DIAGNOSTIC REPORT

Emergency Preparedness and Response Capacities in Sudan

September 2021

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ACP-EU Natural Disaster Risk Reduction Program

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PARTICIPATING ENTITIES

Government of Sudan

Ministry of Local Governance

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Ministry of Irrigation and Water Resources

Ministry of Information

National Council for Civil Defense

Humanitarian Aid Commission

Remote Sensing Authority

Sudan Meteorological Authority

Higher Council for Environment

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Telecommunication and Post Regulatory Authority

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Al-Fal Microfinance Company

Regional STAC

Sudanese Chamber of Transport Union

Meraj Space Technology

International Organizations

United Nations Office for Coordination of Humanitarian Affairs

United Nations Development Program

United Nations Office for Disaster Risk Reduction

World Food Program

World Health Organization

OPENING REMARKS

It is my pleasure to announce the release of the Emergency Preparedness and Response Report – Sudan 2021. Through the release of this report, the Sudan Government aims to provide a clear picture of the Country's needs in order to prevent, protect against, respond to, recover from, and mitigate the impacts of any disaster, as well as ensure the continuity of lifelines, essential functions, and services.

On behalf of the National Council for Civil Defense, I write in support of the recommendations listed in the Report aiming to improve Sudan's Emergency Preparedness and Response capacities through a set of recommendations which were developed through a participatory process including a stakeholder workshop.

We support this approach and the focus on improving the current Emergency Preparedness and Response capacities through the implementation of the listed set of mechanism and proposed actions.

As an organization which was involved in the stakeholder engagement process and participated in the stakeholder workshop, we acknowledge the specific roles and responsibilities of the relevant entities to implement the recommendations defined in the diagnostic report.

We believe that national emergency preparedness is the responsibility of all levels of our society, including individuals, local governments, the private sector, and the Federal Government.

Through the proposed Roadmap aiming to establish an effective Emergency Preparedness and Response mechanism we hope to inspire action by the whole community–including individuals; communities; state, local, tribal, and state governments; the private and non-profit sectors; along with the Federal Government–to increase capabilities and make us more resilient, prepared, and ready to address any challenges that we as a Nation may face.

Sincerely,

Major General Ahmed Omar Saeed

General Secretary

National Council for Civil Defense

ABBREVIATIONS

ACP	Africa Caribbean Pacific
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DMIS	Disaster Management Information System
EOC	Emergency Coordination Operation Center
EP&R	Emergency Preparedness and Response
EU	European Union
EWS	Early Warning System
FEWS	Flood Early Warning System
GFDRR	Global Facility for Disaster Reduction and Recovery
HAC	Humanitarian Aid Commission
HNO	Humanitarian Needs Overview
IGAD	Intergovernmental Authority on Development
IFRC	International Federation of Red Cross and Red Crescent
MOH	Ministry of Health
NDRRC	National Disaster Risk Reduction Council
NCCD	National Council for Civil Defense
NGO	Non-Governmental Organization
PDNA	Post Disaster Needs Assessment
R2R	Ready to Respond
RPDNRA	Rapid Post Disaster Needs and Recovery Assessment
SOPs	Standard Operating Procedures
SRCS	Sudanese Red Crescent Society
SMA	Sudan Meteorological Authority
TGoS	Transitional Government of Sudan
TPRA	Telecommunication and Postal Regulatory Authority
UNDP	United Nations Development Program
UNDRR	United Nations Disaster Risk Reduction
UN-Habitat	United Nations Human Settlements Program
UNICEF	United Nations Children's Fund
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNOOSA	United Nations Office for Outer Space Affairs
UN-SPIDER	UN Platform for Space-based Information for Disaster Management & Emergency Response
USD	United States Dollar
WASH	Water, Sanitation and Hygiene
WFP	World Food Program
WRM	Water Resources Management

EXECUTIVE SUMMARY

In 2020, following unusually heavy rains across Central and North-Eastern Africa and devastating flooding in large parts of Sudan, the Transitional Government of Sudan, the World Bank and the United Nations carried out a Rapid Post Disaster Needs and Recovery Assessment (RPDNRA). The aim of the RPDNRA was to assess the impact of the floods on Sudan and to develop a Recovery Strategy to leverage targeted flood response and recovery including the mobilization of financial and technical resources.

Among others, the RPDNRA found that the relevant agencies in Sudan were insufficiently prepared and ill-equipped to adequately respond to large scale disasters like the 2020 floods. This diagnostic of Sudan's capacities for emergency preparedness and response (EP&R) aims to build a better understanding of the capacity gaps and needs for EP&R through a systematic assessment. It presents key recommendations as well as a roadmap to guide implementation of key actions and investments and thus marks a stepping-stone towards enhancing Sudan's resilient recovery.

The EP&R diagnostic was designed based on the Ready2Respond (R2R) methodology and leveraged a participatory approach involving the key state and non-state actors in EP&R in Sudan. Key informant interviews were conducted with stakeholders representing government entities, civil society organizations and international organizations in Sudan. Additionally, a three-day interactive stakeholder workshop was held in Khartoum on 16-18 August 2021. The workshop provided a forum for different groups of actors to discuss the current EP&R practices, identify policy and capacities gaps, and reach consensus over a set of recommendations and a roadmap to enhance the technical, financial and human capacities of EP&R in Sudan.

This diagnostic was developed on the basis of the stakeholder inputs across the five key components of EP&R: (i) legal and institutional frameworks, (ii) information, (iii) facilities, (iv) equipment, and (v) personnel. The following findings regarding the capacity gaps and needs for the EP&R system in Sudan, as well the key recommendations going forward, were identified:

1. Legal and Institutional Frameworks:

The diagnostic documents the challenges resulting from the lack of clarity regarding a legal framework governing EP&R and the overlap of mandates, ambiguity of responsibilities among actors, and inefficient coordination among involved institutions. It also shows that slow decision-making, bureaucratic processes within the EP&R entities, and the delays in budget allocation constitute a real hurdle to effectively prepare and respond to emergencies. Additionally, many EP&R entities do not have emergency response plans in place.

The diagnostic recommends to: (1) activate the national disaster management mechanism in Sudan at a federal level to help streamline EP&R practices, coordinate among actors, and resolve ambiguities in the system, (2) complement and enforce the Disaster Management and/or EP&R Law to define clear responsibilities, authorities, and accountabilities in preparing for and responding to emergencies, (3) formulate entity-specific emergency response plans, taking guidance by the ministries of health and finance who have such plans in place, (4) enhance evidence-based preparedness through more systematic involvement of research entities in Sudan, and (5) develop financial tools for disaster preparedness budgeting.

2. information:

The diagnostic documents the challenge of information sharing and data integration between different actors as well as the lack of a disaster management information system (DMIS). It also documents the stakeholders' concerns regarding the lack of an efficient and central Geographical Information System (GIS) and the fragmentation of the Early Warning Systems (EWS). Additionally, the poor infrastructure of nowcasting and forecasting affects the quality of weather information that is needed to adequately prepare for emergencies by the responsible entities. The diagnostic further documents the absence of government mechanisms to manage community engagement including volunteer management and training.

The diagnostic recommends to: (1) establish an inter-operable DMIS and integrate data of EWS to inform decision-making and reduce response times of emergencies, (2) strengthen the role of the Remote Sensing Authority and assess its system in terms of data quality, data layers, data interpretation and system standards, (3) implement a framework for community engagement to better engage volunteers and provide them with the needed trainings and basic equipment, and (4) develop a programmatic approach for EWS to better plan for and respond to emergencies and reduce the alerts and response times.

3. Facilities:

The diagnostic documents the stakeholders' concerns regarding the lack of oversight on the Emergency Operation Centers (EOCs) established in different entities in Sudan, and the coordination and communication channels among them. It also highlights the existing challenges due to the absence of a national training facility or training programs for emergency responders. The lack of a system to coordinate and store goods received through national and international assistance in government warehouses was also documented. Additionally, the absence of clear evacuation maps and routes and the lack of resources to purchase and device shelters were identified.

The diagnostic recommends to: (1) establish a network of EOCs through a mapping exercise and create a platform among them to ensure synergies and complementarities as well as more effective information flow, (2) support the establishment of a training center for the National Council for Civil Defense (NCCD) to provide training programs to responders including simulations and drill exercises, (3) establish a system to track the supplies in warehouses and improve their capacities, (4) set up disaster evacuation routes and build public awareness especially in the most disaster-prone areas in Sudan.

4. Equipment:

The diagnostic documents the poor quality and lack of equipment across all EP&R entities in Sudan, especially NCCD, MoH and Sudan Meteorological Authority (SMA). Information and Communication Technology, especially the use of radio system communication during disasters, was identified as a major challenge. The absence of back-up systems (satellite, point-to-point backhaul wireless, etc.) as alternative means of communication was also documented as a challenge. The observatories and equipment at SMA, which are key to predict weather information and release alerts, are either worn out, damaged or absent, imposing challenges on the EP&R system. Finally, there is a lack of guidelines for managing large-scale mortality and an absence of emergency outbreak and public awareness material on emerging diseases or outbreaks post disaster.

The diagnostic recommends to (1) supply equipment for urban firefighting and water-based emergencies for NCCD to be able to deal with such emergencies, (2) upgrade the equipment and infrastructure for fore- and now-casting of SMA to identify the changes in weather and issue accurate and real-time warnings, (3) establish an inter-operable radio communication system to first responders that would be used at times of emergencies, and (4) strengthen the capacities of local health stations including hospitals and health workers.

5. Personnel:

Personnel: The diagnostic documents the lack of well-trained staff and the high turnover rate of employees working in EP&R institutions due to low pay and non-conducive working conditions in the public sector in Sudan. State actors aren't capitalizing on the existing training programs available in other institutions such as the Sudanese Red Crescent Society (SRCS) to upgrade the skills and capacities of their own employees. Additionally, a gap was documented in the coordination of international support to Sudan at times of disasters.

The diagnostic recommends to: (1) assess the institutional and human capacities of EP&R actors to identify key interventions and to build capacities to better prepare for and respond to emergencies as well as to retain staff, (2) design a national training and exercise program and encourage knowledge sharing among EP&R actors, and (3) set up a mechanism for better coordination between international organizations to ensure timely, effective and accurate reception of assistance.

This stakeholder-informed recommendations have been translated into an EP&R Roadmap including an indicative timeline for action. The Roadmap provides policy makers and development partners with a general guiding framework towards strengthening Sudan's capacities to better prepare for and respond to future emergencies and disasters.

1. INTRODUCTION

1.1. About this Report

In 2020, Sudan suffered a seminal flood event. According to a Rapid Post Disaster Needs and Recovery Assessment (RPDNRA), which was conducted by the Transitional Government of Sudan (TGoS) with support from the World Bank and the United Nations in Sudan, the floods claimed over 120 people lives, affected an estimated 875,000 people and produced economic damages amounting to over USD 3.3 billion.[1] The RPDNRA extensively documents the damages and impacts across different sectors, and makes evident that Sudan is highly vulnerable to climate-related disasters. The RPDNRA moreover highlights the need to enhance Sudan's disaster resilience by basing reconstruction efforts on the principles of building back better, and to strengthen the country's capacities to prepare for, cope with and respond to disasters.

This rapid diagnostic of Sudan's capacities for Emergency Preparedness and Response (EP&R) was prepared in alignment with the findings and recommendations of the RPDNRA. Building on the established Ready-to-Respond (R2R) diagnostic methodology (Figure 1), it aims at developing a better understanding of Sudan's emergency preparedness and response capacities through the identification of existing gaps in capacities and policies, and providing a set of recommendation to address such gaps.

Chapter one describes Sudan's disaster risk profile and provides an overview of the main natural hazards and impacts, the landscape of EP&R actors and the methodology that was used for the diagnostic. Chapter 2 documents the key findings of the EP&R capacity assessment across the five R2R components based on recommendations to enhance the EP&R capacities in Sudan. The findings documented in assessment including the recommendations were generated from the analysis of the questionnaires and the input provided by the different actors during the stakeholder workshop. Chapter three provides a summary of the recommendations and presents the roadmap for EP&R.

FIGURE 1: Core Components of Emergency Preparedness and Response Systems
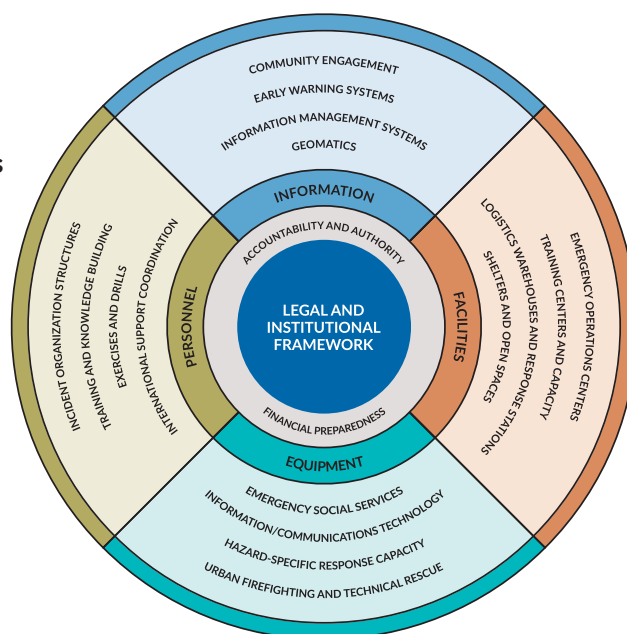
Source: GFDRR and GSURR (2017)

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[1] Government of Sudan, 2021. Sudan Rapid Post Disaster Needs and Recovery Assessment, March 2021. Available online: https://www.gfdrr.org/en/publication/sudan-rapid-post-disaster-needs-and-recovery-assessment

1.2. Methodology and Approach

This diagnostic report was prepared by a group of World Bank consultants based on a comprehensive stakeholder engagement process. Stakeholders were identified and selected through a stakeholder mapping exercise, which differentiates three types of actors according to their influence and relevance for EP&R in Sudan (Figure 2): (i) key actors, i.e. who have the authority and mandate to significantly influence the EP&R system; (ii) primary actors, i.e. who have an immediate stake and provide direct input or have a direct effect on the EP&R system; and (iii) secondary actors, i.e. who are directly or indirectly involved in the EP&R system.

FIGURE 2: Sudan EP&R Map of Actors

Source: own diagram

The majority of actors were either interviewed using a questionnaire-based survey or attended an interactive stakeholder workshop (see below). The content of this report is a result of the collective input and feedback received from the stakeholders throughout the process.

The report is based on the following data collection methodology:

- **Questionnaire-Based Survey:** As part of the data collection effort, in total 30 persons were interviewed using a questionnaire-based survey.[2] The design of the survey was based on the World Bank's Ready2Respond Rapid Diagnostic for EP&R Systems, which aims to build knowledge to improve national, subnational and city resilience mechanisms and to protect development gains through investments in EP&R.[3] The methodology builds on the five core components of EP&R shown in Figure 1: (i) legal and institutional framework, (ii) information, (iii) facilities, (iv) equipment, and (v) personnel. Some of the questions were tailored to the specific context in Sudan, while ensuring that the diagnostic is designed to be an objective, data-driven foundation to engage country counterparts in EP&R development projects.

- **Stakeholder Workshop:** A three-day stakeholder workshop on EP&R was held with the aim to: (i) ensure the engagement of EP&R stakeholders in the assessment and develop the recommendations of the report, (ii) identify the mandates and responsibilities of stakeholders in EP&R in Sudan, and (iii) initiate dialogue between all stakeholders concerned with EP&R in Sudan to discuss the status quo and gaps, and to identify critical needs to build their capacities to better prepare for and respond to emergencies and disasters. The workshop was held from 16-18 August, 2021 in Khartoum and included three thematic topics of EP&R in Sudan:

Day 1: Past Experiences and Current Status

Day 2: Capacity and Policy Delivery Gaps

Day 3: Next Steps towards EP&R Strategy

The workshop was designed in an interactive manner to create an open space for dialogue among almost 60 participants representing 28 state and non-state entities in Sudan to identify the gaps in the EP&R system and to reach a preliminary consensus on the needed actions for improvement. The inputs provided by the participants throughout the three days are reflected throughout this diagnostic report.[4]

- **Data and Document Review:** Finally, this diagnostic report also draws on the review of data collected by the consultants through face-to-face interactions as well as legislative and regulatory documents and secondary documents (e.g. studies).

1.3. Country Context, Natural Hazards and Disaster Risk in Sudan

In September 2019, following the overthrow of President Omar al-Bashir, Sudan began its transition to democracy with the formation of the joint civilian and military government and the signature of the peace agreement between the government and a number of armed groups on 3 October 2020. Despite notable progress, Sudan continues to face major socio-economic and humanitarian challenges related to the fragile political system, the recurrence of natural hazards, the Covid-19 health crisis, as well as armed conflicts in different parts of the country.[5] The most recent Humanitarian Needs Overview estimates around 13.4 million

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[2] See Annex 2 for a list of the individuals/entities that were engaged in the questionnaire-based survey; Annex 4 for an overview of the questionnaire-based survey, and Annex 5 for the interview questions for international organizations.
[3] The World Bank, 2017. Rapid Diagnostic User Guide, Emergency Preparedness and Response Systems
[4] See Annex 1 for the agenda of the stakeholder workshop.
[5] International Organization for Migration. 2021. Sudan Crisis Response Plan.

people (representing 29% of the population) are in need of assistance in 2021 (of which 7.6 million are women, 2.5 million are IDPs and 1.07 are refugees from South Sudan, Central Africa Republic, Eritrea and Ethiopia). Additionally, 7.1 million people are classified to be in high acute food insecurity.[6] The economic situation remains challenging with high inflation and erosion of the purchasing power resembling a threat for a large segment of households' access to basic needs and services and disrupting health services, including access to essential drugs.

In addition, Sudan remains prone to various hazards including localized conflicts, floods, and disease outbreaks. According to the latest World Risk Report,[7] Sudan is among the African countries with the highest vulnerability to extreme natural hazards, including droughts and floods. Although hazard exposure is not as high as in other countries, Sudan's disaster risk is compounded by low coping and adaptive capacities. With the projected increase in temperature and variability in precipitation, climate-related shocks are expected to become more frequent and intense. Already, climate variability over the past few decades has put stress on the region's rainfed agriculture and pastoralist systems, the dominant livelihoods.

Environmental degradation has been identified as a primary driver of fragility in Sudan, where an estimated 60-70% of the population are considered to be highly vulnerable given the lack of adaptive and coping capacities to environmental shocks.[8] The direct dependence of Sudanese communities on the natural environment for survival has contributed to competition and conflict over scare natural resources.[9] Disasters are forcing more people

into poverty.[10] Additionally, the absence of adequate mechanisms disaster risk reduction and prevention poses risks economic and development gains, while adding to humanitarian crisis and political instability.[11]

Sudan's climate zones are classified as hot desert and hot-semi arid climate.[12] The mean annual temperature ranges between 26°C and 32°C, with summer temperatures in the north often exceeding 43°C. Rainfall in Sudan is unreliable and erratic, with great variation between northern and southern regions. Most rainfall occurs during the rainy season from March to October, with greatest concentration between June and September. Sudan is prone to a range of hydro-meteorological hazards, including floods (river, urban and coastal), wildfire, extreme heat, water scarcity, landslide and droughts.[13] According to the UNDRR, limited DRR measures were applied by Sudan in the integration framework which encompasses institutions, systematic/policy, operations, data management and finance.[14]

Floods

Floods have accounted for 44% of all disaster events between 2000 to 2019, affecting 1.6 billion people worldwide, the highest figure for any disaster type.[15] In Sudan, a total of 250,776 people across all 18 States were directly affected by flooding between 2016-2019 (OCHA /HAC 2020). The floods in 2020 are considered the worst in three decades,[16] as documented in the RPDNRA, with more than 875,000 people affected and impacts across all sectors. Damages to buildings, physical assets, and infrastructure (both public and private)

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[6] Food and Agriculture Organization of the United Nations. 2021. The Sudan Humanitarian Response Plan.
[7] Bündnis Entwicklung Hilft and Ruhr University Bochum – Institute for International Law of Peace and Armed Conflict.2020. World Risk Report 2020 Focus: Forced Displacement and Migration.
[8] Carleton University. 2020. Country Indicator for Foreign Policy. Sudan Fragility Brief.
[9] Higher Council for Environment and Natural Resources. 2016. Sudan National Adaptation Plan.
[10] Stephane Hallegatte, World Bank Group. 2017. Unbreakable: Building the Resilience of the Poor in the Face of Natural Disasters.
[11] UNDRR. 2021. Disaster Risk Reduction to Achieve Sustainable Development Goals.
[12] World Bank Group Climate Knowledge Portal. Available online at: August 2021 https://climateknowledgeportal.worldbank.org/country/sudan
[13] https://thinkhazard.org/en/report/6-sudan
[14] UNDRR.2021. Analysis of DRR inclusion in national climate change commitments.
[15] CRED, EM-DAT and UNDRR. 2020. Human Cost of Disasters: An overview of the last 20 years 2000-2019.
[16] In the aftermath of floods of 1988, about 1.5 million people were made homeless and an outbreak of malaria, typhoid and cholera occurred. The cholera outbreak alone claimed 1,200 lives

FIGURE 3: People affected by floods (2013-2020)
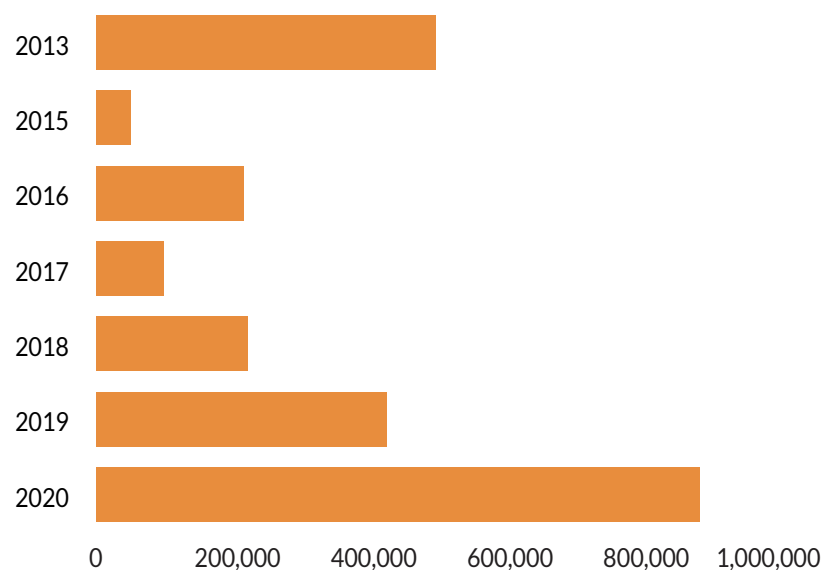
Source: Humanitarian Aid Commission of Sudan

amounted to over USD 3.34 billion, while flood losses, e.g. related to production losses in agriculture and foregone income losses from private SMEs, are estimated at over USD 1 billion. Total recovery costs were estimated around USD 6.9 billion, which includes the costs for the rehabilitation and reconstruction of damaged assets as well as technical and capacity building support for recovery.[17]

Droughts

Droughts affect Africa more than any other continent. EM-DAT[18] recorded 134 events on the continent between 2000 and 2019 (some 40% of the global total).[19] In Sudan, limited water sources beyond the Nile and climate change related droughts pose a challenge to farming and contribute to inter-communal tensions. Most of the Sudanese population depend on agriculture and cattle as a main source of income, which is threatened by desertification and irregular rainfall. The total area prone to droughts produces almost 90% of the cultivated food crops and 85% of firewood. Vulnerability to droughts combined with human activity has led to declining soil fertility and water resources, low agricultural productivity and food insecurity.[20] According to the EM-DAT, during 1970-2020 droughts affected over 27 million people in Sudan. Severe droughts occurred in 1886, 1967-1973, and 1980-1984. In 1984, droughts affected 8.5 million people and 7.8 million livestock was lost causing severe famine. As a result of droughts, thousands of people became displaced, putting a lot of pressure on the government and humanitarian agencies to provide basic needs including food and essential drugs. The repercussions of droughts in Sudan have repeatedly led to food insecurity, human displacement, spread of diseases, malnutrition and conflicts.

[17] Government of Sudan, 2021. Sudan Rapid Post Disaster Needs and Recovery Assessment, March 2021. Available online: https://www.gfdrr.org/en/publication/sudan-rapid-post-disaster-needs-and-recovery-assessment
[18] CRED, EM-DAT and UNDRR. 2020. Human Cost of Disasters: An overview of the last 20 years 2000-2019.
[19] Ibid.
[20] Sudanese Red Crescent Society. 2017. Community Based Disaster Risk Reduction, Climate Change Adaptation and Community Resilience.

Heat Stress

The temperate increase in Sudan in the next fifty years is expected to be slightly higher than the worldwide average.[21] Heat stress in animals caused by rising temperatures and humidity will occur more frequently and for longer periods, impacting milk and meat productivity for dairy cattle, beef cattle, sheep, goat, pigs and poultry across Africa. Analysis of historical data from 1981-2010 shows that livestock have already been progressively subjected to heat stress conditions. According to projections, this is set to worsen significantly, with severe implications for livestock unable to cope with more intense heat. Excessive heat sometimes causes self-ignited fires, and this occurs commonly in the oil seed stores causing serious loss in cereal storage depots. Increasing temperatures and heat stress also poses a risk to humans. Heat strokes are frequently reported at the Red Sea coastal areas, and a large number of fatalities resulting from heat stress were recorded in August 2002.[22]

Desertification

Sudan is the largest country in Africa affected by desertification.[23] Recurring droughts and land degradation are closely linked. Drought increases soil degradation, which, in turn, magnifies the impact of droughts.[24] Desertification is clearly linked to conflict and is considered one of the main factors that cause the migration of rural populations to urban centers; thus, creating so-called "environmental refugees".[25] Desertification in Sudan has been accelerating at a faster rate over the last two decades, leading to marginalization and the loss of arable land. Drought, population growth, the spread of extensive agriculture, deforestation, and rapid urbanization in combination with insufficient environmental protection have contributed to desertification. This has a direct effect on livestock and breeding, leading to food security challenges. Sudan has moreover lost a considerable forest cover due to desertification, resulting in a significant decrease in the wildlife population and plant biodiversity.

FIGURE 4: Desertification Process during 2014-2015
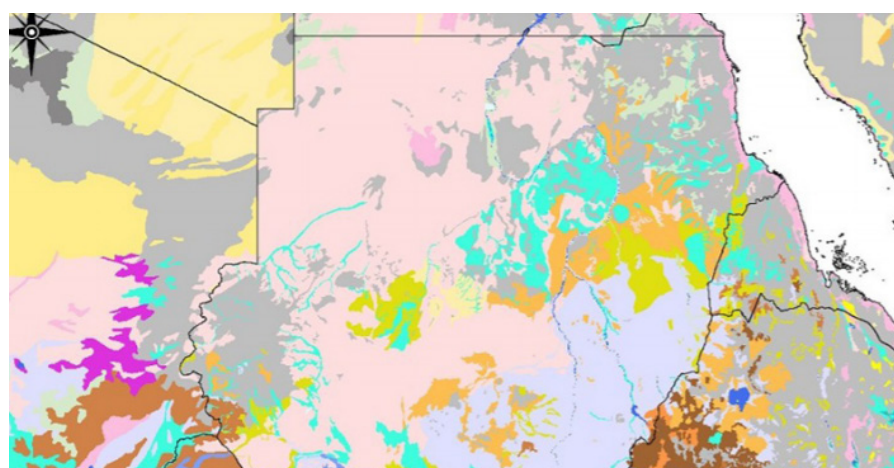
Surveyed by EKT, Soil and Water Tests by Moawia Y. Babiker

% of desertification process

60 %	20 %
50 %	10 %
40 %	5 %

Source: Combating Desertification in Sudan: Experiences and Lessons Learnt.

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[21] https://thinkhazard.org/en/report/6-sudan
[22] United Nations Office for Outer Space Affairs. 2011. Sudan Technical Advisory Mission Report.
[23] Sarah Saad, Adil Seed Ahmed, Allam Ahmed, Sufyan Osman, Ahmed Eldoma.2018. Combating Desertification in Sudan: Experiences and Lessons Learnt.
[24] UNDRR. 2021. Global Assessment Report, Special Report on Drought 2021.
[25] United Nations Environmental Program. 2007. Sudan Post Conflict Environmental Assessment.
[26] Sarah Saad, Adil Seed Ahmed, Allam Ahmed, Sufyan Osman, Ahmed Eldoma.2018. Combating Desertification in Sudan: Experiences and Lessons Learnt.

Disease Outbreaks

According to WHO, the dominant disease outbreaks in Sudan are classified into three major categories based on the nature of preventive and response measures:[27]

a) *Water and Sanitation-Related Disease Outbreaks:* Poor access to safe drinking water and sanitation services causes the transmission of diseases, such as cholera, acute water diarrhea, dysentery, hepatitis A and typhoid. Sudan witnessed more than 17 outbreaks of cholera during 1966-2019. [28]

b) *Vector-Borne Disease Outbreaks:* This is caused by parasites, viruses and bacteria that are transmitted by vectors infecting some people with diseases such as yellow fever, dengue fever, chikungunya fever, rift valley fever and malaria. Sudan has been subject to numerous vector-borne disease outbreaks in the past decades, the worst being the outbreak of chikungunya fever in 2019-2019 in Kassala, Red Sea Gadaref, River Nile, Gezira, Sennar, West Darfur, South Darfur and North Kordofan with total cases reaching 48,763.[29]

c) *Vaccine-Preventable Disease Outbreaks:* In Sudan the coverage of routine vaccination is less than 80% in some states. As a result, Sudan witnessed vaccine-preventable diseases outbreaks when vaccination levels were low, especially in remote areas, conflict-affected areas and IDP camps.

Conflict and Displacement

Sudan has a legacy of conflict and violence, and protracted displacement is widespread in Sudan as a result of two major civil wars and the conflict in Darfur. There were 2.3 million people living in displacement in the country as of the end of 2020. Ongoing violence, particularly in Darfur, as well as disasters, predominantly flooding, trigger significant new displacements every year.[30] In 2020, 100,000 people were displaced due to inter-communal and armed conflicts. UNAMID identified 200 farming villages particularly vulnerable to attacks. Besides leading to displacements, the attacks usually result in crop destruction, killings, maiming, and other abuses including sexual violence.[31]

Sudan hosts one of the largest refugee populations in Africa. The majority of the in total over 1.1 million refugees and asylum-seekers are from South Sudan. Most refugees live in out-of-camp settlements, host communities and urban areas, while others stay in camps, especially in East Sudan and White Nile State. Most recently, Sudan has been affected by the escalating conflict in Ethiopia's neighboring Tigray region: since the violence began, more than 50,000 people have fled into Sudan in search of safety as of mid-December. During the height of the influx, more than 1,000 people on average were arriving each day, overwhelming the capacity to provide aid.[32]

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[27] WHO, UNICEF and Sudan Federal Ministry of Health. 2020 Sudan Multi-Hazard Preparedness and Response Plan. April 2020.
[28] Ibid.
[29] Hassan E El Bushra, Betigel W Habtewold, Naeema Al Gasseer, Rehab E Mohamed, Salim A Mohamednour, 2019. Outbreak of Chikungunya Fever in Sudan, 2018-2019.
[30] IMDC, 2021. Sudan Country Information
[31] UNOCHA. 2021, ibid.
[32] UNHCR, 2021. Sudan.

2. FINDINGS OF THE DIAGNOSTIC AND RECOMMENDATIONS

The summary of results is organized along the five components of the R2R framework (Legal and Institutional Framework; Information; Facilities; Equipment; and Personnel) and their related criteria and indicators.[33] The conclusions and the key recommendations of each component were derived based on the stakeholder interviews and the inputs from the stakeholder workshop.

The order of the key recommendations is based on importance and priority as discussed with the stakeholders during the workshop.

For each component, the information is structured as follows:

i. **Component Overview:** describes the respective component and its related criteria as stated in the R2R methodology.

ii. **Component Findings:** derived from the analysis of the interviews and the identification of challenges and gaps as discussed during the stakeholder workshop.

iii. **Key Recommendations:** describes the way forward as discussed and agreed on during the last day of the stakeholder workshop.

2.1. Component 1: Legal and Institutional Framework

Component Overview

The R2R User Guide states: *"Internal and external clarity about the role of public and private entities is critical during disasters and emergency response. Where ambiguity exists, inefficiency and jurisdictional overlap are likely, and human and economic losses may be greater than they would otherwise be.*

Improving clarity about institutions' preparedness and response roles can be a potent means to improve resilience at various levels of government. Further, clarity about roles ensures that (…) investments in capacity do not lead policy but instead that policy comes first, with financial and technical support provided at the right time to the right entity.

Ideally these accountabilities are clearly enriched in legislation with directive regulations. Where possible, coordinated policy instruments should identify the operational expectations for agencies assigned a preparedness and response mandate. However, even in the absence of complete organizational clarity, investment preparedness and response can often improve a jurisdiction's ability to mitigate impacts and limit disaster and emergency related losses.

Component Criteria

- *Accountability and authority*, including indicators for emergency management legislation, expedited decision-making, response plans, and critical infrastructure assurance.

- *Financial preparedness*, including indicators for ex-ante funding for emergency response, fast track procurement, financial protection strategy, and private insurance.[34]

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[33] The World Bank, 2017. Rapid Diagnostic User Guide, Emergency Preparedness and Response Systems
[34] Rapid Diagnostic User Guide, Emergency Preparedness and Response Systems. p.32

Component Findings

Sudan needs a comprehensive, and enforced, law that governs EP&R activities, and the country could significantly benefit from improving and streamlining its institutional structure for disaster risk management (DRM) and disaster risk reduction (DRR). During the workshop stakeholders agreed that the absence of an enforced legal framework constitutes a real challenge when preparing for and responding to emergencies. State actors acknowledged that there is an overlap in their mandates and unclear responsibilities due to lacking clarity and non-enforcement of the legal framework. Horizontal coordination (between federal ministries and line departments) and vertical coordination (across the different levels of government) is moreover considered to be weak, compromising effective communication and government action in both disaster preparedness and response.

The National Council for Civil Defense (NCCD) considers its law of 2005[35] to be the regulatory framework for disaster management in Sudan. However, as revealed in the stakeholder engagement process, such an understanding is not shared by all concerned actors. Although the law provides a general framework and process for managing and preparing for disasters, NCCD as well as other interviewed actors pointed out that a number of challenges accompany the implementation of the law. These include:

1. The contradiction of some articles of the law with other laws in force in Sudan.

2. The law and its bylaws are not well communicated to relevant stakeholders including non-state actors, especially humanitarian organizations.

3. Public entities consider the law to be specifically addressing the role of the NCCD and not the holistic issue of DRM and DRR, consequently entities don't perceive it as binding for their entities.

4. The focus of the law is on responding to emergencies with limited focus on the aspect of preparedness.

5. The law, which was originally issued in 1991 and amended in 2005, doesn't address the emerging and present emergencies in Sudan arising from changing climate conditions, social unrests, and conflicts.

6. The roles of other relevant specialized entities are not clearly stated and there is no cooperation mechanism in place.

In collaboration with United Nations Disaster Risk Reduction (UNDRR), a National Strategy for Disaster Risk Reduction (2017-2031) was formulated but so far has not been adopted or disseminated. In an attempt to resolve the overlap of mandates and ambiguity of responsibilities, UNDRR, which was represented in the stakeholders' workshop, stated that they have proposed to update the strategy to clarify the roles and responsibilities of different entities, as well as to add action plans for different pillars through which different stakeholders could be accountable. At the time of writing of this report, this proposal was still under consideration by NCCD.

Multiple committees for addressing emergencies and disasters exist at different levels in the government. The Sovereignty Council established the Higher Committee of Health Emergencies to facilitate the response to the COVID-19 crisis with the membership of ministers. In 2020, the Sovereignty Council established a High Flood Coordination Committee to mitigate and address the impact of the floods of 2020. In addition, different thematic coordination and technical working groups were established at the level of different line ministries and entities. While these committees and working groups aim at enhancing the coordination in responding to specific emergencies, several stakeholders voiced concerns that this also creates ambiguity and confusion among EP&R actors regarding their roles and accountabilities and the decision-making process. Stakeholders

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[35] Sudan National Civil Defense Law for the year 2005.

at the workshop agreed on the importance of enhancing the governance structure for the EP&R system in Sudan.

Moreover, the existence of several emergency committees within different entities was found to cause a duplication of response efforts, especially given the insufficient overall coordination of different incidents. In some government entities, such committees are created to address EP&R on an individual institutional basis to compensate for the gap due to the absence of overall oversight by one entity.

The rapid diagnostic concludes that the EP&R system in Sudan lacks coordination, harmonization and a comprehensive functional framework that defines the roles, responsibilities, accountabilities, and specialization of functions of the institutions managing emergencies and disasters. This is especially evident with regard to the overlap of responsibilities between NCCD and HAC, which has a spillover effect on the work of key entities responding to emergencies in Sudan, such as the Sudan Red Crescent Society (SRCS) and UNOCHA. Despite these ambiguities there is some agreement among EP&R actors that in the aftermath of disasters NCCD is responsible for providing shelters and securing evacuation routes, while HAC is responsible for coordinating and delivering humanitarian aid. Yet, both entities consider themselves to be mandated with the overall management of emergencies and disasters in Sudan, which in some cases leads to institutional friction and disagreement affecting the response of both entities.

During the workshop, different representatives of public entities described the decision-making processes within their entities to be very slow and the chain of command as not clear enough to enable quick response in a given emergency. Workshop participants pointed out that the main reason for this is related to the highly bureaucratic administrative processes and insufficient accountabilities of public entities.

In the assessment, it also became evident

that the majority of government entities concerned with EP&R lack response plans, although a number of development agencies (such as UNOCHA) in Sudan have been advocating the importance of formulating and devising such plans to better prepare for and respond to emergencies as well as to facilitate their work during emergencies. In 2020, the Ministry of Health and the World Health Organization (WHO) and UNICEF developed and jointly endorsed the Sudan Multi-Hazard Preparedness and Response Plan, which guides the interventions in health-related hazards and identifies the need for medical supplies and equipment to address health emergencies, through the Strategic Tool for Assessing Risk (STAR). Additionally, the Ministry of Finance and Economic Planning (MoFEP) with the support of the African Risk Capacity has recently prepared a Drought Operations Plan 2021-2022 and an insurance scheme for farmers affected by droughts through the African Disaster Risk Financing Program (ADRIFI). MoFEP is planning to replicate the same process for floods in the near future. Despite of that, there is still need for better financial mechanisms to enable different stakeholders to prepare and respond to disasters. Currently, NCCD requests the EP&R budgets from different stakeholders, sends them to MoFEP and acquires the funds unilaterally without notifying the stakeholders with the amounts allocated. Stakeholders expressed the need to have their EP&R budgets allocated directly to MoFEP without the additional step of involving NCCD.

Finally, some participants in the workshop noted that there is considerable focus by different government entities in Sudan to responding to floods, while less attention is given to other types of disasters, such as droughts, health, armed conflicts and social unrest. This gap of the government's role in preparing and responding to such emergencies is largely filled by non-government and development agencies (such as SRCS, WFP, WHO and UNOCHA).

Key Recommendations

Recommendation 1.1: Activation of the National Disaster Management Mechanism

The activation of the national disaster management mechanism, which is to be mandated with the overall management of emergencies and disasters in Sudan, is needed to address the overlaps in institutional mandates and streamline the different initiatives and approaches of EP&R. Political support by the Cabinet of the Ministers is essential to facilitate the activation of such mechanism. Once activated, equal focus should be given to preparedness and response and all types of hazards. Key mandates of the mechanism, among others, will be to ensure inter-agency coordination, formulate policies and plans for EP&R, and mobilize the required financial and human resources to adequately prepare for and respond to emergencies and disasters.

Recommendation 1.2: Compliment and enforce the Disaster Management and/or EP&R Law

The lack of consensus over a comprehensive and fully enforced legal framework that regulates EP&R and defines authorities and accountabilities causes malfunctions in managing disasters and emergencies in Sudan. The understanding of NCCD to its own law as an emergency management legislation is not shared by other actors in the field. The enforcement and building consensus over the law should ideally be led by the National Disaster Management Mechanism with full input and participation of all government and non-government actors in Sudan to ensure consensus and a clear definition of responsibilities and accountabilities.

Recommendation 1.3: Formulate emergency response plans and/or SoPs

Following the example of MoFEP and MoH, it is recommended that public entities concerned with EP&R and disaster management draft response plans and develop standard operating procedures (SOPs). Entities could also capitalize on the existing knowledge of development partners to formulate such plans and SOPs.

Recommendation 1.4: Enhance evidence-based preparedness

The diagnostic found that all the entities mandated with EP&R in Sudan are response oriented with less and in some cases no focus on preparedness. For them to be able to adequately prepare for emergencies, data and analyses related to disaster risk and emergency preparedness, also from national research entities,[36] should receive stronger consideration. NCCD and HAC could capitalize on evidence-based disaster data and analysis drawing on technology and research which is carried out by RSA and others to better prepare for emergencies and disasters. RSA and related institutions have to be well positioned among the key actors in EP&R and should be empowered to inform EP&R.

Recommendation 1.5: Develop financial tools for disaster preparedness budgeting

The diagnostic found that it is important to develop financial tools to enable Sudan to carry out a disaster preparedness budgeting. Currently, there is a lack of financial resources when responding to an emergency with a strong reliance on external, ad hoc funding. It is recommended to capitalize on the experience of MoFEP in dealing with droughts and the establishment of an insurance scheme for farmers, to create similar models of financial preparedness for other types of disasters in Sudan. The diagnostic also suggests determining EP&R budgets in direct coordination with line ministries, contrary to the current practice whereby NCCD mediates this process. This was found to result in financial gaps and the inability of line ministries to respond in a timely manner to emergencies, either due to the absence of financial resources or their limited awareness of the available financial resources for emergency response.

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[36] Such as: Remote Sensing Authority, Sudan Meteorological Authority and Universities.

1.2. Component 2: Information

Component Overview

The R2R User Guide states: *"The collection, analysis and swift dissemination of information enables better decision-making in advance of emergencies, during response operations and through the transition to early recovery. Impacts from emergences are felt locally, and so community engagement is vital to a well-developed state of preparedness.*

The information used for preparedness and response includes the information generated from early warning systems; this information provides local residents – and the response teams that support them – with advance notice of emergency hazardous events. Other relevant emergency information comes from responding agencies and social media; coordination of this information ensures horizontal and vertical situational awareness that enables efficient, coordinated, and prioritized response operations.

Finally, the development of hazard and vulnerability maps along with other georeferenced emergency information, capture digitally and shared electronically, provides decision-makers with a key resource for planning across time scales to reduce risk. However, for high-quality information to have an impact, it must be utilized both by the affected community and by well-trained, committed personnel that have the appropriate equipment to respond safely and effectively to the given event.

Component Criteria

- **Community engagement**, including indicators for volunteer management, public preparedness education, community-led mitigation, and leadership engagement.

- **Early warning systems**, including indicators for hazard monitoring, information analysis, active messaging and warning dissemination.

- **Information management systems**, including indicators for inter-agency application, early warning system data integration, maintenance programming, and GIS data integration.

- **Geomatics**, including indicators for implementation capability, geo-referenced hazard data, georeferenced vulnerability data, and public-private data sharing agreements.[37]

Component Findings

It was evident during the meetings with the Remote Sensing Authority (RSA) that it has a strong capacity to predict, monitor and analyze potential hazards and disasters through satellite and drone images as well as to conduct vulnerability, risk and hazard mapping which was previously carried out with the support of UNDP. The main challenge, however, is that the data generated by RSA is not feeding into the decision-making process of disaster management in Sudan. Moreover, RSA informed that it is developing a home-grown early warning system based on the internal data-warehouses which, if fully utilized, will constitute a strong information base in preparing for emergencies. Sudan Meteorological Authority (SMA) also generates robust data through satellite images and provides the data to NCCD for action. However, according to the representatives of SMA, the information provided by SMA was only acted upon when the 2020 floods occurred.

Interviewees and participants of the workshop pointed out that information sharing and integration between different actors is a major challenge in Sudan. This is found to be the result of the lack of a disaster management information system (DMIS) that allows for effective inter-agency flow of information. More critically, the entities which are mandated with responding to emergencies such as HAC often don't have real-time information about the emergency at hand. RSA has a GIS in place with accurate data which enables them to provide advice on disasters. According to RSA

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[37] Rapid Diagnostic User Guide, Emergency Preparedness and Response Systems. p.55

representatives, the GIS in Sudan is fragmented and not fully utilized. A multi-hazard early warning system is currently being developed in NCCD and the Higher Council for Environment with external support. Such system might not address the challenge mentioned above in case the information generated from the systems still doesn't feed into a DMIS.

In terms of health emergencies, a visit to MoH Emergency Operation Center (EOC) showed that it is well-established including the related IT-system, which was set up with support of the WHO as a pilot for the whole region. The system includes three features: 1. Watch mode, 2. Classifications of emergencies, and 3. Response mode. The IT-system should be ideally accessed by all entities which are members of the MoH EOC, yet according to the interviewees in the MoH the representation of other entities in the EOC is weak since the entities invited are not always represented and the system is currently being used by the MoH staff only.

Some international organizations have their own EWS which enables them to forecast, prepare for and respond to emergencies in a timely manner in Sudan. For instance, the WFP system called "Cloud to Street" allows for carrying out analysis on flood risks on crops, people and roads, yet information from relevant entities in Sudan, such as the SMA and the Ministry of Irrigation and Water Management, still needs to be incorporated into the system.

Due to the challenges in capacities and infrastructure, SMA informed that its mandate isn't effectively practiced, especially when it comes to providing weather and climate information and services of quality to help decision-makers plan and take action to ensure food security, poverty reduction and sustainable development.

There is no government mechanism to manage community engagement, while there is substantial reliance on volunteers and the local communities when responding to emergencies, especially in remote areas. Volunteers training and management is mostly done through SRCS and UNOCHA, both of which have systems in place to ensure their engagement. In this regard, the diagnostic found that the potential of volunteers is not fully utilized. The same finding could apply to community education. Although the University of Rabat offers a specific degree on disaster prevention, this was found not to contribute directly to raising the awareness at the local level on specific threats or to help communities engage in EP&R.

Finally, representatives of NCCD stated that they recently launched an initiative to add disaster management content to schools' curricula. This is considered a good step towards raising the general awareness for disasters and provides a basis for scaling-up through related activities.

Key Recommendations

Recommendation 2.1: Establish an integrated DMIS and feed in data from EWS

It is essential to have a DMIS that is used by all entities, emergency operation centers and personnel involved in preparing for and responding to emergencies. Ideally, the system would be inter-operable with systems used by other international institutions and able to integrate data from early warning systems. Establishing an integrated DMIS would contribute to ensuring stronger operational and situational awareness and inform decisions with reduced response times. A solid training program should accompany the development of the system for administrators and users.

Recommendation 2.2: Strengthen the role of RSA to coordinate GIS

The diagnostic suggests strengthening the role of RSA to coordinate GIS with different stakeholders to support the situational awareness, especially immediately after emergencies. A review of RSA current systems

is essential to assess data quality, data layers, data interpretation and system standards. Ideally, the system should be inter-operable allowing stakeholders to have a common picture and efficient information flow. A standard and regular updating process should be set for RSA vulnerability and hazards mapping which was last conducted in 2015.

Recommendation 2.3: Implement a framework for community engagement

The government is advised to establish a framework for engaging volunteers in advance of an emergency. A formulation of a framework/program which provides volunteers with basic training in search and rescue and basic protective equipment is considered to have a positive impact on response effectiveness and response times. Such a framework/program could be established jointly with SRCS and

UNOCHA. *evelop a programmatic approach for Early Warning Systems*

Strong EWS is a crucial factor for emergency planning and response as it reduces alert and response time as well as exposure of those at risk. Attention should be given to creating a broad and multi-dimensional programmatic approach for EWSs in Sudan. Support is needed to build interfaces for applications of the different EWSs which already exist or are in the process of development. A mapping exercise is recommended to identify the systems already in place including functionality. On this basis the use of the systems should be categorized per disaster type. Such mapping can help the government and international organizations better coordinate and exchange information and address the challenge of duplication related to having multiple systems in place.

1.3. Component 3: Facilities

Component Overview

The R2R User Guide states: *"Coordination of effort of EP&R activities require a structural presence, be it for command and control, movement of emergency aid, or the staging of response teams and their equipment. These physical facilities act as a core element in establishing a culture of preparedness, ensuring a dependable common operating picture and resilient services when most other critical infrastructure and government services are disrupted. This component ensures that there is a nexus for information, personnel, and equipment as the EP&R system matures through focused investment.*

Component Criteria

- *Emergency operations centers, including indicators for resilient structures, mobile command posts, activation procedures, and social media monitoring.*

- *Training centers, including indicators for personnel and equipment capacity, multi-agency training, maintenance, and location attributes.*

- *Logistics warehouses and response stations, including indicators for international reception, warehousing networks, specialized hazard response facilities, and urban response stations.*

- *Shelters and open spaces, including indicators for temporary housing, multifunction open space, evacuation routes, and emergency shelter management".* [38]

Component Findings

Stakeholders indicated that there are multiple Emergency Operation Centers (EOCs) at the central and state levels, each dealing with a specific type of disaster, such as the ones established in the Ministry of Health, the Ministry of Interior, NCCD and the Meteorological Authority. It was noted that the

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[38] Rapid Diagnostic User Guide, Emergency Preparedness and Response Systems. p.98

most recent EOC was established following the floods of 2020, affiliated to the Ministry of Labor and Social Development which was also heading the Higher Committee for Flood Mitigation then. The maturity levels and the use of technologies in EOCs vary, with the most advanced EOC being the one established in the MoH. A common concern of stakeholders was the lack of an oversight on the mandates and different functions of EOCs, the coordination mechanism and communication channels between them. The reliability of the systems in place within EOCs and the operational costs is unclear.

Stakeholders acknowledged that Sudan doesn't have a training center for disasters. The NCCD has acquired a site to establish a large training center, which according to NCCD representatives would serve Sudan and the region. Yet, due to lack of funding, the center was not established physically, and the training process and content wasn't put in place.

The SRCS training facilities provide an opportunity to train government and non-government officials on basic emergency and disaster response related skills, however, according to SRCS, such training services are thus far not fully utilized by the government.

Stakeholders further voiced concern that there is no system in place to coordinate and store national and international assistance in warehouses during disasters. Both NCCD and HAC have warehouses at the national and local levels, but there is no mechanism in place to either track existing supplies in the warehouses pre-disaster or monitor the supplies received by international organizations and countries post disaster. Aircrafts with donations and supplies are delivered to Sudan airports and dealt with on a case-by-case basis, either received by the Armed Forces, NCCD or

other entities, resulting in a lack of oversight of the quantity of supplies received and the allocations in different warehouses. On the other hand, non-state actors such as the WFP, UNOCHA and SRCS manage the supplies of their warehouses effectively and the supplies are provided and refurbished ahead of emergencies based on predictions and forecasts. One major challenge in this regard is the slow process of issuing the necessary approvals of medical supplies by the Ministry of Health.

Evacuation and sheltering are among the mandates of NCCD, yet NCCD considered that the absence of a clear map for evacuation routes and sites, and the resistance of some populations to relocate before and during a disaster, presents a real challenge to ensure the safety of affected individuals. The lack of resources is an additional challenge for NCCD to purchase and devise shelters and temporary housing. It was evident that there is a need to address this issue from a preparedness perspective, especially with floods blocking roads to affected areas, making it difficult for NCCD to reach such areas, set up shelters and evacuate individuals. One major challenge linked to evacuation is the firefighting capacity of NCCD and its capacity to deal with water-related disasters (see component 4). The shelters provided by WFP, SRCS and other UN agencies are key reliance factors during disasters in Sudan. The National Fund for Housing and Reconstruction works post disaster on reconstructing the houses in the affected areas. The representatives of the Fund indicated that a map is missing to identify areas at risk of floods and heavy rains, which makes it difficult to prevent and ban urban development in flood prone areas.

Key Recommendations

Recommendation 3.1: Establish a network of EOCs

Stakeholders agreed that a map of the current EOCs is needed to provide an overview of their respective mandates and the equipment in use. To this effect, an assessment of the EOCs emergency plans, infrastructures and backup system should be carried out. The government is advised to then establish a network/platform among such EOCs to ensure synergies, complementarities and proper flow of information between them.

Recommendation 3.2: Support the establishment of NCCD Training Center

Senior officials of the NCCD emphasized the importance of mobilizing the necessary financial and technical support to establish the NCCD training center. The center, which is built on a large area of land, should be used to accommodate participants and also carry out simulation and drill exercises for EP&R in Sudan, not only for NCCD officers but also for first responders and volunteers. Investments and mobilization of resources is needed to build the center and provide proper training processes and curricula to ensure the functionality of the center in the future.

Recommendation 3.3: Establish a system to track the supplies and improve the capacity of the warehouses

Stakeholders agreed on the importance to systematically refurbish the government warehouses before the occurrence of the disaster. An information system needs to be in place to track the supplies in different warehouses and also track and distribute the supplies received in airports during disasters. The capacities of the current warehouses should be assessed, including the equipment for storage and record-keeping infrastructure whereby capacities of the warehouses would be upgraded.

Recommendation 3.4: Set up disaster evacuation routes and communicate with the affected populations

Evacuation routes should be defined, especially in the most disaster-prone areas in Sudan. Populations must be made aware of the evacuation routes and signposts have to be in place and regular practices and evacuation drills must take place to ensure that populations are well informed about the evacuation procedures.

1.4. Component 4: Equipment

Component Overview

The R2R User Guide states: *"The appropriate acquisition, use and maintenance of preparedness and response equipment ensures timely information sharing and safe, effective rescue operations. It allows for effective communication in even the harshest conditions. Investments in equipment help governments overcome the capital requirements to ensure access to lifesaving technologies and resources. Combined with clear implementation guidance, established parts and service supply chains, and program budgets for maintenance and upgrades, these elements ensure a government's core preparedness and response agencies have the tool to safely and effectively deliver their services."*

Component Criteria

- **Emergency social services**, including indicators for casualty care, water/sanitation/hygiene services, vulnerable population support, and mortality management

- **Information / communications technology**, including indicators for radio capacity, system interoperability, broadband connectivity, and communication infrastructure recovery.

- **Hazard-specific response capacity**, *including indicators for wildland fire suppression, flood and water related emergencies, structural collapse, and hazardous materials containment.*

- **Urban firefighting and technical rescue**, *including indicators for structural firefighting, entrapment and extrication, rope rescue, and confined space rescue.*[39]

Component Findings

From the interviews and the gap analysis, which was carried out by stakeholders in the workshop, the lack of equipment in all entities concerned with EP&R in Sudan was identified as a major challenge. For instance, representatives of MoH highlighted the lack of proper equipment (such as ambulance services) to address health-related disasters, NCCD noted that they don't have the necessary fire trucks to deal with all types of fire rescue, and SMA raised concern about the lack of radars. Stakeholders collectively agreed that existing equipment is outdated, basic or worn-out. Specifically, it was reported that health workers don't have protective gears or proper insurance to guarantee their safety when dealing with health-related emergencies.

The hazard-specific response capacities are low in Sudan, and challenges related to the capacities and equipment of NCCD to deal with hazards were identified during the interview. NCCD officials acknowledged the lack of search and rescue equipment to adequately deal with water-based emergencies (including protective equipment, boats and water vessels), which limits NCCD capacities to evacuate individuals from islands or inundated areas. Moreover, NCCD pointed out the risks faced by emergency responders due to lacking protective gear against hazardous material (hazmat).

A significant challenge is also found in the urban firefighting capacities of NCCD. The current equipment only allows NCCD to deal with fire incidents in smaller houses. Rescue tools and personnel for vehicle extraction, protective personal equipment and medical resources are lacking, and training for rescue teams on search and rescue and for extraction of victims is an area of improvement.

Further, information and communication technology has been identified as a major shortcoming. The lack of radio system by all government EP&R actors during times of emergencies and their reliance on mobile networks and landlines is problematic when the emergency affects such means of communication. No back-up systems (satellite, point-to-point backhaul wireless, etc.) are available to use as alternative means of communication. Only the radios of the police and military can be used in case of emergencies. Representatives of the Telecommunication and Postal Regulatory Authority (TPRA) informed that an emergency plan is in place for emergency communication; however, other stakeholders noted that the plan has not been communicated and shared with them, most importantly with the NCCD. TPRA voiced their concern of securing the communication towers, as damages to towers and fiber optics result in additional maintenance needs especially at times of emergencies. Similarly, SMA observatories are outdated and at risk of collapsing. Moreover, due to the absence of radars, SMA is not able to get clear and accurate weather images or real-time information related to vulnerable areas during times of emergencies.

Emergency outbreak and public awareness materials on emerging diseases or outbreaks after disaster are lacking. Guidelines for management of large-scale mortality are also not in place. There is no single point of reporting on mortalities in Sudan, so figures often vary from one entity to another.

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[39] Rapid Diagnostic User Guide, Emergency Preparedness and Response Systems. p.141

Key Recommendations

Recommendation 4.1: Supply equipment for urban firefighting and water-based emergencies

Equipment must be provided to NCCD and other emergency response agencies to be able to deal with fires and water-based emergencies. Procurement of firefighting trucks, boats, life jackets etc. is essential to enable NCCD to save and evacuate people.

Recommendation 4.2: Upgrade the equipment and infrastructure for fore- and now-casting of SMA

Investments to upgrade the infrastructure of SMA are needed to nowcast and forecast the changes of weather and provide accurate early warnings. Additionally, the purchase of radars was found by the diagnostic to be a critical area for EP&R investments.

Recommendation 4.3: Establish an inter-operable radio communication system

An interoperable radio communication system must be provided to first responders and in EOCs (currently only the military and police in Sudan have adequate radio equipment). Moreover, alternative communication must be available and clearly indicated and utilized by NCCD.

Recommendation 4.4: Strengthen the capacities of local health stations

It is important to enhancing the capacities of state health stations, hospitals and staff. An incentive for health workers was suggested to be put in place to encourage them to serve at the state level.

1.4. Component 5: Personnel

Component Overview

The R2R User Guide states: *"A highly skilled and experienced workforce is the most valuable resource in any disaster preparedness and response system. To achieve this, there must be a culture of preparedness in which both the public and political entities trust the agencies tasked with ensuring public safety and minimizing economic disruptions. Developing such a culture requires intensive and extensive training of those involved in EP&R so that they acquire the necessary knowledge, skills, and practical experience. Training of personnel must take advantage of the nest available plans, information, facilities, and equipment to ensure an interoperable systems approach is broadly understood. It must also enable deep capability in focused areas of expertise to ensure that personnel development spreads upwards, from the individual to the team, and from the team to the agency".*

Component Criteria

- ***Incident organization structures***, *including indicators for policy direction, multi-incident application, guiding materials, and functional role rosters.*

- ***Training and knowledge building***, *including indicators for comprehensive programs, knowledge management, continuous improvement methodology and program quality.*

- ***Exercises and drills***, *including indicators for central design, inter-agency collaboration, response plan validation, and exercise planning process.*

- ***International support coordination***, *including indicators for central agency coordination, aid reception and storage, application of service standards, and distribution logistics.*[40]

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[40] Rapid Diagnostic User Guide, Emergency Preparedness and Response Systems. p.184

Component Findings

The diagnostic found that an incident command structure is currently not in place. The response system is not standardized and the approach in dealing with emergencies is fragmented. According to NCCD, in a national disaster situation, the NCCD law prevails but in the workshop such an understanding was not shared by other stakeholders. According to the stakeholders, response is very much described as "institutionally led", meaning that each institution acts on its own.

The majority of the relevant state stakeholders in Sudan flagged the issue of the lack of well-trained staff and high turnover rates. Such issues are related to the low pay of civil servants and non-conducive working conditions in public organizations in Sudan. In the MoH for instance, such a challenge hinders the response capacity of the MoH due to the lack of doctors with certain specializations, especially at the state level.

Training on dealing with emergencies and disasters occurs in the SRCS, however the state actors are not capitalizing on such training for their staff and workers. Stakeholders agreed on the dire need to build the capacities of personnel, especially of first responders and health officers. Due to the absence of a training center, there are no exercises or drills for first responders. In this regard, all stakeholders raised the importance of designing special technical training programs to enable them to better prepare for and respond to emergencies.

Finally, concerning international support coordination, although the MoFEP is coordinating the whole Official Development Assistance in Sudan, the assistance received during emergencies is not coordinated by them. Respondents agreed that while HAC coordinates humanitarian aid, the oversight of international support is missing and that in many cases aid is being received through different airports and directed to specific entities without prior coordination with NCCD.

Key Recommendations

Recommendation 5.1: Assess the institutional and human capacities of key EP&R entities

It is recommended to assess the institutional structure of entities responsible for EP&R as a basis to ensure more effective collaboration and coordination. Additionally, the human capacities must be assessed in terms of workforce allocation and technical capacity needs.

Recommendation 5.2: Design a national training and exercise program and encourage knowledge sharing

It is essential to formulate a nation-wide programmatic approach to training. The government should make use of the already existing training programs of other entities such as SRCS or neighboring countries.

Recommendation 5.3: Set up a mechanism for better coordination between international organizations

A mechanism has to be in place to ensure timely, effective and accurate reception of assistance. A mechanism for receiving, storing and distributing international assistance needs to be developed. Full coordination needs to be in place between EP&R entities in Sudan and the relevant department at the MoFEP.

3. CONCLUSIONS AND EP&R ROADMAP

This diagnostic of EP&R capacities and needs in Sudan was developed in a participatory manner by bringing together state and non-state actors in a stakeholder engagement process. The inputs, discussions, insights and agreements of different stakeholders were documented and considered as an integral part of this diagnostic, directly informing the assessment, findings and recommendations as summarized in this report. Importantly, stakeholders considered the gaps in policies and the need for a stronger and more coherent legal and institutional framework as a prerequisite for strengthening the other components in EP&R. This is in line with the R2R methodology, which places the institutional and legal framework at the core of EP&R systems.

Undoubtedly, the implementation of the proposed recommendations will require strong political will and dedication, especially with regards to putting in place the disaster management mechanisms and laws. A mindset of coordination and dialogue will further be key to shift from institutional-led actions to holistic interagency interventions and develop a more robust EP&R system in Sudan. Further, financial resources along with physical investments will be needed to upgrade the current EP&R facilities and equipment, and to ensure a higher degree of response and preparedness capacities, and to decrease the current levels of disaster risk, including human casualties and disaster-related damages to properties and assets. Finally, the Government of Sudan will also need to focus attention to training personnel and developing human capital, along with strengthening institutional capacities of EP&R entities to ensure preparedness and timely response to disasters.

The comprehensive and detailed list of recommendations developed by the stakeholders (Table 1) indicate the key priorities for action moving forward.

TABLE 1: Summary of EP&R Recommendations

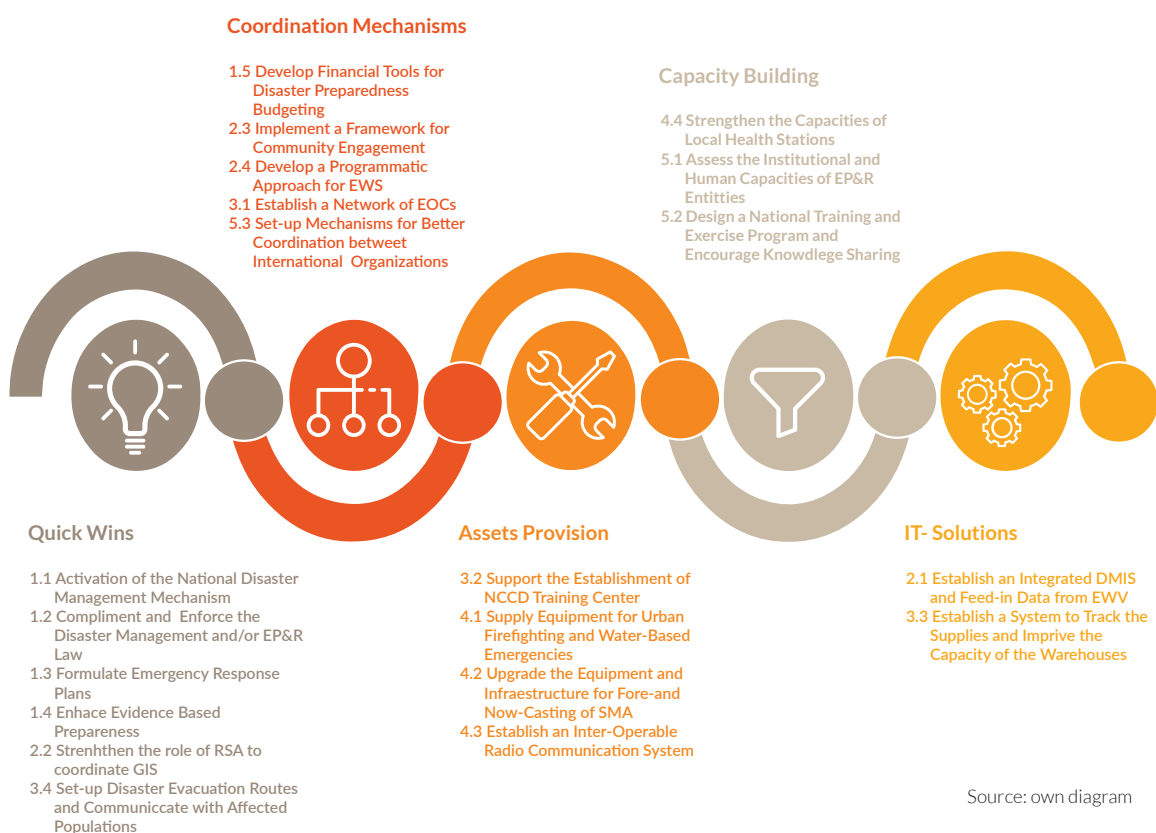|	Component	Recommendations
1	Legal and Institutional Framework	1.1: Activation of the National Disaster Management Mechanism 1.2: Compliment and enforce the Disaster Management and/or EP&R Law 1.3: Formulate emergency response plans and/or SoPs 1.4: Enhance evidence-based preparedness 1.5: Develop financial tools for disaster preparedness budgeting
2	Information	2.1: Establish an integrated DMIS and feed in data from EWS 2.2: Strengthen the role of RSA to coordinate GIS 2.3: Implement a framework for community engagement 2.4: Develop a programmatic approach for Early Warning Systems
3	Facilities	3.1: Establish a network of EOCs 3.2: Support the establishment of NCCD Training Center 3.3: Establish a system to track the supplies and improve the capacity of the warehouses 3.4: Set up disaster evacuation routes and communicate with the affected populations

	Component	Recommendations
4	Equipment	4.1: Supply equipment for urban firefighting and water-based emergencies
		4.2: Upgrade the equipment and infrastructure for fore-and now-casting of SMA
		4.3: Establish an inter-operable radio communication system
		4.4: Strengthen the capacities of local health stations
5	Personnel	5.1: Assess the institutional and human capacities of key EP&R entities
		5.2: Design a national training and exercise program and encourage knowledge sharing
		5.3: Set up a mechanism for better coordination between international organizations

The EP&R Roadmap (see Figure 5) clusters and prioritizes the different sets of recommendations into short-, medium- and long-term actions, which could be considered by Sudanese policy makers and development partners to enhance the EP&R system in Sudan. Based on the feedback of stakeholders, the report suggests that the implementation of the different clusters and recommendations of the Roadmap to be carried out by a national mechanism which comprises all stakeholders that engaged in the EP&R process to ensure continuous dialogue, build consensus and use synergies.

The clusters and associated timeline are set around five key phases, as follows:

1. **Quick-Wins (1-3 months):** The initial three months will target the low-hanging fruits and focus on initiatives that will show immediate results. This includes the recommendations that require minimum human and financial resources. Actions under this cluster could create momentum around the issue, engage different stakeholders and create visible change. It is imperative that all stakeholders are engaged and are involved in this initial stage.

2. **Coordination Mechanisms (3-6 months):** Here the focus will be on strengthening communication and improving the level of coordination among key players. The present entities operating within the EP&R sphere will be brought together and encouraged to share information and knowledge. The cluster includes the recommendations that would directly contribute to enhancing coordination, streamlining processes, and setting up engagement frameworks for the community.

3. **Equipment Provision (6-12 months):** At this stage the mechanism will start acquiring the needed resources and compliment the currently existing ones. NCCD, RSA and the SMA will be the main beneficiaries here. This cluster includes recommendations that address the upgrade of existing EP&R equipment and facilities or the provision of new ones. The procurement process for the purchase would need to start during the first phase.

4. **Capacity Building (12-18 months):** Once the needed resources are in place and a suitable coordination system is enforced, the environment will be conducive to start a comprehensive and practical training program that targets those assuming key positions within national disaster management mechanism. This cluster includes recommendations that would address institutional development and capacity building for EP&R entities and first responders.

5. **IT-Solutions (18-24 months):** Finally, the mechanism will go through a process of re-engineering and automating key functions to enhance the effectiveness of the EP&R system. The recommendations in this cluster include devising IT-tools that would enhance the oversight and management of the EP&R system.

FIGURE 5: Sudan EP&R Roadmap

Coordination Mechanisms

1.5 Develop Financial Tools for Disaster Preparedness Budgeting
2.3 Implement a Framework for Community Engagement
2.4 Develop a Programmatic Approach for EWS
3.1 Establish a Network of EOCs
5.3 Set-up Mechanisms for Better Coordination betweet International Organizations

Capacity Building

4.4 Strengthen the Capacities of Local Health Stations
5.1 Assess the Institutional and Human Capacities of EP&R Entitties
5.2 Design a National Training and Exercise Program and Encourage Knowdlege Sharing

Quick Wins

1.1 Activation of the National Disaster Management Mechanism
1.2 Compliment and Enforce the Disaster Management and/or EP&R Law
1.3 Formulate Emergency Response Plans
1.4 Enhace Evidence Based Prepareness
2.2 Strenhthen the role of RSA to coordinate GIS
3.4 Set-up Disaster Evacuation Routes and Communiccate with Affected Populations

Assets Provision

3.2 Support the Establishment of NCCD Training Center
4.1 Supply Equipment for Urban Firefighting and Water-Based Emergencies
4.2 Upgrade the Equipment and Infraestructure for Fore-and Now-Casting of SMA
4.3 Establish an Inter-Operable Radio Communication System

IT- Solutions

2.1 Establish an Integrated DMIS and Feed-in Data from EWV
3.3 Establish a System to Track the Supplies and Imprive the Capacity of the Warehouses

Source: own diagram

ANNEX 1: Agenda of the Stakeholder Workshop

August 16: "Past Experience and Current Status"		
Time	**Content**	**Speaker**
08:30 – 09:00	**Registration and welcome tea and coffee**	
09:00 – 09:30	**Keynote Speeches** **Ms. Milena Stefanova** Sudan Country Manager - The World Bank Group - - **Dr. Amin Salih Yasin** - Undersecretary of Economic Planning - Ministry of Finance and Economic Planning - - **Major General/ Ahmed Omar Sayed** - Secretary General - National Council for Civil Defense	
09:30 – 10:00	**Emergency Preparedness and Response Report: Process, Progress and Timeline** **Aim and Proceedings of the Stakeholders Dialogue**	**Lead Consultant** World Bank Group
10:00 – 10:30	**The Role of Remote Sensing in Disaster Management**	**Prof Amna Ahmed Hamid** Consultant with the Remote Sensing Authority
10:30 – 12:00	**World Café Exercise** From your experience from Floods of 2020, what were the key success factors and challenges, with regards to: • Legal Frameworks (laws, policies etc) • Governance (decision making processes, institutional effectiveness, accountability, information etc) • Financial and Human Resources • Infrastructure and Facilities	Facilitated by the Project's Consultants
12:00 – 12:30	**Coffee Break**	

Time	Content	Speaker
12:30 – 13:30	**Presentations of the Outcomes of the World Café Exercise**	Moderated by World Bank Consultant
13:30 – 14:00	**Wrap-up of day one and feedback from participants**	
14:00 – 15:00	**Networking Lunch**	
	August 17: "Capacity and Policy Delivery Gaps"	
Time	**Content**	**Speaker**
08:30 – 09:00	**Registration and welcome tea and coffee**	
09:00 – 09:30	**Ready to Respond Framework: Capacities and Delivery Gaps for Emergency Preparedness and Response** • Legal and Institutional Frameworks, • Information, • Facilities, • Equipment, and • Personnel	**Lead Consultant** World Bank Group
09:30 – 10:00	**The Role of Finance in Disaster Management** A Case Study of Sudan Drought Operation Plan 2021-2022	**Mr. Elalim Salih Eldow** Risk Management Unit Ministry of Finance and Economic Planning
10:00 – 10:30	**Presentation of the Case Study and Formation of the Working Groups**	Moderated by World Bank Consultant
10:30 – 12:00	**Case Study and Simulation Exercise**	Facilitated by the World Bank Consultants
12:00 – 12:30	**Coffee Break**	
12:30 – 13:30	**Presentations of the Outcomes of the Simulation Exercise**	Moderated by World Bank Consultant
13:30 – 14:00	**Wrap-up of day two and feedback from participants**	
14:00 – 15:00	**Networking Lunch**	

August 18: "The Way Forward: Towards an EP&R Roadmap in Sudan"		
Time	**Content**	**Speaker**
08:30 – 09:00	**Registration and welcome tea and coffee**	
9:00 – 10:00	**Leading Practices:** **Emergency Preparedness and Response and Disaster Management** - Mr. Hamed Gour, Director of Disaster Management, Emergency and Response, Sudanese Red Crescent Society - Mr. Dagim Tadesse, United National Office for Coordination of Humanitarian Aid - Ms. Claudia Lorena Trejos, Senior Disaster Risk Management Consultant, World Bank Group	
10:00 – 10:30	**EP&R Strategies and Systems**	**Lead Consultant** World Bank Group
10:30 – 12:00	**Group Exercise: Key Pillars of EP&R System/Roadmap in Sudan:** - Legal and Institutional Frameworks, - Information, - Facilities, - Equipment, and - Personnel	Facilitated by the World Bank Consultants
12:00 – 12:30	**Coffee Break**	
12:30 – 13:30	**Presentations of the Preliminary Findings for the key Pillars of the Roadmap**	Moderated by World Bank Consultant
13:30 – 14:00	**Wrap-up of the Event and Next Steps**	
14:00 – 14:30	**Concluding Remarks** Mr. Ko Takeuchi – The World Bank Group	
14:30 – 15:30	**Networking Lunch**	

ANNEX 2: Interview Schedule

	Date	Entity	Respondents	Relevant R2R Components
1	July 11	National Fund for Housing and Reconstruction	Mr. Alhady Abo Dafayer – Secretary General Mr. Mohamed Sediq – Head of Technical Office Mr. Omar Taha – Department of International Relations	Equipment – Facilities – Personnel
2	July 12	National Council for Civil Defense	Major General/ Ahmed Omar Saeed – Secretary General Brigadier/ Abdelgalil Abdelrahim – Spokesperson Brigadier/ Qurashi Hussein Abdelqader – Head of National Emergencies and Disasters Captain/ Ali Hassan Al-Malahy – Member of Technical Secretariat Captain/ Abdallah Mohamed Saleh - Head of Branch - Rescue and Security	Legal and institutional framework – Information – Equipment – Facilities – Personnel
3		Sudanese Red Crescent Society	Mr. Hamed Gour – Director of Disaster Management, Emergency and Response	Legal and institutional framework – Information – Equipment – Facilities
4	July 14	The Higher Council for Environment	Ms. Eman Eltayeb Abdelkarim Mohamed – Director of Climate Changes, Natural Disasters and Waste Management	Legal and institutional framework - Information – Equipment – Facilities
5	July 15	Humanitarian Aid Commission	Mr. Yasser Mohamed Hashem – Director of the Disaster Management Department	Legal and institutional framework – Information – Equipment – Facilities – Personnel
6		Remote Sensing Authority	Professor/ Amna Hamed – Strategic Advisor to the Head of the Center Dr. Khaled Mohamed – Deputy Head of the Authority Mr. Hatem Ebid – Head of Disaster Risk Assessment Department	Information – Equipment – Facilities – Personnel

	Date	Entity	Respondents	Relevant R2R Components
7	July 27	Ministry of Transportation	Ms. Najwa Fadlalla – Head of Planning Unit Ms. Mayson Mahgoub – Railway Unit	Legal and institutional framework – Information – Equipment – Facilities
8	July 29	United Nations Development Program	Mr. Sudhir Kumar - UNDP Disaster Risk Management Recovery Assurance	
9		United Nations Office for Coordination of Humanitarian Affairs	Mr. Salah Koko – National Coordinator, Coordination Support Section	
10	August 2	Sudanese Red Crescent Society	Ms. Najat Malek – Head of Training and Volunteer Management Department	Information – Personnel
11	August 3	World Health Organization	Mr. Betigel Habtewoldb – Public Health Specialist	
12	August 4	World Food Program	Mr. Mark Arango – Focus Based Financing Coordinator	
13	August 5		Mr. Abraham Abatneh – Head of Emergencies	
14	August 12	The Federal Ministry of Finance and Economic Planning	Mr. Amin Saleh Yassin – Undersecretary of Planning Mr. Elalim Saleh Eldaw – Risk Management Unit	Legal and institutional framework
15	August 19	The Federal Ministry of Health	Dr. Mohamed Abdelhafez – Head of Emergencies Department Dr. Al Rashid Saied – Advisor to MoH Ms. Razan Abdallah – Head of EOC	Legal and institutional framework – Facilities- Equipment- Personnel
16	August 19	Meteorological Authority	Dr. Hanan Rabah – Head of SMA Dr. Mohamed Ahmed – Head of Forecasting Department Mr. Noah Adam Hadou – Head of Early Warning Center	Information – Facilities – Personnel

ANNEX 3: References, Documents and Studies

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ANNEX 4: Questionnaire-Based Assessment Survey

Entity	
Name & Position	
Location	
Interview date	Start time End time

Question	Response

Purpose and Instructions

This survey is part of a rapid diagnostic which aims to develop a better understanding of the Sudan's institutional landscape and capacities in emergency preparedness and response (EP&R) and the capacities of the main governmental and non-governmental actors and stakeholders and their roles and responsibilities in responding to and preparing for natural and climate-related hazards, in particular floods and droughts. This survey aims to collect written feedback from the different agencies to gain a better understanding of their respective responsibilities, challenges, and capacity gaps for EP&R. The collected information and data will be used to define relative strengths of Sudan's EP&R system.

Introductory Questions

1. In which way is your organization involved in preparing for and responding to disasters in Sudan?

2. Please provide some details about your current position and its relevance to preparing for and responding to disasters.

1 Legal and Institutional Accountabilities

Question	Response
To your knowledge, is there an emergency management legislation in force in Sudan? ☐Yes ☐No ☐Under development ☐Not aware If yes, please refer to the laws/policies and its relevance to your current capacity.	
Describe the decision making process during disasters from the perspective of your current position. Please give a recent and practical crisis/emergency situation. Follow up question: How does the inter-agency coordination and chain of command take place? How would you describe this process?	

Does your organization have an operational response plan in place? ☐ Yes ☐ No ☐ Underdevelopment ☐ Not aware If yes, please provide some details about the plan and the extent to which it is utilized in times of crisis/emergencies.	
Is a critical infrastructure assurance program established? ☐ Yes ☐ No ☐ Underdevelopment ☐ Not aware If yes, please provide more details about the program, its updates (if any) and how data is stored and secured.	
Is there a financing instrument for emergency response and recovery in Sudan? ☐ Yes ☐ No ☐ Underdevelopment ☐ Not aware If yes, please describe the financing instrument (a disaster fund, stand-by line of contingent credit, traditional insurance instruments etc) with a special focus on the risk management strategy (if any) and its component	
Is there an emergency procurement system and/or framework in force? ☐ Yes ☐ No ☐ Underdevelopment ☐ Not aware If yes, please describe the system in place including its forecasting, budgeting and planning processes.	
What are the Public Financial Management policies for dealing with emergency expenditure in place? Are they adequate to respond to emergency response costs?	
How does the Government of Sudan ensure that the financial burden on individuals and families are reduced in the wake of disasters and emergencies? Please mention any personal financial risk transfer programs in place.	

2	**Information**
Is there a program or a system to engage volunteer emergency responders? ☐Yes ☐No ☐Underdevelopment ☐Not aware If yes, can you please describe the program with special focus on the training, equipment and funding available for the program.	
Is there a program for community education on emergency preparedness and response? ☐Yes ☐No ☐Underdevelopment ☐Not aware If yes, please give more details about the programs in place including the source of funding and content.	
Is there a program/initiative that supports community-led mitigation works? ☐Yes ☐No ☐Underdevelopment ☐Not aware If yes, please describe the program/initiative, its funding and the support it provides at the local level.	
Are local leaders empowered to advocate for resources and policies for emergency preparedness and response? ☐Yes ☐No ☐Underdevelopment ☐Not aware If yes, please describe how different community groups are empowered and engaged in risk and emergency management.	
Is there a functioning technological monitoring and surveillance program that allows for predicting and forecasting of potential hazards? ☐Yes ☐No ☐Underdevelopment ☐Not aware If yes, please give more details about the system in place.	
Is there a disaster management information system (DMIS) in place? ☐Yes ☐No ☐Underdevelopment ☐Not aware If yes, please describe the functionality of the DMIS and the extent to which it is used in the emergency operations center.	

At times of disasters, to which extent the information is available and accessible to you?	
Please describe the geographic information system (GIS) in place, in terms of the features, data quality and accuracy.	

3	Facilities

Is there an emergency operation center established in Sudan? ☐ Yes ☐ No ☐ Underdevelopment ☐ Not aware If yes, to which extent is the center supported by sufficient back-up systems including power, heating and cooling, communications, staff, and operational resources. Please also describe from your point of view the extent to which there are clear lines of authority within the center.	
Is a mobile command post available for multi-agency coordination during large scale disasters? (*mobile command post facilities include space for incident management activities in a controlled environment*) ☐ Yes ☐ No ☐ Underdevelopment ☐ Not aware If yes, please evaluate from your point of view the capability and reliability of the mobile command post.	
Is a standardized process in place for the collection, analysis, sharing, storing and maintenance of social media and crowdsourced data in the emergency operations center? ☐ Yes ☐ No ☐ Underdevelopment ☐ Not aware If yes, please describe with concrete example the extent to which the process tracks the social media content surrounding an incident. Please highlight the process of collecting, aggregating and analyzing the media.	

Is there a training center established in Sudan? ☐Yes ☐No ☐Underdevelopment ☐Not aware If yes, please mention the site, mandate and programs offered by the center. Please also mention the extent to which the training center is equipped.	
At times of disasters, how does the government coordinate and support logistic hubs and warehousing?	
What is the capacity (size, staffing, resources…) of logistic warehouses?	
Please describe the readiness of the infrastructure to deploy emergency housing and temporary shelters for displaced persons during a disaster. From your point of view, is there infrastructure in place to deploy emergency housing and temporary shelters for displaced persons during a disaster? Are there sufficient open spaces (parks, vacant lands, fields etc) for disaster management operations	
Do states in Sudan have disaster evacuation routes established and maintained? ☐Yes ☐No ☐Underdevelopment ☐Not aware If yes, please give an example and describe how local populations know about the route.	

4 Equipment

Please describe the system of medical care for casualty in Sudan. How does the system allow for communication, track and document injuries and patients transported from the field to the hospitals.	
Are disease prevention and core services available for communities local emergencies and disasters? ☐Yes ☐No ☐Underdevelopment ☐Not aware Please give practical examples how does the government prevent a breakdown of public health and WASH (water, sanitation, hygiene) after a disaster.	
How are vulnerable groups (women, children, elderly) protected from a disaster?	

How does the government manage mortality during emergencies and disasters?	
Are radio communications available for supporting emergency operations centers and first responders? ☐Yes ☐No ☐Underdevelopment ☐Not aware If yes, please describe the reliability of the communication tool and its usage.	
Is broadband network connectivity allowing voice, data and video communications available for emergency operations center and command post use? ☐Yes ☐No ☐Underdevelopment ☐Not aware	
Is a plan in place for the protection and rapid recovery of public and private sector communication systems? ☐Yes ☐No ☐Underdevelopment ☐Not aware	
How do you assess Sudan's capability for wildland firefighting?	
What are the capacities available for search and rescue during disasters, especially flooding and water-based emergencies? Please elaborate with examples from the latest Flood disaster.	
Does Sudan have rescue capacity for structural collapse and entombed rescue? Please describe the equipment and capacities available with some examples, if any?	
Do functional urban firefighting capabilities (including entrapment and extrication rescue) exist? ☐Yes ☐No ☐Underdevelopment ☐Not aware Please provide details about the equipment and capacities available in this regard.	

5	Personnel
To which extent response agencies have a comprehensive, nation-wide, systematic approach to manage incidents through a policy of using a common incident organization structure?	
To which extent is the incident organization structure flexible and scalable which allows for quick response and coordination.	
Is there a training component included in the incident organization structure? ☐ Yes ☐ No ☐ Underdevelopment ☐ Not aware If yes, please describe the training program in place.	
Is there a roster available for trained and experienced personnel and a database of common response resources in Sudan? ☐ Yes ☐ No ☐ Underdevelopment ☐ Not aware If yes, please provide details about the system in place.	
To which extent is the workforce allocation sufficient to deal with disasters?	
Was there any assessment for training needs or capacities/competencies that was carried out? ☐ Yes ☐ No ☐ Underdevelopment ☐ Not aware	
From your point of view, what kind of human capacities are needed to enhance emergency preparedness and response?	
To which extent are the staff well retained?	
Please provide information about the training program/s in place for emergency response in terms of: • The provision of dedicated training programs for those involved in planning for and responding to an emergency. • The availability of qualified trainers and solid training material and methods. • Assessment of training programs (quality and accuracy) • Tracking results of personnel trained.	

Please provide information about the exercises and drills programs in place, and how the programs are planned and coordinated between public and private response partners.	
How is international support for disasters coordinated in Sudan? Please provide information about how the entity responsible is carrying out the coordination function during disasters.	
To which extent is Sudan's logistics system well-functioning to receive, stage and distribute international support.	

ANNEX 5: Interview Questions for International Organizations

Entity			
Name & Position			
Location			
Interview date		**Start time**	**End time**

Question	Response

Purpose and Instructions

This survey is part of a rapid diagnostic which aims to develop a better understanding of the Sudan's institutional landscape and capacities in emergency preparedness and response (EP&R) and the capacities of the main governmental and non-governmental actors and stakeholders and their roles and responsibilities in responding to and preparing for natural and climate-related hazards, in particular floods and droughts. This survey aims to collect written feedback from the different agencies to gain a better understanding of their respective responsibilities, challenges, and capacity gaps for EP&R. The collected information and data will be used to define relative strengths of Sudan's EP&R system.

Introductory Questions

1. In which way is your organization involved in preparing for and responding to disasters in Sudan?

2. From your point of view, how do you describe the inter-agency coordination and decision making process among stakeholders in Sudan responsible for EP&R (NCCD, HAC, Ministry of Health and others).

3. Please elaborate on your support to Sudanese stakeholders to prepare for and respond to emergencies, especially the MoH, NCCD, RSA and the Higher Council for Environment. Are there other state or non-state actors which you support?

4. What are the development priorities for supporting EP&R in Sudan.

5. In light of the Aid Effectiveness Agenda and the Global Partnership for Effective Development Cooperation (Paris Declaration, Accra Agenda, Busan, Mexico Communique, etc) how do you balance between the provision of humanitarian and development aid in Sudan.