to control all the water resources within their state boundaries shall be reformed or created. Consideration shall be given to water-scarce states, which would allow the transfer of water from nearby water-rich states. The Federal government, with the agreement of the related states and through MWRI, shall have a legal mandate to decide on state-to-state water rights and transfer issue.

Environmental impact studies will be conducted to identify and address potential negative effects of such water transfers.

Water Resources Policy and Guidelines

The current sector policy still needs to be complemented by a comprehensive water resources policy. At the same time incompatibilities within the sector and among other sector water related legislation and procedures need to be addressed.

Integrated water resources management requires a consistent legal and procedural framework guided by sector regulation. Sector regulation, involving key sector stakeholder groups (including various types of resource consumers), is to provide guidance and mechanisms to cater for equitable and fair water resources allocation, prevention and mitigation of conflicts over water resources and setting tariffs that ensures globally adopted rights to access to water and sanitation services for all, in particular also to the disadvantaged population groups.

Water, Sanitation and Hygiene Sector Policy and Guidelines

The policy itself still needs to be translated into operational standards, legislative amendments and clear definition of roles and responsibilities at various sector management levels. The managerial and procedural arrangements need to address both vertical harmonization (federal, state, Mahalia, community levels) as well as horizontally between ministries and (non-)governmental sector players (e.g. private sector, NGOs and CBOs).

The above issues require developing and strengthening institutional arrangements within the sector but also with other interest groups that allow joint review to identify sector weaknesses and strengths and to initiate sector reform and develop operational solutions that contribute to a more efficient and effective provision of Water, Sanitation and Hygiene services.

Facilitating the process of sector regulation

Currently there is no Water Resources, and Water, Sanitation and Hygiene Sector independent regulatory system. To stimulate private and non-governmental stakeholders to contribute to develop the sector, a trusted and representative sector regulatory system is important. Developing the regulatory system requires an effective inter-ministerial facilitating entity that listens to and involves key sector players, including sector information management bodies (SSMO, university departments, and research), service providers, capacity development organizations and representation of various consumer groups. The development of a regulatory system will have to identify most appropriate regulatory levels (e.g. federal, state, Mahalia, community) for every sector issue that requires regulation (e.g. setting of tariffs of use and pollution of water resources; water quality assurance; performance standards of service providers; enforcement of rules and regulations).

Very practical quality and quantity standards will also have to be developed such as appropriate drinking water standards and those for construction materials. Component 4 addresses the monitoring; evaluation; and the facilitation of sector learning and sharing that will contribute to identify the most appropriate approaches to setting and regularly adjusting such standards.

Drinking water standards

Current drinking water standards for Sudan shall be actively enforced to ensure the standards are applied. Water from new water sources shall be tested to certify that the water is fit for human consumption and water from existing water sources shall be regularly monitored to ensure proper quality standards are maintained.

Choice of construction materials

Materials used in water and sanitation works shall be governed by quality control laws to avoid toxic and hazardous materials. Toxic and hazardous construction materials shall be prohibited by law.

Sector reform

The overall aim of the sector is to achieve sustainable water and sanitation services for the entire Sudanese population, both rural and urban. Services go beyond the systems per sé and include management and governance. Sustainability basically refers to the components institutions, finance, environment, technology and social dimensions⁴. This will only be achieved by a dynamic sector open for change in policy and practice. Sector reform is not implemented through a blue print and/or top-down approach. Changing roles and

⁴ See Annex 1 for the principles to address to ensure sustainable water service delivery.

responsibilities needs to be tested through joint monitoring and learning. Sector reform is a process that requires facilitation and involvement of all stakeholders and sector players. Decades of sector experiences exist both within the country and abroad that can feed into the joint identification and piloting innovative approaches to sector management and development at various levels.

Facilitating such a sector reform process is based on a range of mechanisms that allow multi-level and inter-sectoral consultation, exchange of experience, development, testing and adoption of innovative ways of sector management and development. Mechanisms include annual sector reviews by all stakeholders, peer reviews through exchange visits; facilitating and managing sector information and knowledge that provides overview; access and good use of existing experiences in and outside the country through various channels; etc.

At both national and state level institutional arrangements can be made to make the sector reform process a reality.

National level

A National Commission for Water and Sanitation (NCWS) is to be established at the national level with representatives from the Ministry of Irrigation and Water Resources, Ministry of Health, Ministry of Education, Ministry of International Cooperation, Ministry of Environment, Ministry of Finance, PWSC and other key sector partners, such as development partners and associations of NGOs and private sector, to coordinate, supervise, harmonize, monitor and evaluate sector performance and decisions making. Definitions of roles and responsibilities in agreed TORs; structure and mandate for managing and developing the Water, Sanitation and Hygiene Sector both in urban and rural settings needs to be developed.

State level

A State Council for Water and Sanitation (SCWS) shall be established with representatives from the State Ministry of Physical Planning and Public Utilities, State Ministry of Health, State Ministry of Finance, State Ministry of Education and State Water and Sanitation Corporation and representatives of development agencies; local NGOs; service providers and consumer associations. The SCWS is to ensure sector collaboration and coordination to ensure the operationalization of sector policy objectives, required sector reform and enhanced management and development of Water, Sanitation and Hygiene service provision in close consultation with Mahalias and community representatives. Definitions of roles and responsibilities in agreed TORs structure and mandate for managing and developing the Water, Sanitation and Hygiene Sector both in urban and rural settings can be developed.

Plan Estimates

The following tables provide the programmes and projects planned for the 2012-2016 period to implement component 1.

Table 10 Programmes, projects, activities

Type (1)	Project title	Managing agency (acronym) (2)	Others involved (acronym) (2)	Status (3)	Tot. Cost (SDP)	(Proposed) source of funding	Remarks (ref nr. on map)
N1.01	Establishment of PWC policy committee for follow up and supervision	PWC		NP	720,000	FMoF/UNICEF	
N1.02	Conduct a national review workshop July 2010	PWC	UN, ministries, NGOs , SWCs	NP	200,000	FMoF/UNICEF	
N1.03	Council of Ministers & National Assembly viewed & approved Water, Sanitation and Hygiene Sector Policy	PWC	Council of Ministers & National Assembly	NP	50,000	FMoF/UNICEF	
N1.04	Conduct 6 (sectors) workshops to ensure implementation of policy after endorsement	PWC	UN, ministries, NGOs, SWCs, State Council of Ministers & Assembly	NP	750,000	FMoF/UNICEF	
N1.05	Review, update & amend the document, two times (2012 – 2016) by consultants	PWC	National Assembly, consultants, Council of Ministers	NP	120,000	FMoF/UNICEF	
N1.06	Review & update & amend the 14th technical guidelines and manuals for water Supply Sanitation facilities each 2 years	PWC	UN, ministries, NGOs	NP	100,000	FMoF/UNICEF	
N1.07	Establish Committee to review Legal Resolutions of PWSC to be launched at federal and State level by end of 2010	PWC	UN, ministries, NGOs	NP	120,000	FMoF/UNICEF	
N1.08	Conducting 6 regular meetings /conferences with other water, sanitation and hygiene sector related partners	PWC	UN, ministries, NGOs, private sector	NP	1,020,000	FMoF/UNICEF	
N1.09	10 exchange visits with others countries and participate in regional and international conferences	PWC	UN, NGOs, FMoF	NP	120,000		

Type (1)	Project title	Managing agency (acronym) (2)	Others involved (acronym) (2)	Status (3)	Tot. Cost (SDP)	(Proposed) source of funding	Remarks (ref nr. on map)
N1.10	Conducting 6 (sectors) workshops at state level for mobilization and awareness raising	PWC	UN, ministries, NGOs, SWCs, State Council of Ministers & Assembly	NP	1,020,000	FMoF/UNICEF	
N1.11	Training of Public relation staff at federal & State level to produce regular bulletins and other information, Communication and marketing media messages	PWC	SWCs, UN	NP	100,000	FMoF/UNICEF	
	TOTAL				3,370,000		

Legend

(1) Project codes: N<nr> (national funded); F<nr> (foreign funded).

(2) See list of acronyms and abbreviations at begin of document.

(3) Status: O = on-going; NF = new with funding; NP = new proposal / in pipeline no funding secured.

Table 11 Gantt chart scheduling over 2010-2016 planning period

# (1)	Project Title	5 year Plan 2007-2011				5 year Plan 2012-2016									
		2010		2011		2012		2013		2014		2015 MDG		2016	
		Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)
	Establishment of PWC policy committee for follow up and supervision	xxxx	120	xxxx	120	xxxx	120	xxxx	120	Xxxx	120	xxxx	120	xxxx	120
N1.01	Conduct a national review workshop July 2010	xxxx	200		0		0		0		0		0		0
N1.02	Council of Ministers & National Assembly viewed & approved Water, Sanitation and Hygiene Sector Policy	1	50		0		0		0		0		0		0
N1.03	Conduct 6 (sectors) workshops to ensure implementation of policy after endorsement		0	6	750		0		0		0		0		0
	Review, update & amend the document twice (2012 – 2016) by consultants		0		0	1	60		0		0	1	60		0
	Review & update & amend the 14 th technical guidelines and manuals for water Supply Sanitation facilities twice (2012 – 2016)		0		0	1	50		0		0	1	50		0
	Establish committee to review legal resolutions of PWSC to be launched at federal and state level by end of 2010		60		60		0		0		0		0		0
F1.01	Conducting 6 regular meetings / conferences with other Water, Sanitation and Hygiene Sector		0	1	170	1	170	1	170	1	170	1	170	1	170

# (1)	Project Title	5 year Plan 2007-2011				5 year Plan 2012-2016									
		2010		2011		2012		2013		2014		2015 MDG		2016	
		Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)
	related partners														
F1.02	10 Exchange visits with others countries and participate in regional and international conferences		0	3	45	1	15	1	15	1	15	1	15	1	15
F1.03	Conducting 6 (sectors) workshops at state level for mobilization and awareness raising		0	6	170	6	170	6	170	6	170	6	170	6	170
	Training of public relation staff at federal & state level to produce regular bulletins and other information, communication and marketing media messages		0		20		16		16		16		16		16
	TOTAL		430		1335		601		491		491		601		491

Legend

N=National / F=Foreign funding.

Sched=schedule: xxxx indicates scheduled throughout the year otherwise numbers indicate number of events.

Component 2: Sector coordination, Planning, Implementation and Communication

Component 2 considers measures that should lead to a better managed Water, Sanitation and Hygiene Sector. Improved management will lead to a higher level of achievement of sector objectives and priorities. Better management requires a consistent and agreed sector policy and a conducive institutional environment. Both these requirements are addressed under component 1.

Improved sector management involves many aspects. The most important being dealt with in component 2 include: coordination among all sector players (e.g. government, (non)government, private sector); strategic, efficient and participatory sector planning; management of funded projects; and all the required forms of communication (e.g. internal among all sector players and external to the wider public and political decision makers). Component 2 is supplemented by required capacity development and innovation (component 3); Monitoring to feed into management decision making and sector learning (component 4); funding mechanisms that if managed well will provide the resources to manage and implement planned projects (component 5).

Horizontal coordination

Horizontal coordination among all sector players at one specific level (national, state, Mahalia) contributes to reaching a common understanding and collaboration to work towards a more efficient and effective sector that takes into account each other's expertise and interests and contributes to reaching agreed sector objectives and ultimately to better Water, Sanitation and Hygiene services to citizens.

At the main governance / management levels (e.g. national, state, Mahalia), representative sector coordination platforms will be facilitated by an experienced core facilitation team. These platforms meet at least 4 times a year, typically in line with the annual cycle of sector review (learning and sharing) and sector (re-)planning adjusting forward looking planning to lessons learned and resources available.

These platforms may establish, in function of identified needs, more specialised focussed working groups or technical committees that address specific sector weaknesses or identified needs, including on information management; knowledge sharing; peer review; planning and procurement procedures; monitoring; rural sanitation approaches and technologies; water treatment guidelines; conflict management around water resources; management and coordination issues; provision of Water, Sanitation and Hygiene services to the poor.

Vertical coordination

Vertical coordination ensures that the various levels of sector governance (national, state, Mahalia) collaborate in an efficient and effective manner to reduce unnecessary bureaucratic delays in matters like transfers; provision of support; monitoring feedback;

exchange and access to vital sector data and information; transfer of innovation and lessons learned; rapid identification of constraints and opportunities; and more in general to contribute to a motivated sector.

At least one annual meeting, ideally in combination with annual sector reviews, between national, state and representation of Mahalia levels (which could be organized at a regional level bringing together several neighbouring states for efficiency and joint learning) is organized mainly to get holistic insight in the functioning of the sector, its development, and management and achievement of set objectives and targets. Such meetings also serve to update lower levels of government of new developments regarding federal planned and managed large scale sector interventions and vice versa to allow lower levels of government to express required central government support.

Such annual events will need to be complemented by an increasingly effective system of face-to-face exchange where and when needed and increasingly by an effective electronic and (mobile) phone based communication on all matters contributing to facilitate each sector actor to play their roles and responsibilities in the best possible way.

Special procedures and arrangements will be developed to enhance the capability at all levels to address unforeseen humanitarian or natural emergency situations.

Water, Sanitation and Hygiene Sector coordination

Background

There has been no proper Water, Sanitation and Hygiene Sector coordination before the inception of Darfur conflict in 2003 although many sector partners were involved in Water, Sanitation and Hygiene service delivery in many part of the country at that time. The terrible nature and size of Darfur emergency compel sector partner to establish coordination mechanism in all war-affected states.

The role of these coordination forums

PWC at national level and WES projects in the States have been taking the role of lead agencies with tangible support from UNICEF.

The functions of coordination forums/platforms:

- Inclusion of key humanitarian partners.
- Establishment and maintenance of appropriate humanitarian coordination mechanisms at state, affected settlements and camps.
- Coordination with national/local authorities, State institutions, local civil society and other relevant actors.
- Participatory and community-based approaches.
- Attention to priority cross-cutting issues (e.g. age, diversity, environment, gender, HIV/AIDS and human rights).
- Needs assessment and analysis.
- Emergency preparedness, planning and strategy development.
- Application of standards.
- Monitoring and reporting.
- Advocacy and resource mobilization.
- Training and capacity building.

The Activities of coordination forums/platforms:

- Establishment of sector coordination mechanism in all states (emergencies should be part of the state coordination mechanism at the Planning Department at the PWC.
- Strengthening the Area Coordination Unit to take the role of sector coordination at region areas.
- Advocacy of establishment of coordination unit at state level.
- Ensure the dissemination and promotion of sector guidelines and standards.
- Ensure that service providers subscribe to the agreed standards, and that their performance is monitored.
- Train partners on Initial Rapid Assessment (IRA) in all States.
- Introduce the use of the Water Sanitation and Hygiene Reporting Template.
- Technical assistant to help in establishment of a coordination unit.
- Training and Training of Trainers (ToT) in-country and overseas.
- Strengthen the Information management system at state level.
- Conduct planning, mid review and annual review meetings at region and national level.

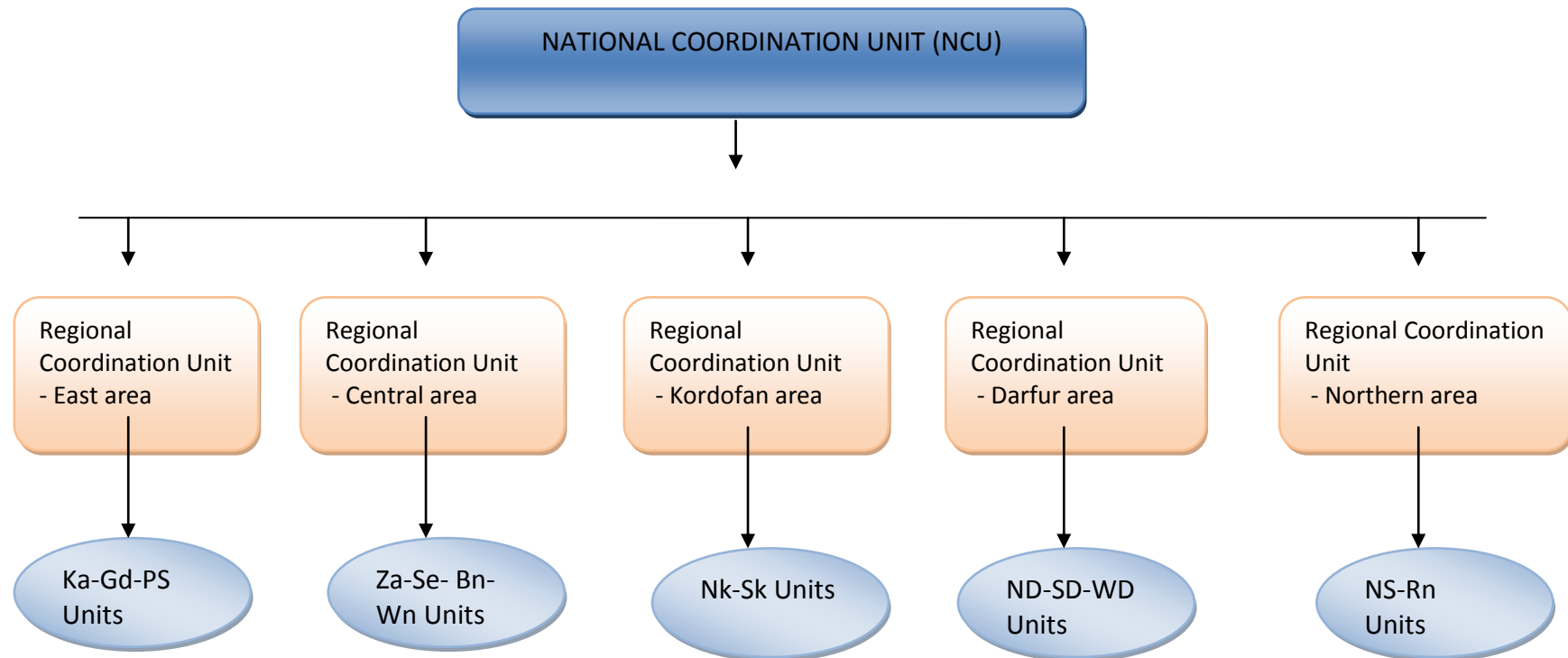


Figure 7 Proposed WASH sector coordination structure

Table 12 Projects 2012-2016 plan

Total 2011-2016	2011		2012		2013		2014		2015		2016		Total Cost (SDG 000)
Activity	Activity	Cost (SDG 000)	Activity	Cost (SDG 000)	Activity	Cost (SDG 000)	Activity	Cost (SDG 000)	Activity	Cost (SDG 000)	Activity	Cost (SDG 000)	
Technical assistance to establish state coordination unit	3 assistant	180											180
Advocacy of establishment of coordination unit at state level	5 workshop	150											150
Establishment of sector coordination mechanism in 15 states (emergencies should be part of the state coordination mechanism)	5 states	604	5 states	604	4 states	483							1691
Strengthening the Area Coordination unit	3 states	352	2 states	234									586
Conduct Initial Rapid Assessment (IRA) 15 States	5 states	50	5 states	50	5 states	50							150
Dissemination and promotion of water, sanitation and hygiene sector Guidelines and standards	7 states	147	8 states	168									315
Conduct planning, mid review and annual review meeting at region and national level	5 region & national level	270	5 region & national level	270	5 region & national level	270	5 region & national level	270	5 region & national level	270	5 region & national level	270	1620
Conduct overseas coordination training	6 persons	180	6 persons	180	6 persons	180							540

Total 2011-2016	2011		2012		2013		2014		2015		2016		Total Cost (SDG 000)
Activity	Activity	Cost (SDG 000)	Activity	Cost (SDG 000)	Activity	Cost (SDG 000)	Activity	Cost (SDG 000)	Activity	Cost (SDG 000)	Activity	Cost (SDG 000)	
Conduct ToT internal training by external facilitators			25 persons	50									50
Total SDG													5,282

The Planning Cycle

The planning process initiated in 2009 has been an innovative and most satisfactory process as it was based on guidance, procedures, and formats and required training on the job workshop that allows a bottom up planning process based on the current realities of the 15 states. Representation of Mahalia's and agencies operating in their territories were involved in the planning process for the development of the state level multi-year Water, Sanitation and Hygiene Sector development plans, which are complementary to national umbrella sector plan. In future updating and re-planning of the Water, Sanitation and Hygiene Sector will take place to bring the participatory approach even further down to also involve consumer representation and CBOs in the exercise. This will ensure that sector planning is truly based on realities on the ground and hence will cater even more for affordable, endorsed and sustained development of Water, Sanitation and Hygiene services to Sudan's citizens.

In the 2009-2010 Water, Sanitation and Hygiene Sector planning exercise representatives of the national overall planning agency were also invited to ensure compatibility with overall national strategic planning. An effort was made in the Water, Sanitation and Hygiene Sector planning to be coherent with national planning cycles, as indicated in the 2012-2016 period in the planning tables of this national and the 15 state Water, Sanitation and Hygiene Sector plans.

However, in view of rapid contextual realities, such as political developments, socio-economic developments, global financial crisis, climate change, there is a strong argument to make sector planning a more flexible process. Hence a number of recommendations are listed here, which the sector should discuss with national and state planning authorities and political decision makers, to explore if more flexible sector planning could contribute to better long term results.

Planning process recommendations

Planning cycles could be brought down to 3-year periods.

Planning for three years could be further rendered flexible by working towards 3 year indicative rolling plans, whereby every year the first of the next 3 year period becomes the actual annual sector development plan complemented for more indicative mid-term planning to cater for consistency regarding larger multi-year projects and programmes.

These flexible 3 year rolling plans could be produced in a context of a more strategic framework sector vision and mission based on long term (e.g. MDG, National 25 year strategies) visioning, which among other things could also provide guidance on inter-sectoral interactions (e.g. priorities and agreements on multiple needs for water resources among various sectors and vice versa addressing long term water resources over extraction or pollution risks).

The above approach would allow for regular updating required not only due to sector external factors, but it could also allow adjustments required that emerge from the newly introduced monitoring and sector learning components of this Water, Sanitation and Hygiene Sector plan.

In terms of matching top-down guidance, coordination, securing foreign investment and overall management and regulation with bottom-up needs and opportunities based on

community involvement in planning, next rounds of sector planning should aim to decentralize the planning process even further down than the current state level. This, however, should be introduced gradually and incrementally as capacities of sector planning facilitation improves over time at national, state and lower levels.

Key to further improvement of the quality of sector planning will be to improve sector coordination, sector communication and sector information and knowledge management. Only with full engagement of informed sector players at all levels, a major improvement step can be achieved.

Implementation of National Water, Sanitation and Hygiene Sector Plan of Sudan

National WASH Sector Plan implementation

Overall coordination and management is done by the National Coordination Unit (NCU) in PWC. Once approved and created the NCU will be governed and guided by a National Commission for Water and Sanitation (NCWS).

The implementation of the National plan starts once the plan has gone through all approval procedures at ministerial, cabinet and parliament levels. The actual implementation is then subject to budgetary allocations by the Ministry of Finance. Plan components without secured funding, will require active sourcing of funding and in case funding cannot be secured within workable time, implications for the overall consistency of the plan components will have to be reassessed. Where necessary, adjustments or even re-planning of affected components will be undertaken; this may involve reviewing state plans as well.

State WASH Sector Plan implementation

At the state level, overall management and coordination is provided by the Ministry for Urban Planning and Public Utilities, once the plan has been approved by the state cabinet and endorsed by State Assembly. A coordination unit at the SWC is in day to day charge of the plan implementation. Once approved and created this unit will be governed and guided by a State Commission for Water and Sanitation (NCWS).

Communication strategy

Communication is crucial to achieve an efficient and effective Water, Sanitation and Hygiene Sector. Communication is required for many purposes and among many different players and stakeholders in the sector. Communication content needs to be adjusted to the recipient of the communication content and communication channels need to be accessible and affordable by those who receive or wish to send communication content. Various communication channels (oral meetings, radio, TV, mobile phone, SMS, internet) can complement each other. A national guideline should be written for people with only basic information but disseminated to satellite state offices by email, printed and photocopied there and then further disseminated to Mahalias or community levels. Some of this guideline maybe translated into comic strips or oral theatre to share with audiences that cannot read.

Communication serves many different purposes:

- Internal communication within an agency (and its satellites/branches if existing).
- Internal communication within the sector but among various agencies.
- Communication towards political decision makers.
- Communication to the wider public or target sub-groups among citizens (e.g. school children).
- Communication in the wider global sector to share and learn from each other's experiences.

Communication only becomes really valuable if it allows multi-directional exchange. Too often communication is understood as a one-way action: a sender sends something to one or more receivers. In terms of collaboration and learning from each other, communication becomes much more valuable if the receiver can send back to the sender. Even more valuable is if multiple receivers can communicate with multiple other receivers and senders.

Communication channels need to be chosen with care: depending on the purpose and intention of the communication, not all communication channels offer the same opportunities. Some channels are clearly meant to offer multi-way exchange of communications (email, social networks, meetings if well facilitated) others not (a letter, a TV transmission that doesn't offer calling in by spectators). Also not all whom one may like to involve in communication have access to all types of communication channels.

Communication is crucial in management of the Water, Sanitation and Hygiene Sector for information and returning information (including data, information, analysis, reports, etc.) among players at one level but even much more importantly among players operating at different levels (national to community and all levels in between).

A very different form of communication is the one the sector needs to use to raise awareness, to advocate for issues among policy decision makers, to change behaviour, to allow feedback from (un)satisfied customers or to collect ideas on how to improve on Water, Sanitation and Hygiene sector services.

Advocacy at all political decision making levels to ensure adequate priority and allocation of resources is essential. It is important that communication makes it possible that all stakeholders can communicate well about the changes that are happening or need to happen in the sector. Under PWSC a Public Relations project and staff is required, with capability to address the specific communication, PR and advocacy requirements in the various sub-sectors (urban, rural, water, sanitation, hygiene, water resource management). A communication strategy and plan will identify content, channels, frequencies, etc.: think of regular articles, radio interviews (get media people involved!); involve NGOs especially for local advocacy. Also create exchange platforms (electronic, newsletters, annual meetings, etc. where states, external support agencies, private sector and civil society can interact and exchange information).

Component 3: Capacity Development and Innovation

Rationale for component 3

The sector has to be clear about the roles and responsibilities of all stakeholders involved to ensure efficiency and effectiveness and avoid overlap. Overlaps leads to no one feels responsible. This is true at all levels and among all involved players both within one level of governance and in-between those levels.

Professional sector staffing is skewed towards the lower levels: much personnel is hired at the lower echelon levels, whom due to weak human resource management and assignment of tasks and responsibilities, are only intermittently assigned tasks and hence for a large part of their paid working time, stand idle and contribute to lower the productivity levels in the sector. Relatively large percentages of salaries paid are hence paid to unproductive staff for work that could often easily be outsourced or subcontracted to labourers available on the market at those times that they are really needed. Savings made by this human resource management policy, could be reoriented to the upper level echelons to (1) recruit and remunerate adequately highly skilled managers and (2) offer remuneration that can compete with that given to similar skills in other (private) sectors and hence motivate staff employed.

Over the past decades, due to imposed sanctions on Sudan in terms of know-how exchange and opportunities to get access to foreign high-level training and re-training opportunities, it has not been easy to maintain an experienced and skilled workforce in government departments in general and hence also not in the Water, Sanitation and Hygiene Sector. Staffing of both PWC and the SWCs has been reduced to very low levels in comparison to those in comparable countries and motivational policy has been limited.

The same analysis is also valid in the field of water and sewerage services management and technology innovation. In sector management few innovations, introduced in other similar countries, have been introduced in Sudan, the same is true for methodological approaches and technology choices in water, sanitation and hygiene service provision in general, with the one interesting positive exception of having introduced the principle that water and sanitation services are to be paid for by consumers at all levels, mainly through a system of tariff setting.

Towards sector capacity development and innovation

Roles and responsibilities for the four main governance levels in the Water, Sanitation and Hygiene Sector (national, state, Mahalias, communities) need to be properly documented and disseminated among all players; reviewed where necessary based on sector learning approaches (see component 4).

Once clarity on roles and responsibilities has been provided, a sector wide, encompassing all levels, human resources needs assessment and a human resources development assessment are to be conducted. These will form the basis for the development of a consistent sector-wide organizational and human resources development plan, including a strategy of gradual and incremental enhancement of appropriate staff identified and

(re)training to reach levels of competence required. This will need to be preceded by the following:

- Clear demarcation of roles of sector players' categories (government staff at all levels, private sector, NGOs and CBOs).
- Development of generic organograms for the various main government departments and specialized units.
- Generic and more detailed function descriptions and required levels of competence for the various categories of key sector functions.

The above described work will be based on general principles and policy guidelines provided by the existing sector policy.

In a similar way, and again based on a series of (sub) sector annual sector learning events, an inventory of priority research and innovation development fields need to be identified. Research institutes and maybe externally funded action-research programs identified can contribute to re-launch innovative approaches in the sector, not only in terms of technology but just as importantly in terms of management ethics and methods.

A capacity development strategy

The development of an integrated sector wide capacity development strategy will incorporate the comprehensive human resource development and hence training plan. The training plan will require up front a comprehensive training needs assessment across the board, based on clearly defined roles and responsibilities of sector personnel. Next to this a training provision assessment will need to be made, covering an inventory of existing training institutions, there training offered and identifying gaps that need to be filled either in-country or by resorting to flying in or outsourcing to foreign training institutes.

Training will have to cover for levels:

1. Certificate and diploma for artisans;
2. Certificate and diploma for technicians;
3. BSc / MSc and permanent learning short courses for engineers and other non-engineering sector staff;
4. PhD for a select group of senior sector research or management staff.

Training will have to cover not only WRM, WS, Sewerage, (Environmental) Sanitation, Hygiene Promotion but also those areas required to plan and manage the sector as a whole, to the extent that such expertise is not readily available on the market.

The sector should also map the demand for the various types of staff by the sector players in order to know clients and market for training. Different players have different needs; e.g. a private service provider thinks commercially, needs customer-orientation, needs technical skills to do repairs, reduce losses, financial management etc.

Skills development will also need to cater for new approaches, methods and technologies or ways of working. These may include sector learning, social networking, eCollaboration, could based data management, knowledge management, IWRM, water service

management, management and business models, commercialisation, customer-relationship, non-revenue water, billing, communication, monitoring, water quality, water point mapping, sanitation in a value chain, hygiene promotion.

Assessments and strategic decisions need to be made on what need exists for additionally fully training staff and what existing staff needs are that can be catered through lifelong training and learning, that has many modalities to deliver including short courses, on-the-job training, seminars, e-learning, workshops.

Training programmes

Estimates for training and more general capacity development are presented in table 13 and 14.

International networking on innovation

Participation in international conferences, both online and face to face are required to keep Sudan sector specialists in touch with new developments in the sector and bounce their experience and challenges with those made in other countries.

Staff of both PWSC and the SWCs and key service providers should be provided opportunities to relevant international courses (e.g. in the Netherlands NUFFIC courses are again open for Sudan participants). For policy-makers, top planners and other high-level staff international forums and events are a good ground to learn and share experiences and new trends. This allows staff to widen their horizon and they will start thinking out of their common cadres and may bring new ideas home for experimenting, research and action-research. The sector will only gradually change. Experiments and detailed assessments are needed to assist the sector decision-makers to change strategy, technologies and management modalities.

Research strategy

The sector research strategy should focus on identified weaknesses and challenges in the various sub-sectors for which ready answers or capacities are not easily identified. The research strategy should be based on international collaboration with the most promising partners. Research should be needs and hence action driven, aiming for concrete solutions to concrete sector problems.

Regular assessments are required to identify the high priority areas of research. In parallel to this assessments need to identify what kind of research could be led by what kind of Sudan institution with what kind of international partners.

Substantiated research projects need to be developed and submitted for funding. Ideally the sector will set up a sector wide representative research commission with its own coordination unit to establish, guide and manage the sector research strategy.

Table 13 National Capacity Development (PWC & States)

Project type (1)	Project title	Managing agency (2)	Others involved (2)	Status (3)	Tot. Cost (SDG)	(Proposed) source of funding	Remarks (ref nr. on map)
N3.01	Procurement project: Procurement of (40 computers & accessories, 20 laptop, 4 projectors, 4screen plasmas, 16 GPS Centralized stabilizer, 4color photocopier	PWC/M of H		NP	180,000	FMOF	
N3.02	Management for sustainability (two TOT training courses)	PWC		NP	80,000		
N3.03	Monitoring for effectiveness (two TOT training courses)	PWC		NP	80,000		
N3.04	Sanitation and hygiene promotion (two TOT training courses)	PWC/M of H		NP	80,000		
N3.05	Sewage system management (two TOT training courses)	PWC	SWCs	NP	80,000		
N3.06	IWRM (two TOT training courses)	PWC		NP	80,000		
N3.07	Water safety (two TOT training courses)	PWC		NP	80,000		
N3.08	Emergency preparedness response (two TOT training courses)	PWC/M of H		NP	80,000		
N3.09	Technical assistant (consultants)	PWC		NP	75,000		
N3.10	Conduct Exchange experiences / study tour to different countries for 60 Persons (PWC + SWC + Stakeholders)	PWC		NP	1,050,000		
N3.11	Conduct Exchange experiences / study tour to different states for 60 Persons (PWC + SWC + Stakeholders)	PWC		NP	15,000		
	TOTAL				1,880,000		

Table 14 Gantt Chart Capacity Development (SWC, PWC) 2011-2016

Project type & nr (1)	Project title	5 Year Plan 2012-2016												
		2011		2012		2013		2014		2015 [MDG]		2016		5 Year Plan
														2012-2016
		Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	SDG (000)
N3.01	Procurement project: Procurement of (40 computers & accessories, 20 laptop, 4 projectors, 4 plasma screen, 16 GPS Centralized stabilizer, 4 colour photocopier)				80,000		50,000		50,000		0		0	180,000
N3.02	Management for sustainability (two TOT training courses)				40,000		40,000		0		0		0	80,000
N3.03	Monitoring for effectiveness (two TOT training courses)						40,000		40,000		0		0	80,000
N3.04	Sanitation and hygiene promotion (two TOT training courses)				40,000		40,000		0		0		0	80,000
N3.05	Sewage system management (two TOT training courses)						40,000		40,000		0		0	80,000
N3.06	IWRM (two TOT training courses)								40,000		40,000		0	80,000
N3.07	Water safety (two TOT training courses)				40,000				40,000					80,000
N3.08	Emergency preparedness response (two TOT training courses)						40,000		40,000					80,000
N3.09	Technical assistant (consultants)				25,000				25,000		25,000			75,000
N3.10	Conduct Exchange experiences / study tour to different countries for 60 Persons (PWC + SWC +				210,000		210,000		210,000		210,000		210,000	1,050,000

Project type & nr (1)	Project title	5 Year Plan 2012-2016												
		2011		2012		2013		2014		2015 [MDG]		2016		5 Year Plan
														2012-2016
		Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	SDG (000)
	Stakeholders)													
N3.11	Conduct Exchange experiences / study tour to different states for 60 Persons (PWC + SWC + Stakeholders (p 100 persons)												15,000	
	TOTAL		2011		235,000		210,000		485,000		235,000		210,000	1,880,000

Table 15 Capacity Development and Innovation (PWC Training Centre)

type (1)	Project title	Managing agency (2)	Others involved (2)	Status (3)	Tot. Cost (SDG)	(Proposed) source of funding	Remarks (ref nr. on map)
N3.01	Procurement project: Procurement of (2 mini bus, 2 vehicles, 2 crane truck, 80 computers & accessories, 20 laptop, 2 network servers + accessories, 4 projector, 4 plasma screen, 18 GPS Centralized stabilizer, 2 colour polluters, 4 colour photocopier, furniture for 2 labs & rooms, 40 original advance software for training require, 1 compressors + accessories, 4 censors, 2 colour borehole camera, 4 generators)	PWC		NP	5,117,800	FMOF	
N3.02	Construction of water quality analysis / test laboratory & equipments	PWC		NP	800,000		
N3.03	Construction of 2 training rooms & 2 seminar rooms	PWC		NP	450,000		
N3.04	Construction of the library for reaches ,studies , references & training	PWC		NP	750,000		
N3.05	Establish 3 regional training unit to coordinate and feedback on training	PWC	SWCs	NP	225,000		
N3.06	Conduct annual assessment of staff needs and new skills to be acquired	PWC		NP	200,000		
N3.07	Development of the manual for planning, managing and evaluating the training courses	PWC		NP	50,000		
N3.08	Training programmes water sector (4)	PWC		NP	500,000		
N3.09	Conduct pilot project in rural water supply; conduct pilot projects in Sanitation and Hygiene promotion	PWC		NP	11,000		
N3.10	Participate in international courses in IWRM & other disciplines for 80 persons (PWC + SWC + Stakeholders)	PWC		NP	225,000		
N3.11	conduct Exchange experiences / study tour to different countries for 60 Persons (PWC + SWC + Stakeholders)	PWC		NP	240,000		
	TOTAL				8,568,800		

Legend

Project codes: N<nr> (national funded); F<nr> (foreign funded).

Acronym / abbreviations used:

Status: O = on-going; NF = new with funding; NP = new proposal / in pipeline no funding secured.

Trainings programmes: 240 persons in admin, technical surface and ground water for 450 persons; water quality courses 300 Persons; computer skills and data management 480 persons; Logistic and stock management 112 Persons; Remote sensing courses 160 Persons; courses in IWRM 240 persons; Environmental courses 180 persons; courses in Hygiene and community mobilization 270 persons; Courses in education technology for trainers; Courses in Quality control and Standards 360 persons; courses in monitoring and evaluation 360 persons; 75 persons (PWC + SWC + Stakeholders) participate in international conference in different countries for different Water, Sanitation and Hygiene Sector activities.

Table 16 Gantt Chart Scheduling PWC Training Centre 2010-2016

type (1)	Project title	5 Year Plan 2007-2011				5 Year Plan 2012-2016										
		2010		2011		2012		2013		2014		2015 [MDG]		2016		5 Year Plan
																2012-2016
		Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	SDG (000)
N3.01	Procurement Project		117		1,500		1,500		1,000		1,000		0		0	3,500
N3.02	Water quality analysis / test laboratory		0		400		400		0		0		0		0	40
N3.03	2 training halls & seminar rooms		0		350		150		0		0		0		0	150
N3.04	Library for training hall & seminar rooms		300		300		150		0		0		0		0	150
N3.05	3 regional training units		0		0		10		100		100		0		0	210
N3.06	Annual assessment of staff needs and new skills to be acquired		0		75		75		50		0		0		0	120
N3.07	Manual for planning, managing and evaluating training		0		0		100		100		100		100		100	500
N3.08	Training programmes water sector		0		1,000		1,000		1,000		100		100		0	2,200
N3.09	Pilot project in water, sanitation and hygiene sector		200		300		200		200		200		0		0	600
N3.10	International courses in IWRM & other disciplines 80 persons (PWC + SWC + Stakeholders)		0		38		38		38		38		38		38	190
N3.11	20 exchange / study tours abroad 60 Persons (PWC + SWC + Stakeholders)		0		40		40		40		40		40		40	200
	TOTAL		617		4,003		3,663		2,528		1,578		278		178	7,860

Legend
N=National / F=Foreign funding.

Component 4: Monitoring and Sector Learning

The rationale for component 4

Management and further development of the Water, Sanitation and Hygiene Sector in an efficient and effective way to achieve the sector objectives and targets set cannot be realized without having a good insight and knowledge of what works and what doesn't work. This is not only true for capital investments in Water, Sanitation and Hygiene Sector infrastructure, but even more so for the smooth and efficient management of the Water, Sanitation and Hygiene Sector as a whole, across all players at all governance levels and also on the levels of satisfaction among citizens about the Water, Sanitation and Hygiene Sector services provided.

Monitoring based on agreed, measurable and above all affordable indicators, is essential to provide this insight and understanding at all management levels, not only at national level but in particular also at all lower levels of sector and Water, Sanitation and Hygiene Sector services management where often immediate remedial action can be taken to address issues that emerge from monitoring.

Monitoring should be based on indicators that provide all required information for management, and hence be formulated and used on financial matters; cost-benefit matters; quality and quantity matters related to Water, Sanitation and Hygiene Sector services provided and Water, Sanitation and Hygiene access reached; motivation and skills of sector players; levels of satisfaction of consumers and long term sustainability issues.

Experiences should be documented and shared, not only among sector players collaborating at one specific level (e.g. state level political decision makers, managers, implementers and consumer representation groups), but also across the various levels, such that national levels understand needs, constraints and opportunities at lower levels and vice versa lower levels understand national level legislation, targets, guidelines, regulation and allocation of national funding and possible subsidies. This is true among all levels, so typically national, state, Mahalias and community levels. The latter exchange of experiences can be addressed by providing explicit learning and sharing events and platforms, typically organized in conjunction with key annual planning cycles (e.g. annual sector review, thematic workshops, annual planning and budgeting exercises). This set of activities, which ensure a more aware and effective approach to Water, Sanitation and Hygiene Sector development, is usually referred to as **sector learning**.

Planning for monitoring and sector learning

Objective 1

Ensure that M&E Unit at PWC and SWC is well established and functioning and also starts monitoring the Sanitation and Hygiene components of the Water, Sanitation and Hygiene Sector Monitoring of different water resources, include basic overview of trends in water use, especially human use and livestock, rural and urbanisation and possible environmental (waste water) problems and measure coverage and access to, and functionality and use of

water supply and sanitation services in urban and rural areas to new target policy until 2016.

Objective 2

Coordination of emergency preparedness operations at state level: There are three levels of coordination regarding the response to the emergency situation: at local, state and national level. Most of the states have emergency committee to manage the operations and facilitates linkages between the different levels. In most cases major support usually comes from the national level. UN agencies and NGOs usually play key role in emergency preparedness and response.

Objective 3

Coordination of M&E with the States in training in M&E, and share guidelines and standards, joint resources allocation, modern different Water, Sanitation and Hygiene Sector acceptable and sustainable technology through foreign and local investment for federal, states rural and urban levels by 2012. Relationship between PWC and SWCs, roles and responsibilities are well defined.

Objective 4

Establishment of a Management Information System (MIS) fully integrated with an affordable and user friendly Geographic Information System (GIS like the Water Point Mapper of WaterAid; mobile phone based monitoring systems are being tested) for proper performance through processing and analysing monitoring data in place by 2013.

Objective 5

Monitor and report of national and internationally funded projects implemented at state level, which are channelled through PWSC.

A National Water, Sanitation and Hygiene Sector Resource Centre

Many countries have established so-called national (and at time sub-national) WASH sector resource centres to play a facilitating role in sector learning and sharing, through activities including providing meta level overview, access and “how to make best use” of existing information and knowledge sector wide (horizontal in terms of areas of knowledge) and across all levels (vertically from communities up to national and international levels). The Sudan WASH sector will explore to what extend the emerging sector training facility of the WES Unit housed in PWC could start up such a Resource Centre Facility to engage in sector learning based networking. Such an initiative could also benefit the proposed communication strategy under component 2 and capacity development under component 3.

Monitoring framework

The Water, Sanitation and Hygiene sector will have to develop a comprehensive and integrated sector monitoring framework. This framework will form the basis of a revision and strengthening of the current sector Management Information System (MIS) and data obtained from the less frequent sector relevant household survey data. A comprehensive

monitoring framework will cover all sub-sectors as identified in the National WASH Sector plan. In the future this WASH sector monitoring framework will also ensure its integration in a broader water resources management monitoring framework. To ensure the integration of the monitoring framework, key performance indicators at sub-state, state and national level will have to be formulated and made coherent.

The monitoring framework development and increased sophistication will have to be based on current affordability and monitoring capabilities at the various sector governance and management levels.

A top priority in this strategic sector plan has been given to the required monitoring capacity building at all relevant levels (see monitoring and sector learning estimates). Capacity building will not only aim at enhanced monitoring capacity but also at sector learning. Sector learning is the activity that is based on monitoring outcomes and ensures that sector management and governance are adjusted regularly based on the lessons learned from the monitoring activities.

Development of MIS

The sector information management system (MIS) has to be improved and regularly updated to accommodate the adopted monitoring system and various management information formats required in the sector.

There is no need to start with a composite and complicated system and high ambitions for the sector information management. Instead, a straightforward database system along with reliable data collection and data reporting tools can be introduced. Establishing an operational database alone is not sufficient to provide relevant information to management. There are other areas that need to be improved concurrently.

First, the data collection process must be efficient and effective in order to assure that all required management information at all relevant levels are made available in a timely fashion. Second, the data and analysis have to be quality controlled throughout the data handling process. Third, the required information management system needs to be complemented relevant analysis and clear management needs oriented reporting and visualization (Geographic Information System (GIS) for mapping). The GIS needs to demonstrate its value to justify its investment and operational costs, by delivering demand based outputs, that start with simple but useful products and as expertise increases incrementally expands its services and products to all relevant stakeholders in the sector.

These are the outlines of the planned and proposed information management system. Such system at its core is composed of a flexible, updatable database along with a GIS tools and should be able to rely on a quality chain of data collection, compilation, consolidation and sharing among all relevant sector management levels.

A continuous capacity development and maintenance programme needs to support this crucial sector management tool.

Table 17 Monitoring and sector learning

Project type (1)	Project title	Managing agency	Others involved	Status (3)	Tot. Cost (SDG)	(Proposed) source of funding	Remarks (ref nr. on map)
N4.01	7 awareness workshops on monitoring all levels (6 regions)	PWC	SWCs	?	420,000	PWC& SWC	
N4.02	Mobilize SWCs for establishment of M&E office and appointment of qualified team as M&E officers	PWC		?	30,000	PWC& SWC	
N4.03	Support: PWC, M&E offices with essential tools and equipment to assist in program implementation: 10 GBS; 10 lap top; communications accessory (MDSLs); 3 printers; consumable materials	SWC	PWEC	?	60,000	SWC/PWC	
N4.04	Share in preparation of annual emergency program and awareness rising	PWC	SWCs	?	20,000		
	1 annual national workshop for M&E officers from federal and state levels on urban/rural Water, Sanitation and Hygiene Sector technology	PWC	SWCs	?	300,000		
	M&E annual meeting one at federal and (6) regional levels	PWC	SWCs	?	300,000		
	Monitoring the status of Water, Sanitation and Hygiene Sector program in (15) states by conducting at least one visit to each state per month	PWC	SWCs	?	270,000		
N4.05	Establishment of Central Database at PWC	PWC	SWCs	?	105,000		
N4.06	Adoption and promotion of simple reporting format for SWC teams	PWC	SWCs	?	21,000		
N4.07	ToT of SWCs M&E officers in simple form of financial follow up, contract management, Status of Water, Sanitation and Hygiene Sector program and other financial reporting systems	PWC	SWCs	?	45,000		
	TOTAL				1,571,000		

Legend

Project codes: N<nr> (national funded); F<nr> (foreign funded).

Status: O = on-going; NF = new with funding; NP = new proposal / in pipeline no funding secured.

Table 18 Gantt Chart Monitoring and Sector Learning 2010-2016

type (1)	Project title	5 Yr Plan 2007-2011				5 Year Plan 2012-2016										
		2010		2011		2012		2013		2014		2015 [MDG]			2016	5 Year Plan
																2012-2016
		Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	Sched	SDG (000)	SDG (000)
N1.01	7 awareness workshops	1	60		360		0		0		0		0		0	420
N1.02	Establishment of SWCs M&E offices		0	15	30		0		0		0		0		0	0
N1.03	PWC M&E equipment		0		60		0		0		0		0		0	0
N1.04	Share in emergency program		0		20		0		0		0		0		0	0
N1.05	Annual national M&E workshops		0	1	50	1	50	1	50	1	50	1	50	1	50	250
N1.06	Annual M&E meetings		0	1	50	1	50	1	50	1	50	1	50	1	50	250
N1.07	Monitoring visits to states		0	15	45	15	45	15	45	15	45	15	45	15	45	225
N1.08	Establishment of Central Database at PWC		0	1	105		0		0		0		0		0	0
N1.09	Introduction reporting format		0	1	21		0		0		0		0		0	0
N1.10	ToT SWCs M&E officers		0	1	45		0		0		0		0		0	0
	TOTAL		60		786		145		145		145		145		145	1145

Legend
N=National / F=Foreign funding.

Component 5: Water, Sanitation and Hygiene Sector funding mechanisms

National Water, Sanitation and Hygiene Sector Policy guidance

Water supply and sanitation development programs shall be given high priority in funding by the government. In rural water development programs, the government, communities and other stakeholders shall cover the capital investments costs in agreed shares. While covering management costs, including operation and maintenance costs is the responsibility of the local community of consumers of the services. This is typically ensured by instating agreed sets of tariffs. In urban water supply development programs, the capital investment shall be covered by government and other stakeholders whereas operation, maintenance and replacement costs shall be borne by the urban community through tariff structure and service tax. Investment in rural sanitation services is typically a household responsibility, though government and development agencies will build local (private) sector capacity to put on the market various sanitary options for sale. Mahalias and CBOs, under overall regulation by the state, may at local level decide to (cross) subsidize disadvantaged households that may not be able to bear the full investment costs. The management and related costs of sanitary facilities in rural areas is at the full cost of the users. There where sanitary facilities need regular emptying by external (private) operators, rules, regulations and a tariff system will be instated. In urban sanitation, especially where more complex collective sanitary technology is introduced, (collective septic tanks, various forms of sewerage infrastructure), consumers will contribute to coverage of the costs through a tariff system.

Government will remain overall responsible for required investments in water resources management, including safeguarding citizens from natural phenomena and disasters (e.g. seasonal flooding, seasonal variation in availability of sufficient water resources to warrant human rights to access to water, and in general water resources requirements for socio-economic development). Where water is used for productive, hence income generating, purposes (agriculture, livestock, brick making, etc.) users of bulk water supply will also be charged by agreed tariffs in the context of the gradual introduction of watershed or river basin based water resources management.

Overarching awareness raising, hygiene promotion and promoting hygiene behaviour change that benefits both water usage practices and sanitation, will remain the responsibility of government, which may outsource or subcontract such assignments to qualified development agencies, whom in their turn will have the responsibility to build sustained and thus structural local (non) (government) capacity to ensure on-going hygiene promotion and campaigns, particularly also at schools.

Facilitating and securing investments in the Water, Sanitation and Hygiene Sector

Government aims at promoting the involvement of private sector and community based initiatives in reaching the MDG and national multi-year objectives in the Water, Sanitation and Hygiene Sector. In order to convince private sector, but also community based

organizations, they must be provided sufficient and trusted information about the government's policy in this respect. Incentives may be made available and these need to be widely communicated. One important aspect in making private sector, but more in particular CBOs willing to invest in Water, Sanitation and Hygiene Sector infrastructure is to know whether they will or not retain ownership of their investments made. Ownership may also allow them in the longer term to qualify for loans and credits for future improvement or expansion of Water, Sanitation and Hygiene facilities they have put in place. Especially in rural areas or low-income urban areas, citizens may not have the required education to understand the options at their disposal. So promotion of CBO and private sector investment will require capacity development in various skills required to invest in the sector. This is primarily a government task, though it may subcontract qualified agencies to carry such projects out on its behalf and under its supervision and regulation.

Cost factors in developing the provision of Water, Sanitation and Hygiene services

The following main cost factors should be distinguished (see Annex 2):

1. Investment costs to build the water and sanitation infrastructure, called CAPEX⁵
2. Management and O&M costs to ensure sustained functioning and use of the Water, Sanitation and Hygiene services, called OPEX.
3. Expenditures related to indirect support, also called ExpIDS, at macro and local level for policy making, planning; in general institutional costs in providing future PWSC and SWSCs with the required capital investments in assets (buildings), equipment (transport, construction, if not outsourced to private sector) and materials for organisational functioning.
4. Expenditures related to direct support, also called ExpDS, which relate to expenditures related to post-construction activities to local stakeholder groups including water service management entities and users groups, WASH committees etc. National, State and Mahalia's recurrent costs are part of this, including salaries and operational costs (phone bills, fuel, paper) but also on-going capacity development and retraining; running campaigns; hiring consultants, etc.

The sector must indicate clearly at what level (federal, state, Mahalia) which costs should be born and how they should be financed (e.g. grants, credits, cost recovery mechanisms on services provided) in a realistic way. Effective decentralisation demands clarity on financial and functional responsibilities. In terms of financing mechanism, government at all levels will have to assess whether the sector can be in principle self-financing (at least in terms of covering the OPEX and CapManEX) or whether (cross) subsidies on specific cost categories (e.g. CapManEx) need to be approved from other government revenue generation (e.g. tax on oil exploitation, shares on general tax revenues).

⁵ Reference is made to the WASH life-cycle cost approach, <http://www.washcost.info/page/121>.

International procurement and contracting

International procurement of water supply inputs and contracting for implementation of national sector projects is PWC's mandate in collaboration with federal Ministry of Finance and Economy. PWC also is responsible developing and safeguarding sector standards.

Component 6: National and external funded projects

Cost factors in developing the provision of Water, Sanitation and Hygiene services

As explained in the introduction of the National Plan document, this national plan serves to complement and support WASH services provision by the States and their composing Mahalias.

The National Plan needs to primarily ensure funding for large sector development investment initiatives that are beyond the realm of state governments. On top of this the national plan needs to ensure the overall resources to govern and manage the sector country wide.

The following main cost factors should be distinguished (see Annex 2):

1. Investment costs to build the water and sanitation infrastructure, called CAPEX⁶. Availing of the required water related infrastructure costs will be the responsibility of federal and state level. Those costs will be financed as part of the federal and state annual budget allocation and external support funds. However, rural communities at locality level will contribute to the capital investment cost of community level water sources. For the household sanitation infrastructure, the majority will be financed by communities at Locality level, while a very small portion (sewerage networks) will be financed with federal and state level funds.
2. Management and O&M costs to ensure sustained functioning and use of the Water, Sanitation and Hygiene services, called OPEX. The O&M cost for WASH services will be fully recovered from the end users at Locality level.
3. Expenditures related to indirect support, also called ExpIDS, at macro and local level for policy making, planning; in general institutional costs in providing future PWSC and SWSCs with the required capital investments in assets (buildings), equipment (transport, construction, if not outsourced to private sector) and materials for organisational functioning. Costs will be incurred at federal and state level, and will be financed as part of the federal and state annual budget allocation and external support funds.
4. Expenditures related to direct support, also called ExpDS, which relate to expenditures related to post-construction activities to local stakeholder groups including water service management entities and users groups, WASH committees etc. National, State and Mahalia's recurrent costs are part of this, including salaries and operational costs (phone bills, fuel, paper) but also on-going capacity development and retraining; running campaigns; hiring consultants, etc. Direct support expenditures will mainly be covered at state and Locality levels from the O&M tariff paid by consumers. At federal level, it will be availed from the water and sanitation national budget allocation and external support.

Effective decentralisation demands clarity on financial and functional responsibilities. In terms of financing mechanism, government at all levels will have to assess whether the

⁶ Reference is made to the WASH life-cycle cost approach, <http://www.washcost.info/page/121>.

sector can be in principle self-financing (at least in terms of covering the OPEX and CapManEX) or whether (cross) subsidies on specific cost categories (e.g. CapManEx) need to be approved from other government revenue generation (e.g. tax on oil exploitation, shares on general tax revenues).

Capital Investment (CAPEX) Water and Sanitation Services

In order to achieve the targets set for the time horizon end 2016 of this national plan the national Water, Sanitation and Hygiene Sector is expected to invest the following amounts per year in Water, Sanitation and Hygiene Sector infrastructure.

Table 19 CAPEX in WASH sector 2012-2016

Year	Urban WS SDGx1000	Urban S&H SDGx1000	Total per year SDGx1000
2012	10,500	268,500	281,012
2013	34,000	282,000	318,013
2014	28,000	265,500	295,514
2015	4,500	229,000	235,515
2016	-	-	-
TOTAL	77,000	1,045,000	1,130,054

Recurrent Costs of Water and Sanitation Services

In order to manage those Water, Sanitation and Hygiene services not managed by local communities the next table provides estimates required on an annual basis until 2016, taking into account that the service provision is (at least partly) covered by revenues generated from tariffs paid by consumers.

Table 20 OPEX in WASH sector 2012-2016

Year	Urban WS	Urban S&H	Total per year
2012			
2013			
2014			
2015			
2016			
TOTAL			

Capital Investments of Support Services

In order to manage the Water, Sanitation and Hygiene Sector as a whole (PWC and related departments) will require annual capital investment for each of the sector components to provide the necessary assets until 2016.

Table 21 CapManEx in WASH sector 2012-2016

Year	Capacity Dev & Innov SDGx1000	Urban WS	Rural S&H	Urban S&H	Total
2012	2,210				
2013	1,100				
2014	1,100				
2015	-				
2016	-				
TOTAL	4,410				

Recurrent Costs of Support Services

In order to manage the sector in an integrated way, recurrent budgets lines (disaggregated into the usual budget lines) will be required on an annual basis till 2016.

Table 22 ExpDS in WASH sector 2012-2016

Year	Policy and sector reform SDGx1000	Sector Coord. Planning & Comm. SDGx1000	Capacity Dev. & Innov. SDGx1000	Monitoring & Sector learning SDGx1000	Total SDGx1000
2012	1,335	1,556	1,453	145	6,501
2013	601	983	1,428	145	5,170
2014	491	270	478	145	3398
2015	491	270	278	145	3199
2016	601	270	178	145	3210
TOTAL	3,519	3,349	3,815	725	21,478

Table 23 **ExpIDS in WASH sector 2012-2016**

Year	Rural WS	Urban WS	Rural S&H	Urban S&H	Total
2012					
2013					
2014					
2015					
2016					
TOTAL					

Component 6a Estimates funded from national resources

Projects listed under component 6a are nationally funded (grants or credits) from a range of different sources, including government, private sector and credit facilities (full financing through Sudanese institutions). These projects may be of a nature to only strengthen Water, Sanitation and Hygiene Sector delivery capacity or infrastructure at national level, but more often benefit specific regions in specific states of the nation. The estimates distinguish whether the planned activity is at the national or state level. The planning includes project ideas in an advanced stage for which only tentative cost estimates are provided.

Component 6b Estimates of foreign funded investment

Projects listed under component 6b are externally funded (grants or credits) by a range of international agencies, bi-lateral donors, private companies or international finance institutions. These projects may focus the Water, Sanitation and Hygiene Sector delivery capacity or infrastructure at national level, but more often benefit specific regions in specific states of the nation. The estimates distinguish whether the planned activity is at the national or state level. The planning includes project ideas in an advanced stage for which only tentative cost estimates are provided.

Table 24 National funded project 2012-2016 (Component 6a)

State	Project Title	5 year Plan 2012-2016									
		2012		2013		2014		2015		2016	
		SDG (000)	US\$ (000)	SDG (000)	US\$ (000)	SDG (000)	US\$ (000)	SDG (000)	US\$ (000)	SDG (000)	US\$ (000)
South Darfur	Gerida - water plant		15,000		15,000		15,000		10,000		
	Kass - from Jemeza	1,750		1,750		1,750		1,750			
	Rehed el Berdi - from Kohr Bagara	1,750		1,750		1,750		1,750			
North Dafur	Elfasher - Sag Elneam		17,500		17,500						
	Malit - water plant	3,500		3,500							
North Kordofan	Abu Zabad - water plant	3,500		3,500							
	40 Km networks for Jebal Hedoub villages				12,500		12,500				
White Nile	Eldwim - water plant		4,500		4,500		4,500		4,500		
	Kosti - water plant		4,500		4,500		4,500		4,500		
	Rabak - water plant		4,500		4,500		4,500		4,500		
	Networks for (Eldwim-Kosti -Rabak -Getina)						3,500		3,500		
Al-Gazira	Great Medani - water plant		7,500		7,500		7,500		7,500		
	Elkamlin -(N.AI -Gazira) - water plant		7,500		7,500		7,500		7,500		
	El Hasaheisa - water plant		4,500		4,500		4,500		4,500		
	El Managil - water plant		7,500		7,500		7,500		7,500		
	Networks for (the above 4 locations from Sondous irrigation scheme)			5,000		5,000					
Sinnar	Sinnar town - water plant		4,500		4,500		4,500		4,500		
	Singa town - water plant		6,000		6,000		6,000		6,000		
	Singa network				1,000		1,000				
	Jebel Dood -Netwok			1,000		1,000		1,000			
Blue Nile	Elrosieris			500		1,500					
	Eldamazin		4,000		4,000		4,000				
	Transmion line South Elrosieris dam			2,500		2,500					
Northern	El toraa - water plant			2,500		2,500					
	Burgeig - water plant			2,500		2,500					
	Abri - water plant			2,500		2,500					
	Networks for (the above 3 locations from Sondous irrigation scheme)			2,500		2,500					

State	Project Title	5 year Plan 2012-2016									
		2012		2013		2014		2015		2016	
		SDG (000)	US\$ (000)	SDG (000)	US\$ (000)	SDG (000)	US\$ (000)	SDG (000)	US\$ (000)	SDG (000)	US\$ (000)
	Dongla town - water plant		6,000		6,000		6,000				
	Debba - water plant		2,500		2,500						
	Argo - water plant			2,500		2,500					
	Shendi - water plant		6,000		6,000		6,000				
	Abu hamad - water plant		2,000		2,000		2,000				
	Networks for (the above 2 locations from Sondous irrigation scheme)			2,000		2,000					
Gedarif	Gedarif - water plant		20,000		20,000		20,000		20,000		
	Dams and haffirs (Islamic bank)		3,750		3,750		3,750		3,750		
Kassala	Kassala water plant development		4,500		4,500		4,500		4,500		
Red Sea	Transmion pipline - Damer Portsudan		86,250		86,250		86,250		86,250		
Khartoum	Bori -water plant		15,000		15,000		15,000		15,000		
	Abu Siead - water plant		30,000		30,000		30,000		30,000		
	Networks for (the above 2 locations from Sondous irrigation scheme)		5,000		5,000		5,000		5,000		
TOTAL		10,500	268,500	34,000	282,000	28,000	265,500	4,500	229,000	-	-

Table 25 Foreign funded projects and programmes (Component 6b)

State	Project Title	Managing agency (2)	Others involved (2)	Status (3)	Cost in US\$	Cost in SDG (000)	(Proposed) source of funding	Remarks (ref nr. on map)
South Darfur	Gerida - water plant	PWC/SWC/Mof F	Private Sec	NP	55,000,000			
	Kass - from Jemeza	PWC/SWC/Mof F	Private Sec	NP	0	7,000,000		
	Rehed el Berdi - from Kohr Bagara	PWC/SWC/Mof F	Private Sec	NP	0	7,000,000		
North Darfur	Elfasher - Sag Elneam	PWC/SWC/Mof F	Private Sec	NP	35,000,000	0		
	Malit - water plant	PWC/SWC/Mof F	Private Sec	NP		7,000,000		
North Kordofan	Abu Zabad - water plant	PWC/SWC/Mof F	Private Sec	NP	0	7,000,000		
	40 Km net works for Jebal Hedoub villages	PWC/SWC/Mof F	Private Sec	NP	25,000,000	0		
White Nile	Eldwim - water plant	PWC/SWC/Mof F	Private Sec	NP	18,000,000	0		
	Kosti - water plant	PWC/SWC/Mof F	Private Sec	NP	18,000,000	0		
	Rabak - water plant	PWC/SWC/Mof F	Private Sec	NP	18,000,000	0		
	Net works for (eldwim-Kosti -Rabak -Getina)	PWC/SWC/Mof F	Private Sec	NP	7,000,000	0		
Al -Gazira	Great Medani - water plant	PWC/SWC/Mof F	Private Sec	NP	30,000,000	0		
	Elkamlin - (N.Al -Gazira) -water plant	PWC/SWC/Mof F	Private Sec	NP	30,000,000	0		
	El Hasaheisa -water plant	PWC/SWC/Mof F	Private Sec	NP	18,000,000	0		
	El Managil -water plant	PWC/SWC/Mof F	Private Sec	NP	30,000,000	0		
	Net works for (the above 4 locations from Sondous irrigation scheme)	PWC/SWC/Mof F	Private Sec	NP		10,000,000		
Sinnar	Sinnar town -water plant	PWC/SWC/Mof F	Private Sec	NP	18,000,000	0		
	Singa town -water plant	PWC/SWC/Mof F	Private Sec	NP	24,000,000	0		
	Singa network	PWC/SWC/Mof F	Private Sec	NP	2,000,000	0		
	Jebel Dood –Netwok	PWC/SWC/Mof F	Private Sec	NP	0	3,000,000		
Blue Nile	Elrosieris	PWC/SWC/Mof F	Private Sec	NP	0	2,000,000		
	Eldamazin	PWC/SWC/Mof F	Private Sec	NP	12,000,000	0		
	Transmion line South Elrosieris dam	PWC/SWC/Mof F	Private Sec	NP	0	5,000,000		
Northern	El Toraa - water plant	PWC/SWC/Mof F	Private Sec	NP	0	5,000,000		
	Burgeig - water plant	PWC/SWC/Mof F	Private Sec	NP	0	5,000,000		
	Abrie - water plant	PWC/SWC/Mof F	Private Sec	NP	0	5,000,000		
	Net works for (the above 3 locations from Sondous irrigation scheme)	PWC/SWC/Mof F	Private Sec	NP	0	5,000,000		

State	Project Title	Managing agency (2)	Others involved (2)	Status (3)	Cost in US\$	Cost in SDG (000)	(Proposed) source of funding	Remarks (ref nr. on map)
	Dongla town - water plant	PWC/SWC/Mof F	Private Sec	NP	18,000,000	0		
	Debba - water plant	PWC/SWC/Mof F	Private Sec	NP	5,000,000	0		
	Argo - waterplant	PWC/SWC/Mof F	Private Sec	NP		5,000,000		
River Nile	Shendi - water plant	PWC/SWC/Mof F	Private Sec	NP	18,000,000	0		
	Abu hamad - water plant	PWC/SWC/Mof F	Private Sec	NP	6,000,000	0		
	Net works for (the above 2 locations from Sondous irrigation scheme)	PWC/SWC/Mof F	Private Sec	NP		4,000,000		
Gedarif	Gedarif - water plant	PWC/SWC/Mof F	Private Sec	NP	80,000,000	0		
	Dams and haffirs (Islamic bank)	PWC/SWC/Mof F	Private Sec	NP	15,000,000	0		
Kassala	Kassala water plant development	PWC/SWC/Mof F	Private Sec	NP	18,000,000	0		
Red Sea	Transmion pipline - Damer Port Sudan	PWC/SWC/Mof F	Private Sec	NP	345,000,000	0		
Khartoum	Bori - water plant	PWC/SWC/Mof F	Private Sec	NP	60,000,000	0		
	Abu Siead - water plant	PWC/SWC/Mof F	Private Sec	NP	120,000,000	0		
	Net works for (the above 2 locations from Sondous irrigation scheme)	PWC/SWC/Mof F	Private Sec	NP	20,000,000	0		
	Total				1,045,000,000	77,000,000		

Summary Estimates Sector Plan 2011-2016

Introduction

The narrative and tables that follow provide summary estimates for investments in the WASH sector for the planning period 2011-2016, both at national and at state levels⁷. This period includes and specifies the 5 year national planning cycle 2012-2016 for which the totals are specified. For overall national planning purposes the 5 year cycle estimates are therefore available. Note that the MDG end year 2015 is included in that period.

Consolidated national planning estimates

Table 27 provides the consolidated state estimates - for those states for which estimates have been produced - aggregated per state WASH sector plan components:

1. Rural Water Services;
2. Urban Water Services;
- 3.1 Domestic Sanitation;
- 3.2 Public Sanitation;
- 3.3 Hygiene Education;
3. Total Sanitation and Hygiene;
4. Emergency (preparedness);
5. Institutional and Capacity Development.

Table 28 provides the total consolidated WASH sector estimates, for the states (where available) and at national level (both from national and foreign sources). The total Sudan WASH sector investment estimates for the period 2011-2016 amount to SDG 55,915,186 equivalent to US\$ 18,638,395.

Table 29 provides the sector supportive investment estimates at national level, disaggregated by the following sector supportive components

1. Policy Review, Development and Sector Reform;
2. Sector Coordination, Planning, Communication;
3. Capacity Building and Innovation;
4. Monitoring and Sector Learning;
5. WASH Sector Support Funding Mechanism;
6. Foreign Funded Projects.

Table 30 and following tables provide the consolidated State Level Investment Estimates for each state and disaggregated by State Plan components 1-5 (as indicated above under table 27)⁸.

⁷ Khartoum State Plan document is under development.

⁸ Ibid.

Consolidated State Level Estimates

Current situation (states figures are found at Annex 3, table 1-4)

Access to improved water sources for the 14 states population as per 2008 census is 64.81% (urban: 91.12%, rural: 56.83%) with the average daily per capita consumption of 23.99 l/c/d (urban: 42.06, rural: 18.66 l/c/d) as of 2010. Access to household safe means of excreta disposal for the 14 states population is estimated to be 34% as of 2010. Access to adequate sanitation for the state's schools is estimated as 37% and for the state's health facilities is estimated as 48%.

States WASH Sector Main Challenges

The state's water, sanitation and hygiene sector major challenges were found to be:

Deficiencies in the institutional setup, structures and policy instruments.

Overlap and fragmentation of responsibilities among the sector stakeholders.

Significant shortfall of qualified staff, equipment and supplies.

Inadequate information system.

No coordination body at state level for the promotion of the sanitation component.

Inadequate consultation with communities during the project planning and implementation phases.

Total of all States Strategic Plans 2011-2016

States figures are found at Annex 3, table 5-8.

Specific Objectives

Increase by 2016, access to improved water from 64.81% (urban: 91.12%, rural: 56.83%) to 100% including livestock water services.

Increase by 2016, access to household safe means of excreta disposal from 34% to 57%.

Increase by 2016 basic schools sanitation coverage from 37% to 100% and health facilities coverage from 48% to 100%

Outreach by 2016 all of the country's communities including basic school children with environmental and personal hygiene messages.

Ensure by 2011, readiness of WASH effective emergency preparedness plan and response for the state's emergency affected population needs.

Expected Results at State Levels

Rural water services

Access to improved drinking water increased by 2016 for the country's 24,180,686 total rural population within 0.5 km from average 18 l/c/d to 36.72 l/c/d including provision of adequate water supply for 131 million livestock. Access to improve drinking water sustained by 2016 for the country 24,180,686 total rural population and 131 million livestock.

Total cost: SDG 6,110,107,900

Urban water services

Access to improved drinking water increased by 2016 for the country's 8,68,642 total urban population within 0.5 km from average 42.06 l/c/d to 77.41 l/c/d. Access to improved drinking water sustained by 2016 for the country's 8,68,642 total urban population.

Total cost: SDG 2,215,978,000

Sanitation and Hygiene

Access to HH safe means of excreta disposal increased by 2016 for additional 9,080,772 rural/urban population representing 9,081 communities. Access to safe means of excreta disposal increased by 2016 for all of the state's basic schools and health facilities (additional 9,401 basic schools and 2,556 health facilities). All of the country's communities including basic school children outreach by 2016 with environmental and personal hygiene messages.

Total cost: SDG 3,417,926,500

Emergency Preparedness and Response

Access to improved drinking water, sanitation and hygiene interventions increased and sustained by 2016 for 2.6 million IDPs/returnees in three Darfur states. Water, sanitation and hygiene emergency preparedness and response plan is in place by 2011 for additional 300,000 emergency affected/at risk persons in the state.

Total cost: SDG 245,009,866

Institutional Development and Capacity Building

Water, sanitation and hygiene related mandates; roles and responsibilities of WASH sector (mainly State Water Corporations and State Ministries of Health) are well defined and implemented by 2013. Water, Sanitation and Hygiene Sector capacity (with focus on State Water Corporations and Ministries of Health) for proper management enhanced by 2016 in terms of human resources, MIS, equipment, Locality offices and logistical means.

Total cost: SDG 48,617,000

State sector plan estimates for the 2011-2016 Strategic Plan

Total estimate SDG 12,037,639,266

Government share: 50%, Community share: 30%, External Agencies share: 20%.

Table 26 National Plan Summary Investment Estimates by component

(1 US\$ = 3 SDG)
(SDG x1000)

All States Plan Component	National Sum of States Estimates							
	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services	619,616	8,768,538	4,791,345	20,702,244	4,684,789	8,994,123	47,941,039	48,560,655
2. Urban Water Services	206,075	334,441	275,671	2,365,032	199,818	171,653	3,346,615	3,552,690
3.1. Domestic Sanitation	85,480	97,371	109,645	115,688	126,658	133,613	582,975	668,455
3.2. Public Sanitation	29,121	30,642	31,337	30,067	30,224	24,874	147,142	176,263
3.3. Hygiene Education	337,983	463,148	463,854	460,362	463,559	430,471	2,281,394	2,619,378
3. Sanitation and Hygiene (3.1+3.2.+3.3.)	452,585	591,160	604,836	606,116	620,442	588,958	3,011,511	3,464,096
4. Emergency (Preparedness)	25,085	27,415	35,549	32,954	38,205	35,735	169,858	21,712,991
5. Institutional and Capacity Development	8,698	7,842	6,634	5,934	1,992	34,672	57,074	65,771
TOTAL	1,312,058	9,729,396	5,714,034	23,712,280	5,545,246	9,825,141	54,526,097	55,838,155

Notes:

20111202 estimates include 8 of 15 states.

20111202 emergency yearly estimates only partial.

Table 27 National Plan Total Investment Estimates by states

(1US\$=3 SDG) (SDG x1000)								
Sudan	Consolidated National and States Estimates							
States	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. White Nile	130,222	8,133,596	4,196,694	20,120,398	4,106,039	8,114,711	44,671,438	44,801,659
2. South Kordofan	126,350	271,910	220,183	213,829	207,895	221,797	1,135,614	1,261,964
3. Sennar	57,137	165,966	92,435	68,753	71,909	61,189	460,252	517,389
4. River Nile	273,023	229,041	237,865	215,365	215,580	490,185	1,388,036	1,661,059
5. Red Sea	372,033	480,087	489,020	2,644,102	482,363	484,155	4,579,728	4,951,761
6. West Darfur	53,561	105,001	85,215	76,401	69,615	62,767	398,998	452,559
7. South Darfur	174,861	209,933	234,535	216,672	229,576	253,622	1,144,337	1,319,199
8. North Darfur	124,871	133,863	158,088	156,761	162,269	136,714	747,695	872,565
9. Gezira	-	-	-	-	-	-	-	-
10. Gedaref	-	-	-	-	-	-	-	-
11. Kordofan North	-	-	-	-	-	-	-	-
12. Kassala	-	-	-	-	-	-	-	-
13. Blue Nile	-	-	-	-	-	-	-	-
14. Northern	-	-	-	-	-	-	-	-
15. Khartoum	-	-	-	-	-	-	-	-
Total All States	1,312,058	9,729,396	5,714,034	23,712,280	5,545,246	9,825,141	54,526,097	55,838,155
National Level Estimates	8,057	19,465	17,647	15,984	14,794	1,084	68,974	77,031
Total Sudan Estimates	1,320,115	9,748,861	5,731,681	23,728,264	5,560,040	9,826,225	54,595,071	55,915,186
Total in US\$	440,038	3,249,620	1,910,560	7,909,421	1,853,347	3,275,408	18,198,357	18,638,395

Note:
20111202 estimates of 8 states available.

Table 28 National level summary Investment Estimates by component

								(1US\$=3 SDG) (SDG x1000)	
National Level Components		National Level Investments							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan	
	2011	2012	2013	2014	2015	2016	2012-16	2011-16	
1. Policy Review, Development and Sector Reform	1,335	601	491	491	601	491	2,675	4,010	
2. Sector Coordination, Planning, Communication	1,933	1,556	983	270	270	270	3,349	5,282	
3. Capacity Building and Innovation	4,003	3,663	2,528	1,578	278	178	8,225	12,228	
4. Monitoring and Sector Learning	786	145	145	145	145	145	725	1,511	
5. WASH Sector Support Funding Mechanism	-	-	-	-	-	-	-	-	
6. Foreign Funded Projects	-	13,500	13,500	13,500	13,500	-	54,000	54,000	
TOTAL	8,057	19,465	17,647	15,984	14,794	1,084	68,974	77,031	

Table 29 White Nile Plan Summary Investment Estimates by component

								(1US\$=3 SDG) (SDG x1000)	
State:		White Nile							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan	
	2011	2012	2013	2014	2015	2016	2012-16	2011-16	
1. Rural Water Services	76,870	8,091,237	4,109,608	20,042,983	4,025,217	8,063,091	44,332,136	44,409,006	
2. Urban Water Services	35,566	27,725	65,167	52,779	55,743	23,772	23,772	59,338	
3.1. Domestic Sanitation	9,129	9,654	16,549	19,566	20,576	23,339	89,684	98,813	
3.2. Public Sanitation	4,563	2,798	3,355	3,241	3,131	3,146	15,671	20,234	
3.3. Hygiene Education	3,161	1,285	1,244	1,238	1,225	1,216	6,208	9,369	
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)	16,853	13,737	21,148	24,045	24,932	27,701	111,563	128,416	
4. Emergency (Preparedness)							-	5,841,222	
5. Institutional and Capacity Development	933	897	771	591	147	147	2,553	3,485	
TOTAL	130,222	8,133,596	4,196,694	20,120,398	4,106,039	8,114,711	44,671,438	44,801,659	

Table 30 South Kordofan Plan Summary Investment Estimates by component

(1US\$=3 SDG) (SDG x1000)								
State:	South Kordofan							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services	65,028	119,533	114,636	147,068	140,500	156,745	678,482	743,510
2. Urban Water Services	24,546	101,471	51,615	13,065	12,024	10,104	188,279	212,825
3.1. Domestic Sanitation	7,770	13,355	15,372	14,872	15,326	15,892	74,817	82,587
3.2. Public Sanitation	1,835	3,775	4,430	4,360	5,035	3,520	21,120	22,955
3.3. Hygiene Education	26,767	33,378	33,831	34,147	34,711	35,225	171,292	198,059
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)	36,372	50,508	53,633	53,379	55,072	54,637	267,229	303,601
4. Emergency (Preparedness)							-	4,199
5. Institutional and Capacity Development	404	398	299	317	299	311	1,624	2,028
TOTAL	126,350	271,910	220,183	213,829	207,895	221,797	1,135,614	1,261,964

Table 31 Sennar Plan Summary Investment Estimates by component

								(1US\$=3 SDG) (SDG x1000)	
State:	Sennar								
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan	
	2011	2012	2013	2014	2015	2016	2012-16	2011-16	
1. Rural Water Services	39,612	74,095	67,660	50,487	53,513	42,059	287,814	327,426	
2. Urban Water Services	8,854	80,219	12,929	8,169	9,569	8,969	119,855	128,709	
3.1. Domestic Sanitation	4,374	7,707	8,040	6,434	5,801	7,285	35,267	39,641	
3.2. Public Sanitation	2,500	2,500	2,500	2,500	2,500	2,500	12,500	15,000	
3.3. Hygiene Education	594	589	589	514	514	364	2,570	3,164	
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)	7,468	10,796	11,129	9,448	8,815	10,149	50,337	57,804	
4. Emergency (Preparedness)							-	5,841,222	
5. Institutional and Capacity Development	1,204	856	717	650	12	12	2,247	3,450	
TOTAL	57,137	165,966	92,435	68,753	71,909	61,189	460,252	517,389	

Table 32 River Nile Plan Summary Investment Estimates by component

(1US\$=3 SDG) (SDG x1000)								
State:	River Nile							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services	196,255	151,380	160,177	134,515	125,599	399,132	970,803	1,167,058
2. Urban Water Services	60,022	60,818	60,818	60,818	60,818	60,818	304,090	364,112
3.1. Domestic Sanitation	11,623	11,641	12,224	15,866	24,706	26,240	90,677	102,300
3.2. Public Sanitation	2,715	2,845	2,595	2,295	3,050	2,600	13,385	16,100
3.3. Hygiene Education	1,475	1,460	1,280	1,280	1,260	1,260	6,540	8,015
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)	15,813	15,946	16,099	19,441	29,016	30,100	110,602	126,415
4. Emergency (Preparedness)							-	5,841,222
5. Institutional and Capacity Development	933	897	771	591	147	135	2,541	3,474
TOTAL	273,023	229,041	237,865	215,365	215,580	490,185	1,388,036	1,661,059

Table 33 Red Sea Plan Summary Investment Estimates by component

(1US\$=3 SDG) (SDG x1000)								
State:	Red Sea							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services	44,615	53,874	56,869	55,416	65,958	70,068	302,185	346,800
2. Urban Water Services	45,436	24,142	30,185	2,191,281	15,866	16,156	2,277,631	2,323,067
3.1. Domestic Sanitation	410	840	837	785	653	331	3,446	3,856
3.2. Public Sanitation	3,110	3,040	3,070	2,890	2,640	1,450	13,090	16,200
3.3. Hygiene Education	277,046	397,116	397,202	393,035	397,014	363,238	1,947,605	2,224,651
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)	280,566	400,996	401,109	396,710	400,307	365,019	1,964,141	2,244,707
4. Emergency (Preparedness)							-	3,913,152
5. Institutional and Capacity Development	1,416	1,076	857	694	232	32,912	35,771	37,187
TOTAL	372,033	480,087	489,020	2,644,102	482,363	484,155	4,579,728	4,951,761

Note:

Table 34 West Darfur Plan Summary Investment Estimates by component

								(1US\$=3 SDG) (SDG x1000)	
State:	West Darfur								
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan	
	2011	2012	2013	2014	2015	2016	2012-16	2011-16	
1. Rural Water Services	10,187	58,301	37,446	27,976	20,695	13,116	157,534	167,721	
2. Urban Water Services	7,080	11,235	12,277	12,686	13,375	14,382	63,954	71,033	
3.1. Domestic Sanitation	12,690	13,266	14,169	14,186	14,010	13,298	68,929	81,619	
3.2. Public Sanitation	4,801	4,826	4,876	4,863	4,963	4,863	24,391	29,192	
3.3. Hygiene Education	7,645	7,628	7,653	7,681	7,715	7,747	38,424	46,069	
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)	25,136	25,720	26,698	26,730	26,688	25,908	131,744	156,880	
4. Emergency (Preparedness)	10,035	8,657	7,835	8,213	8,570	9,074	42,349	52,384	
5. Institutional and Capacity Development	1,124	1,088	959	797	287	287	3,418	4,541	
TOTAL	53,561	105,001	85,215	76,401	69,615	62,767	398,998	452,559	

Table 35 South Darfur Plan Summary Investment Estimates by component

								(1US\$=3 SDG) (SDG x1000)	
State:	South Darfur								
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan	
	2011	2012	2013	2014	2015	2016	2012-16	2011-16	
1. Rural Water Services	90,418	119,976	119,772	119,004	121,461	142,766	622,979	713,397	
2. Urban Water Services	19,941	23,169	38,977	23,259	30,043	34,374	149,822	169,763	
3.1. Domestic Sanitation	30,285	31,455	32,740	33,994	35,337	36,701	170,227	200,513	
3.2. Public Sanitation	7,102	6,281	6,069	6,016	5,830	5,645	29,839	36,941	
3.3. Hygiene Education	17,000	17,396	17,759	18,171	16,824	17,164	87,314	104,314	
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)	54,387	55,132	56,568	58,180	57,992	59,510	287,381	341,768	
4. Emergency (Preparedness)	8,554	10,114	17,917	14,730	19,499	16,392	78,652	87,206	
5. Institutional and Capacity Development	1,562	1,542	1,301	1,499	581	581	5,504	7,065	
TOTAL	174,861	209,933	234,535	216,672	229,576	253,622	1,144,337	1,319,199	

Table 36 North Darfur Plan Summary Investment Estimates by component

								(1US\$=3 SDG) (SDG x1000)
State:	North Darfur							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services	96,631	100,142	125,177	124,795	131,846	107,146	589,106	685,737
2. Urban Water Services	4,630	5,663	3,703	2,975	2,380	3,078	17,799	22,429
3.1. Domestic Sanitation	9,199	9,453	9,714	9,985	10,249	10,527	49,928	59,127
3.2. Public Sanitation	2,495	4,577	4,442	3,902	3,075	1,150	17,146	19,641
3.3. Hygiene Education	4,296	4,296	4,296	4,296	4,296	4,257	21,441	25,737
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)	15,990	18,326	18,452	18,183	17,620	15,934	88,515	104,505
4. Emergency (Preparedness)	6,496	8,644	9,797	10,011	10,136	10,269	48,857	55,353
5. Institutional and Capacity Development	1,124	1,088	959	797	287	287	3,418	4,541
TOTAL	124,871	133,863	158,088	156,761	162,269	136,714	747,695	872,565

Table 37 **Gezira Plan Summary Investment Estimates by component**

								(1US\$=3 SDG)
								(SDG x1000)
State:	Gezira							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services								
2. Urban Water Services								
3.1. Domestic Sanitation								
3.2. Public Sanitation								
3.3. Hygiene Education								
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)								
4. Emergency (Preparedness)								
5. Institutional and Capacity Development								
TOTAL								

Table 38 **Gedaref Plan Summary Investment Estimates by component**

								(1US\$=3 SDG)
								(SDG x1000)
State:	Gedaref							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services								
2. Urban Water Services								
3.1. Domestic Sanitation								
3.2. Public Sanitation								
3.3. Hygiene Education								
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)								
4. Emergency (Preparedness)								
5. Institutional and Capacity Development								
TOTAL								

Table 39 Kordofan North Plan Summary Investment Estimates by component

								(1US\$=3 SDG)
								(SDG x1000)
State:	Kordofan North							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services								
2. Urban Water Services								
3.1. Domestic Sanitation								
3.2. Public Sanitation								
3.3. Hygiene Education								
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)								
4. Emergency (Preparedness)								
5. Institutional and Capacity Development								
TOTAL								

Table 40 **Kassala Plan Summary Investment Estimates by component**

								(1US\$=3 SDG)
								(SDG x1000)
State:	Kassala							
Plan Component		National 5 Year Plan					Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services								
2. Urban Water Services								
3.1. Domestic Sanitation								
3.2. Public Sanitation								
3.3. Hygiene Education								
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)								
4. Emergency (Preparedness)								
5. Institutional and Capacity Development								
TOTAL								

Table 41 Blue Nile Plan Summary Investment Estimates by component

								(1US\$=3 SDG)
								(SDG x1000)
State:	Blue Nile							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services								
2. Urban Water Services								
3.1. Domestic Sanitation								
3.2. Public Sanitation								
3.3. Hygiene Education								
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)								
4. Emergency (Preparedness)								
5. Institutional and Capacity Development								
TOTAL								

Table 42 Northern Plan Summary Investment Estimates by component

								(1US\$=3 SDG)
								(SDG x1000)
State:	Northern							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services								
2. Urban Water Services								
3.1. Domestic Sanitation								
3.2. Public Sanitation								
3.3. Hygiene Education								
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)								
4. Emergency (Preparedness)								
5. Institutional and Capacity Development								
TOTAL								

Table 43 Khartoum Plan Summary Investment Estimates by component

								(1US\$=3 SDG) (SDG x1000)
State:	Khartoum							
Plan Component	National 5 Year Plan						Total National Plan	Grand Total WASH Plan
	2011	2012	2013	2014	2015	2016	2012-16	2011-16
1. Rural Water Services								
2. Urban Water Services								
3.1. Domestic Sanitation								
3.2. Public Sanitation								
3.3. Hygiene Education								
3. Sanitation and Hygiene (3.1.+3.2.+3.3.)								
4. Emergency (Preparedness)								
5. Institutional and Capacity Development								
TOTAL								

Annex 1 Principles framework sustainable water services delivery⁹

Triple-S principles framework

Pillar	Level of application of principle					
	Principle	Consumer	Water service provider	Water service authority	National	International
Service Delivery Approach	Policy, legislation and institutional roles are clarified for commonly agreed on service delivery models	Consumers understand which service they are supposed to get and from which type of service provider they get this.	Water infrastructure, service levels and management arrangements are part of recognised and well-defined service delivery models.	Clear roles and responsibilities are defined and authority is exercised at decentralised levels to ensure the delivery, support and oversight of water services delivery.	Policies, legislation and institutional structures exist which define one or more service delivery models. Adequate authority is granted to decentralised levels to enable the functioning of the service delivery models.	Development partners at international level understand and recognise different service delivery models and support those in their institutional policies and approaches.
	Financing the full life-cycle costs are effectively covered through an agreed upon combination of tariffs, taxes and transfers	Consumers contribute through tariffs to the parts of the full life-cycle costs that they are supposed to cover, in line with national tariff structures.	Service providers understand the full life-cycle cost of the service they are running, and cover these through a combination of tariffs that are effectively levied as well as taxes and transfers in line with national policy. Service providers have appropriate financial accounting systems.	Financial planning accounts for full life-cycle costs and service delivery is supported within available funding, through a combination of taxes and transfers and where relevant indirectly through tariffs.	The concept of full life-cycle costs is applied in the national financial framework in terms of financial mechanisms, budget processes, disbursement systems, subsidy rules and tariff structures. Total costs for service delivery are known and funded through a combination of national budgets, tariffs and development partner transfers.	Development-partner funding policies take into account the need for full life-cycle costs and provide clarity about which of these can be covered from transfers.
	Planning aims for full coverage and accounts for the different stages of	Consumers participate in planning processes and consultation	Service providers plan and implement operation and (capital) maintenance activities	Service authorities plan for full coverage across their entire area of jurisdiction, based on the	There is a clearly articulated national planning framework, which sets out policy	Development partner are committed to universal coverage and recognise the

⁹ Source : <http://www.waterservicesthatlast.org/Resources/Concepts-tools/Principles-for-sustainable-services2>.

Annex 2 Life-cycle cost for water services¹⁰

Assessing and costing water, sanitation and hygiene service levels

	Resources	Infrastructure – service delivery	Demand/Access – user coping costs
Water and hygiene	Costs involved in sustainable provision of water resources of required quantity and quality.	Costs incurred by service providers when constructing, operating and maintaining water supply infrastructure.	Costs incurred by users who routinely access formal, informal and private water supply systems to meet demands (domestic, municipal, commercial, industrial, MUS, livestock etc.). These costs include any costs that are not met by the service providers.
Sanitation and hygiene	Costs involved in protecting water resources from disposal of black and grey wastewater and storm water.	Cost incurred by service providers when constructing, operating and maintaining sanitation, environmental sanitation and grey and black wastewater and stormwater infrastructure. Also other costs incurred by service providers that relate to CLTS and/or creating and maintaining demand for and ownership of improved sanitation, environmental sanitation and hygiene practices.	Costs incurred by users who routinely access formal, informal and private grey and black wastewater and stormwater systems to meet demands. These costs include any costs that are not met by the service providers.

¹⁰ Source: <http://www.washcost.info/page/1557>.

Annex 3 States 2011-2016 Strategic Plans Components

Table A3-1 Population and access to improved water by state, 2010

State	Total population	Rural population	Urban population	Total Access	Rural access	Urban access
Blue Nile	875,944	680,295	195,649	50.80%	41.00%	81.70%
Gedarif	1,419,404	990,578	428,826	59.90%	45.60%	96.30%
Kordofan North	3,086,857	2,531,013	555,844	70.40%	63.80%	97.60%
Northern	730,162	403,548	326,614	88.70%	87.20%	96.40%
Red Sea	1,469,654	781,961	687,693	58.20%	35.60%	93.60%
River Nile	1,177,164	805,367	371,797	68.10%	58.10%	92.70%
Sennar	1,341,860	1,092,012	249,848	82.20%	79.30%	92.90%
South Kordofan	2,508,268	2,116,645	391,623	70.90%	62.60%	98.00%
White Nile	1,821,749	1,061,000	760,749	61.10%	49.50%	84.20%
Gezira	3,734,323	3,020,966	713,356	91.30%	89.50%	99.00%
Kassala	1,884,086	1,248,137	635,949	54.00%	43.90%	82.80%
North Darfur	2,517,133	2,165,539	351,594	49.90%	43.70%	80.50%
South Darfur	4,309,227	3,496,255	812,972	52.10%	41.20%	92.50%
West Darfur	1,377,140	1,097,814	279,326	44.70%	37.80%	78.30%
Total	28,252,971	21,491,130	6,761,840	64.81%	56.83%	91.12%

Source: 2008 Census and state statistic offices.

Table A3-2 Litres per capita per day per state, 2010

State	Average (l/c/d)	Rural (l/c/d)	Urban (l/c/d)
Blue Nile	23.9	16.6	49.4
Gedarif	25.1	17.2	43.4
Kordofan North	28.3	25.4	41.5
Northern	41	30	55.4
Red Sea	24.7	5	47.1
River Nile	46	43	73.8
Sennar	34	30	50
South Kordofan	21.9	20.8	27.7
White Nile	25.4	20.5	32.2
Gezira	32	25	62
Kassala	25.9	14.5	48.3
North Darfur	12.1	7.3	41.7
South Darfur	13	12.2	16.1
West Darfur	8.6	6.5	16.5
Total	23.99	18.66	42.06

Source: State water corporations and WES Projects, 2010.

Table A3-3 Access to Improved Sanitation per state, 2010

State	Population	Households	HH with Access	Estimated access %
Blue Nile	875,943	145,992	34,703	24%
Gedaref	1,419,404	236,568	77,955	33%
Kordofan North	3,086,857	514,476	153,428	30%
Northern	730,162	121,695	40,575	33.3%
Red Sea	1,469,654	244,944	2,338	22%
River Nile	1,177,164	196,194	96,255	49%
Sennar	1,341,860	223,644	84,370	38%
South Kordofan	2,508,268	418,045	101,160	24%
White Nile	1,821,749	297,271	122,966	41%
Gezira	3,734,323	622,133	344,682	55%
Kassala	1,884,086	314,016	80,952	26%
North Darfur	2,517,133	419,526	155,220	37%
South Darfur	4,309,227	718,204	230,485	32%
West Darfur	1,377,140	229,523	69,237	30%
Total	28,252,970	4,702,231	1,594,326	34%

Source: Ministry of Health, WES Projects, 2010.

Table A3-4 School and Health Facilities access to sanitation services per state, 2010

State	Total basic schools	Schools with latrines	Coverage %	Total health facilities	Health facilities with latrines	Coverage %
Blue Nile	417	224	54%	234	113	48%
Gedaref	765	413	26%	307	82	27%
Kordofan North	1,963	630	32%	627	180	29%
Northern	479	198	41%	265	131	50%
Red Sea	476	235	49%	258	86	33%
River Nile	927	430	59%	376	306	81%
Sennar	643	107	17%	268	50	19%
South Kordofan	1,414	636	45%	317	136	43%
White Nile	924	216	23%	455	288	63%
Gezira	2,377	964	41%	812	497	61%
Kassala	695	413	59%	393	182	46%
North Darfur	1,036	280	27%	155	98	63%
South Darfur	1,546	362	23%			100%
West Darfur	804	217	27%	307	148	48%
Total	14,466	5,325	37%	4,774	2,297	48%

Source: Ministry of Education/Ministry of Health/WES Project.

Table A3-5 Water Access Targets 2016 per state

State	Total population 2016	Rural population 2016	Urban population 2016	Access 2016	Average (l/c/d)	Rural (l/c/d)	Urban (l/c/d)
Blue Nile	1,021,789	228,224	793,565	100%	43.2	35.5	70
Gedaref	1,655,734	1,155,509	500,225	100%	60.3	39	109.4
Kordofan North	3,643,133	2,987,122	656,011	100%	52.6	45.9	83.1
Northern	832,003	459,833	372,169	100%	67.4	50	89
Red Sea	1,714,344	912,152	802,192	100%	50.3	17.9	87.4
River Nile	1,365,149	933,978	431,170	100%	71.9	64	87
Sennar	1,558,882	1,268,625	290,257	100%	58.1	45	114
South Kordofan	2,925,890	2,469,061	456,829	100%	41.2	35.1	73.8
White Nile	2,125,068	1,241,155	883,913	100%	62.3	33.9	102.3
Gezira	4,255,173	3,442,320	812,853	100%	54.9	41	116
Kassala	2,197,783	1,455,950	741,834	100%	46.9	36.2	68
North Darfur	2,936,232	2,526,098	410,134	100%	38.8	30.9	87.2
South Darfur	5,026,709	3,820,051	1,206,658	100%	30.2	23.3	52.0
West Darfur	1,606,440	1,280,608	325,832	100%	24	20	40
Total	32,864,329	24,180,686	8,683,642	100%	47.5	36.72	77.41

Source: State water corporations and WES Projects, 2010.

Table A3-6 Improved Sanitation Coverage Targets 2016 per state

State	Population 2016	Households 2016	HH with Access 2016	Estimated access% 2016
Blue Nile	1,021,789	170,298	95,415	56%
Gedarif	1,655,734	275,957	195,681	71%
Kordofan North	3,643,133	607,189	280,016	46%
Northern	832,003	139,086	112,518	80.9%
Red Sea	1,714,344	285,725	15,349	68%
River Nile	1,365,149	227,525	186,586	82%
Sennar	1,558,882	259,814	179,145	69%
South Kordofan	2,925,890	487,648	230,522	47%
White Nile	2,125,068	346,959	198,785	57%
Gezira	4,255,173	708,647	508,267	72%
Kassala	2,197,783	366,299	297,291	81%
North Darfur	2,936,232	489,372	213,348	44%
South Darfur	5,026,709	837,786	447,333	53%
West Darfur	1,606,440	267,741	147,532	55%
Total	32,864,329	5,470,046	3,107,788	57%

Source: Ministry of Health, WES Projects-2010.

Table A3-7 Schools and Health Facilities Sanitation Targets 2016 per state

State	Additional schools with sanitation facilities	Additional health facilities with sanitation facilities	School and Health facilities access to sanitation (2016)
Blue Nile	193	121	100%
Gedarif	352	228	100%
North Kordofan	1,333	447	100%
Northern	193	121	100%
Red Sea	241	172	100%
River Nile	299	70	100%
Sennar	536	218	100%
South Kordofan	778	181	100%
White Nile	708	167	100%
Gezira	1,413	314	100%
Kassala	282	211	100%
North Darfur	756	57	100%
South Darfur	1,394	0	100%
West Darfur	923	249	100%
Total	9,401	2,556	100%

Source: Ministry of Education/Ministry of Health/WES Project.

Table A3-8 2011-2016 Water, Sanitation and Hygiene Sector Estimates per state

State	Rural water services	Urban water services	Sanitation and Hygiene	Emergency Preparedness and Response	Institutional Development and Capacity Building	Total
Blue Nile	103,845,000	7,830,000	48,335,000	2,099,600	2,027,000	164,136,600
Gedarif	174,959,000	272,861,000	127,194,000	2,099,600	4,541,000	581,654,600
Kordofan North	1,034,679,000	115,473,000	235,978,000	2,099,600	2,027,000	1,390,256,600
Northern	117,688,000	262,856,000	159,891,000	4,948,000	4,946,000	550,329,000
Red Sea	337,387,000	159,810,000	234,562,000	2,099,600	2,027,000	735,885,600
River Nile	478,474,000	250,853,000	564,808,000	5,841,222	3,473,000	1,303,449,222
Sennar	364,978,000	124,709,000	155,190,000	5,841,222	4,568,000	655,286,222
South Kordofan	743,519,000	212,831,000	219,494,000	4,199,200	2,027,000	1,182,070,200
White Nile	412,196,000	270,763,000	165,574,000	2,099,600	2,027,000	852,659,600
Gezira	589,661,000	187,970,000	680,526,000	5,841,222	2,780,000	1,466,778,222
Kassala	185,868,000	86,797,000	223,223,000	2,099,600	2,027,000	500,014,600
North Darfur	685,736,000	22,429,000	104,505,000	57,452,600	4,541,000	874,663,600
South Darfur	713,396,900	169,763,000	341,767,500	91,405,200	7,065,000	1,323,397,600
West Darfur	167,721,000	71,033,000	156,879,000	56,883,600	4,541,000	457,057,600
Total SDG	6,110,107,900	2,215,978,000	3,417,926,500	245,009,866	48,617,000	12,037,639,266

Source: State 2011-2016 Water, Sanitation and Hygiene Sector Plans.