SOME, FOR ALL, FOREVER

Emerging development of Integrated Water Resources Management in non-Nile Sudan

July 2016

Preface and acknowledgements

This report reflects the consultations and awareness raising undertaken on Integrated Water Resources Management (IWRM) in Sudan between 2007 and 2014. The work grew out of efforts in Darfur to coordinate water resources management in the context of the rapid urbanisation and upheaval associated with the crisis. In order to develop a new vision for water management in Darfur, UNEP coordinated an exchange programme with South African water managers. The purpose was to share experiences on how more equitable access to water can be achieved in the aftermath of social upheaval and change[1]. At the request of the Minister of Irrigation and Water Resources, the initiative shifted to a national perspective for non-Nile water management.[2] The Darfur International Water Conference in 2011 was a step forward in raising the profile of IWRM as a broader framework for water management. This led to a consultation on IWRM at the level of federal government in 2012-14. To support this dialogue, a review of approaches to catchment management was published in 2014, with collaboration from UNESCO-IHE.[3] These various dialogues went a long way in contextualising the learning from the original debates on IWRM principles and the application in South Africa. The present report reflects these dialogues and the vision articulated in the statements made by the Sudanese participants on the South African exchange programme (see Annex 1). The recommendations made in the report were endorsed in a meeting with senior representation from the Ministry of Irrigation and Water Resources, the Hydraulic Research Station, the Groundwater and Wadis Unit, the Drinking Water and Sanitation Unit, and the Agricultural Research Station, with additional participants from UN agencies working on water on 23 June 2014.

The work described here has been taken forward with a major effort on catchment management in Wadi El Ku in Darfur. The project has EU funding and is being implemented by UNEP, Practical Action, SOS Sahel and DDRA in collaboration with government and community partners. In other developments, UNDP are working in partnership with the Ministry of Electricity, Water Resources and Irrigation (MEWRI), and with the Ministry of Environment, Natural Resources and Physical Development (MENRPD) on catchment management in Kordofan with Global Environment Facility GEF funding. The Dams Implementation Unit has scaled up its work on non-Nile water resources management with major initiatives on rainwater harvesting. A group of national and international NGOs are working with DFID funding on related work in Darfur and Eastern Sudan. SOS Sahel is working with Excellent Development on implementing sand dams in Kordofan. This report is aimed at supporting these ongoing efforts by providing a record of work on practice and policy that has previously been undertaken.

In the production of the report, particular thanks are extended to H.E. Dr Ibrahim Dukheri, Director of the Agricultural Research Station at the time of the consultations, now Minister of Agriculture and Forests; Prof Yasir Abbas Mohamed, Director of the Hydraulic Research Station and chair of the technical committee for the national vision on IWRM; Dr Badreldin Taha Mohamed, Director General of the Groundwater and Wadis Unit (GWWU) of the Ministry of Water Resources and Electricity (MWRE); Mohi El Din El Kabir, national coordinator for IWRM in the GWWU ; and Hisham Yousif, of the Drinking Water and Sanitation Unit (DWSU) of MWRE. Engineer Hassan Kaskous made important contributions to the development of this work, initially through interaction in his role as Minister of Water Resources and Environment in South Darfur and latterly as a senior technical advisor for UNOPS. His contribution through participation in the field missions reflected in the case studies in this report significantly enriched the reflections on the development of IWRM in Sudan. Within the UN, feedback on proposals in this report from Ram Koirala, Hani El Sadani, El Mardi Ibrahim, Aisha Oschick, Rosanne Marchesich, Sabine Schenk, Min Htut Yin, Hanan Mutwakil and others has been invaluable. Of particular significance is the feedback on earlier drafts from Dr Tariq El Gamry of the Sudan Water Partnership. Ahmed Manies of UNEP has provided important perspectives on the work in addition to his inspirational advocacy for the uptake in Darfur of the ideas described here. The report has been authored by Brendan Bromwich, Dr Hamid Omer Ali and Tayalla El Medani, with contributions from Eiman Karar.

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[1] See this link for details of the exchange programme: http://unep.org/disastersandconflicts/portals/155/countries/Sudan/pdf/SouthSouthCooperationCaseStudy.pdf

[2] See Annex 2 for the details of this collaboration which also included MEFPD, HCENR, UNDP and UNOPS.

[3] http://unep.org/disastersandconflicts/portals/155/countries/Sudan/pdf/SudanWRM.pdf

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Acronyms

AMCOW	African Ministers' Council on Water
BOCMA	Breede Overburg Catchment Management Agency
CBNRM	Community Based Natural Resource Management
CLTS	Community Led Total Sanitation
CPA	Comprehensive Peace Agreement
DDRA	Darfur Development and Reconstruction Agency
DDPD	Doha Document for Peace in Darfur
DDSD	Dam Development Survey in Darfur
DFID	Department for International Development (United Kingdom)
DG	Director General
DRA	Darfur Regional Authority
DWSU	Drinking Water and Sanitation Unit
ENTRO	Eastern Nile Technical Regional Office
ER	Early Recovery
FA	Football Association
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
GEF	Global Environment Facility
GWP	Global Water Partnership
GWWD	Groundwater and Wadis Department/Directorate (now GWWU)
GWWU	Groundwater and Wadis Unit
HAC	Humanitarian Aid Commission
HCENR	Higher Council for Environment and Natural Resources
IDP	Internally Displaced Person
IFAD	International Fund for Agricultural Development
INGO	International Non-Governmental Organisation
IWRM	Integrated Water Resources Management
JICA	Japan International Cooperation Agency
MEFPD	Ministry of the Environment, Forests and Physical Development (now MENPRD)
MENRPD	Ministry of Environment, Natural Resources and Physical Development (formerly MEFPD)
MIWR	Ministry of Irrigation and Water Resources (now MWRE)
MWRE	Ministry of Water Resources and Electricity (formerly MIWR)
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NCP	National Congress Party
ND	North Darfur
NGO	Non-Governmental Organisation
NNGO	National Non-Governmental Organisation
NRM	Natural Resource Management
PWC	Public Water Corporation
SECS	Sudanese Environmental Conservation Society
SIEP	Sudan Integrated Environment Programme
SMOH	State Ministry of Health
SMUP	State Ministry of Urban Planning
SWAP	Sudan Water Partnership
SWC	State Water Corporation
TDRA	Transitional Darfur Regional Authority
UK	United Kingdom
UN	United Nations
UNAMID	African Union-United Nations Hybrid Operation in Darfur
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO-IHE	United Nations Educational, Scientific and Cultural Organisation – Institute for Water Education
UN-Habitat	United Nations Human Settlements Programme
UNICEF	United Nations Children's Emergency Fund
UNOPS	United Nations Office for Project Services
WASH	Water, Sanitation and Hygiene
WES	Water and Environmental Sanitation Project
WFP	World Food Programme
WUA	Water User Association

1 Introduction

Sudan is facing multiple processes of change: climate, population growth, urbanisation, upheaval as a result of conflict and changes in the economy. Therefore, the balance of the economy is changing, and so are the livelihoods practised by communities across Sudan. Businesses and communities are drawing on natural resources in different ways. This challenge of adapting to a changing context and creating new initiatives for development and economic growth is a global challenge, in which each country faces a particular set of opportunities, constraints and goals.

As agriculture increases in significance in Sudan's national economy, improving management of water has potential to limit economic shocks caused by droughts and floods. In some cases challenges arise where urban and agricultural water demands compete, as in Kassala, Nyala and El Fasher. Sudan has a significantly higher proportion of arid land than before the secession of South Sudan.[4] These processes of change all have water resource management implications that require attention.

Darfur, South Kordofan and Blue Nile state face conflicts relating to natural resources in addition to conflicts relating to political tensions. The Doha Document for Peace in Darfur (DDPD) calls for the development of "a new framework" for the interaction between herders and farmers. The DDPD mandates new governance arrangements such as the Darfur Regional Authority (DRA) as a means of enabling the interaction of different resource users so an escape from chronic cycles of conflict can be found.

At first, it may appear unusual to approach issues of development and of conflict mitigation together in the same report. The rationale for this is strong, however, for two reasons. Firstly, by developing water management for inclusive economic growth in peaceful areas, a direction of travel for areas emerging from conflict is also developed. For example, if management of water in Khor Abu Habil, in North Kordofan and White Nile State, is strengthened, then useful approaches may be identified to assist in an area such as Wadi Azoum in Central Darfur. And secondly, to promote a national approach to water, there need to be principles that run throughout the Sudanese water sector: for all that there will be different development goals by state, national resources still need to be governed for all.

The report highlights examples from a number of areas of Sudan of good water management implemented by different actors, including both national and international organisations. The report is written to support the work undertaken by the Ministry of Water Resources and Electricity (MWRE), the Ministry of Environment Forests and Physical Development (MEFPD) and UNEP on IWRM and to reflect the vision and recommendations of Sudanese participants in the South African IWRM exchange programme, described below (see Annex 1 for the vision statements). This approach acknowledges the importance of an inclusive collaboration on IWRM, in which numerous organisations are active in Sudan. DFID/UKAID funded a Darfur IWRM project in 2007–2009, and the Sudan Integrated Environment Project (SIEP) in 2009-2014.[5] This report is published in early 2016 in order to inform a new round of programming on natural resources in Sudan, with a focus on climate adaptation and resilience. The "ADAPT" project is set to run from 2015-2019, with funding from the Government of the UK.

The report builds on the core series of publications in the SIEP, which address environmental governance with a peacebuilding objective:

- 'Environmental Governance in Sudan: An expert review', UNEP (2012)[6]

[4] See FAO's Sudan land cover mapping (2012) http://www.glcn.org/activities/sud_lc_en.jsp .

[5] See www.unep.org/sudan.

[6] http://postconflict.unep.ch/publications/UNEP_Sudan_env_gov_review.pdf

Figure 1.1 The interaction of vegetation, soil and water can be clearly seen in these sub-catchments in West Darfur. While not always so visually striking, this alignment with natural processes is a key principle in IWRM (Photo: M Kovac)

- 'Governance for Peace over Natural Resources: A review of transitions in environmental governance across Africa as a resource for peacebuilding and environmental management in Sudan', UNEP (2013)[7]
- 'Relationships and Resources: Environmental governance for peacebuilding and resilient livelihoods in Sudan', UNEP (2014a)[8]

Within the IWRM theme of SIEP, the report builds on the following work:

- 'Water Resource Management in Humanitarian Programming in Darfur: The case for drought preparedness', UNEP (2008)[9]
- 'Towards IWRM: International experience in development of river basin organisations', UNEP (2014b)[10]

This report discusses initiatives and challenges on IWRM in Sudan, and also reflects on experiences gained by Sudanese water managers through the South African collaboration. The technical role of the Water Research Commission in South Africa has been an important thread running through this programme. This "South – South collaboration" has been a significant step for the IWRM agenda in Sudan.[11] Exchanges with South Africa have been milestones in the translation of IWRM from an abstract concept to something that is perceived to add value in the day to day challenges of the water sector. Reflecting the impact of this collaboration, this report continues the spirit of learning together by analysing South African case studies alongside Sudanese examples. Post-apartheid, post-conflict reforms in South Africa endeavoured to create a more equitable water sector based on principles of participation and sustainability. Twenty years on, the impact of these reforms can be assessed, with clear relevance to the search for conflict mitigation and inclusive economic growth in Sudan.

7 http://unep.org/disastersandconflicts/Portals/155/countries/sudan/pdf/Governance%20for%20Peace_Sudan_Web.pdf

8 http://postconflict.unep.ch/publications/UNEP_Sudan_RnR.pdf

9 http://postconflict.unep.ch/publications/darfur_drought.pdf

10 http://unep.org/disastersandconflicts/portals/155/countries/Sudan/pdf/SudanWRM.pdf

11 http://unep.org/disastersandconflicts/portals/155/countries/Sudan/pdf/SouthSouthCooperationCaseStudy.pdf

The aim of the report is therefore to stimulate dialogue on the further development of Sudan's IWRM agenda by discussing aspects of what has been achieved so far. The report does not give an exhaustive list of work on IWRM to date, but makes a contribution to the wider development of this approach to water resource management in the specific environmental and social context of the country.

The vision statements that were produced by delegates under the collaboration with South Africa are shown in Annex 1. The joint concept paper that emerged on the basis of those consultations is in Annex 2. As part of the consultation for this report, a contribution on the emerging IWRM agenda in Sudan made by the Drinking Water and Sanitation Unit (DWSU) is shown in Annex 3. As described in Annex 2, this initiative on IWRM had three components:

- A higher level policy and awareness raising element supporting the development of the national vision for IWRM;
- The development and implementation of water resources projects, particularly catchment based (such as Wadi El Ku);
- A capacity building role, providing support to Groundwater and Wadis Unit in particular.

The intention in writing this report at this time is to support initiatives across these three priorities as a new phase of programming develops.

2 Integrated Water Resources Management in the context of Sudan

Key points:

- *IWRM is an inclusive and holistic approach to management of water. Water is managed from the perspective of the entire resource, acknowledging all the different uses and users, rather than from the perspective of one set of water demands at a time. The basis of this approach is found in the Dublin Principles.*
- *Water is needed as a platform for economic growth now and in the future in Sudan. This requires the resource to be managed sustainably. Genuine sustainability also implies social equity, and therefore a sustainability framework contributes to the prospects of peace as well as economic growth.*
- *This report draws its analytical framework from the need to manage water resources for economic growth, basic needs and as the lifeblood of the environment. In the sustainability discourse this is known as integrating (or balancing) the three E's: Economy, Social Equity and Ecology.*

2.1 Integrated Water Resources Management

much water will be needed over the long term and find the most cost-effective way of securing a reliable and lasting source. The built-in assumption, however, is that the water will not be needed by others, or necessary for the healthy functioning of the environment. This is a demand-centred approach to water management.

A question arises, then, about how water can be managed in a way that does not lead to competing demand-centred approaches, but looks at water holistically and allocates it in the way that is most beneficial to society, given multiple competing priorities. This question is one faced by countries around the world:

- South Africa faces a dilemma of allocating its water to the mining industry or for agriculture, given that both sectors are essential to the economy and that water is also needed by the large sector of the population struggling with poverty. Resource allocation needs to reduce social inequality as well as enabling the overall economy to grow.
- Australia over-allocated its water resources, giving entitlements to farmers that cannot be sustained. As a result, the country's largest river, the Murray-Darling, had sections with very little water, creating significant problems of low water quality. Since 2007 the government has started a