Research Terms of Reference

Climate analysis in context of conflict in Sudan

SDN2304

Sudan

November 2024

V2

REACH Informing more effective humanitarian action

1. Executive Summary

Country of intervention	*Sudan*					
Type of Emergency	x	Natural hazard	x	Conflict	□	Other *(specify)*
Type of Crisis	□	Sudden onset	□	Slow onset	□	Protracted
Mandating Body/ Agency	*BHA*					
IMPACT Project Code	*SDN2304*					
Overall Research Timeframe *(from research design to final outputs / M&E)*	11/11/2024 to 21/02/2025					
Research Timeframe	1. Pilot/ training: _ _/_ _/_ _ _ _			6. Preliminary presentation: 27/01/2025		
	2. Start collect data: 11/11/2024			7. Outputs sent for validation: 31/01/2025		
	3. Data collected: 22/11 /2024			8. Outputs published: 21/02/2025		
	4. Data analysed: 09/12/2024			9. Final presentation: upon request		
	5. Data sent for validation: 09/12/2024					
Number of assessments	x	Single assessment (one cycle)				
	□	Multi assessment (more than one cycle)				
Humanitarian milestones *Specify **what** will the assessment inform and **when*** *e.g. The shelter cluster will use this data to draft its Revised Flash Appeal;*	**Milestone**			**Deadline (can be tentative)**		
	x	Donor plan/strategy		30/06/2025		
	□	Inter-cluster plan/strategy		_ _/_ _/_ _ _ _		
	□	Cluster plan/strategy		_ _/_ _/_ _ _ _		
	□	NGO platform plan/strategy		_ _/_ _/_ _ _ _		
	□	Other (Specify):		_ _/_ _/_ _ _ _		
Audience Type & Dissemination *Specify **who** will the assessment inform and **how** you will disseminate to inform the audience*	**Audience type**			**Dissemination**		
	x Strategic x Programmatic x Operational □ [Other, Specify]			**x** General Product Mailing (e.g. mail to NGO consortium; HCT participants; Donors) □ Cluster Mailing (Education, Shelter and WASH) and presentation of findings at next cluster meeting x Presentation of findings (e.g. at HCT meeting; Cluster meeting) x Website Dissemination (Relief Web & REACH Resource Centre) □ [Other, Specify]		

Stakeholder mapping *Has a detailed stakeholder mapping been conducted during research design to identify all actors that could **contribute** to and/or **benefit from** the research?*	◻	Yes			x	No
General Objective	*Analyse the effects of climate change in context of conflict in Sudan.*					
Specific Objective(s)	- To analyse the extension of drought and drought severity in Sudan. - To identify the flood susceptibility areas and flood extent in periods of heavy rain in Sudan. - To assess the impact of the Sudan conflict on change in cropland coverage.					
Research Questions	- What is the extension of drought and drought severity in Sudan? - What are the flood susceptibility areas in Sudan? - What is extent of flood in period of heavy rain in Sudan? - What is the impact of the Sudan conflict on the change in cropland coverage?					
Geographic Coverage	*This study covers all of Sudan*					
Population(s) *Select all that apply*	◻	IDPs in camp			◻	IDPs in informal sites
	◻	IDPs in host communities			◻	IDPs [Other, Specify]
	◻	Refugees in camp			◻	Refugees in informal sites
	◻	Refugees in host communities			◻	Refugees [Other, Specify]
	◻	Host communities			◻	[Other, Specify]
	x	All population groups				
Expected ouput type(s) *Drafting tips: Refer to Annex 2 of the Research Reporting Guidelines ([here](#)) on how to choose the most appropriate product type*	◻	Situation overview #: 01	◻	Report #: _ _	◻	Profile #: _ _
	◻	Presentation (Preliminary findings) #: _ _	◻	Presentation (Final) #:	x	Factsheet #: 01
	◻	Interactive dashboard #:_	◻	Webmap #: _ _	x	Map #: 03
	◻	[Other, Specify] #: _ _				
Access	x	Public (available on IMPACT resource centre and other humanitarian platforms)				
	◻	Restricted (bilateral dissemination only upon agreed dissemination list, no publication on IMPACT or other platforms)				
Visibility *Specify which **logos** should be on outputs* ***Drafting tips:** If any of these is not applicable (e.g. no partners), please put N/A instead of deleting the row*	***IMPACT***					
	***Donor:** BHA*					
	***Coordination Framework:** [List logos here as relevant]*					
	***Partners:** OCHA*					

2. Rationale

2.1 Background

Climate-related shocks are increasingly impacting communities in crisis-affected areas around the world. Climate change alters global weather patterns, leading to more frequent and intense extreme weather events. Floods and droughts are the primary hazards caused by climate change, affecting the number of events, the people impacted, and global economic outcomes. Climate change has been identified as a leading human and environmental crisis of the 21st century (ISS, 2010).[1]

The population growth and agricultural expansion have increased the water demand and been responsible for water scarcity in many parts of the world. In recent years, agricultural regions around the world have faced increasingly severe water constraints.[2] Severe droughts over the past years have impacted agricultural production and reduced surface and groundwater reserves, as well as the forage biomass crucial for pastoral activities, which is a key link in food availability. According to forecasts, climate change will exacerbate the variability in precipitation and surface water supplies, which will decrease coverage and affect the water needs of crops and forage resources, further amplifying drought conditions.[3]

Drought and floods are frequent hazards in Sudan. They cause life threatening impacts and drive events and reactions that can create a devastating cycle of environmental collapse, conflict and displacement. Between 60% and 80% of Sudan's population lives in rural areas, depending on agriculture and livestock[4]. Sudan has a long history of drought, including the 1906 famine, the 1984 famine and different droughts during 1989, 1990, 1997, 2000, and 2011.[5] According to OCHA (2024), at the beginning of the 2024 rainy season, more than 35,000 people were affected by floods, and this trend is likely to continue in future rainy seasons. This situation is exacerbated by the ongoing conflict, with more than 8 million people, about 15 percent of the total population having fled their homes since the conflict began. They have sought refuge within Sudan or in neighbouring countries. As a result, there has been a decrease in agricultural land in the southern regions of the country, which constitute the agricultural basin, leading to a high risk of famine [6] [7].

2.2 Intended impact

This assessment aims to fill the information gap regarding climate change analysis through the lens of drought and floods, and their impact on affected populations. It also seeks to facilitate an efficient response by local and international institutions in large, densely populated areas that encompass extensive farmland.

This assessment has been initiated to support humanitarian actors in understanding climate change, the impact of conflict on agriculture, and to estimate the number of people affected by these issues in Sudan. It will analyse the extent of drought and its severity, flood susceptibility, and the impact of these hazards on people and food availability.

3. Methodology

3.1 Methodology overview

The methodology for this assessment will be based on remote sensing and spatial analysis. It will be divided into two main parts: the first part will cover the materials, including data and software, while the second part will detail the methods of data processing and analysis.

[1] ISS, 2010. Th e impact of climate change in Africa. ISS Paper No 220, 18 p.
[2] Belal A-A., El-Ramady H. R. Mohamed E. S. and Saleh A. M. Drought risk assessment using remote sensing and GIS techniques. Arab J Geosci, 19
[3] Zhang Q., Zhang H., Bai Y. And Zhang J. 2019. Monitoring drought using composite drought indices based on remote sensing. Science of the Total Environment. 40 p.
[4] Mahgoub F., 2014. Current Status of Agriculture and Future Challenges in Sudan. NORDISKA AFRIKAINSTITUTET ,UPPSAL, 98 P
[5] Hamid A. et Eltayeb Y. Space borne Technology for Drought monitoring in Sudan. Hamid.pdf (un-spider.org)
[6] Mercy Corps, 2023. Sudan crisis analysis: Remote Sensing to Monitor Impact of Conflict on Agriculture. Mercy Corps, 11 p.
[7] OCHA, 2024. Sudan: Ten months of conflict - Key Facts and Figures, 4 p. Sudan: Ten months of conflict - Key Facts and Figures (15 February 2024) - Sudan | ReliefWeb

To analyse the extension of drought and drought severity in Sudan

According to WMO and GWP (2012)[8], no single indicator or index can be used to determine appropriate actions for all types of droughts given the number and variety of sectors affected. According to Wilhite and Glantz (1985)[9], droughts can be group into meteorological, agricultural, hydrological and socioeconomic droughts. However, scientist realized that the deficit of precipitation has different impacts on groundwater, reservoir storage, soil moisture conditions (agriculture), and streamflow led. This finding led to the development of the **Standardized Precipitation Index (SPI)**[10]. The SPI is a powerful, flexible index that is simple to calculate, of which the only parameter is precipitation. The strength of the SPI is its ability to be calculated for many timescales, which makes it possible to deal with many of the drought types described above. So, the methodology that will be used for this research will be based on SPI. The SPI will assess the extent and severity of drought across Sudan. Two different time scales will be used. The short and medium-term time scale of 3 months and the long-term time scale of 12 months. The 3 months scale reflects short- and medium-term moisture conditions and provides a seasonal estimation of precipitation. In primary agricultural regions, it might be more effective in highlighting available moisture conditions.

The SPI for 3 months will be calculated from May to July 2023 and 2024, which is the period of groundnut and sorghum production (the main food crop in Sudan). The 12 months SPI reflects long-term precipitation patterns. A 12-month SPI is a comparison of the precipitation for 12 consecutive months with that recorded in the same 12 consecutive months in all previous years of available data. SPI of these timescales are usually tied to stream flows, reservoir levels, and even groundwater levels at longer timescales. It will be calculated from 2020 to 2023.

To understand the impact of drought on agriculture, the **Vegetation Condition Index (VCI)** will be calculated for June 2023 and June 2024 using the **Normalized Difference Vegetation Index (NDVI)**. June will be chosen for this analysis because it is the second month of the three-month agricultural season, during which the crops have reached sufficient maturity to be evaluated. While NDVI measures the current health of vegetation, VCI provides a comparative analysis that enhances understanding of how vegetation is responding to environmental conditions, particularly during drought events. VCI offers insights into the health and vitality of vegetation, helping to identify stress levels associated with drought conditions. It also analyses the NDVI anomaly compared to the long-term average, which can provide a good indication of drought severity.

- **Keys definitions**
    - **Standardized Precipitation Index (SPI)**

      The Standardized Precipitation Index is a valuable tool for assessing and monitoring drought conditions. By normalizing precipitation data and providing a standardized measure of precipitation deficits, SPI helps quantify drought severity, support decision-making, and enhance drought management strategies.
    - **Normalized Difference Vegetation Index (NDVI)**

      NDVI, or Normalized Difference Vegetation Index, is a widely used remote sensing index that helps to assess and monitor vegetation health and density. NDVI plays a crucial role in drought assessment by providing a quantitative measure of vegetation health and coverage, which can be used to infer water stress and drought conditions. It helps to understand the impact of droughts on pastureland and agriculture, as well as provide a general idea of how dry the area is.
    - **Vegetation Condition Index (VCI)**

      The Vegetation Condition Index (VCI) is a remote sensing-based metric used to monitor vegetation health and stress, specifically in the context of drought assessment. It is designed to provide a normalized measure of vegetation condition relative to historical value. It is derived from NDVI. It also gives a good idea of drought severity

[8] WMO et GWP, 2016. Handbook of drought Indicators and Indices. WMO-No. 1173, 45 p.

[9] Wilhite, Donald A. and Glantz, Michael H., 1985. Understanding the Drought Phenomenon: The Role of Definitions. Drought Mitigation Center Faculty Publications. 16 p.

[10] WMO, 2012. Standardized Precipitation Index User Guide, World Meteorological Organization, 24 p.

- **Identify the flood susceptibility areas and flood extent in periods of heavy rain in Sudan**

  To identify Sudan's susceptibility flood areas, the multicriteria analysis will be used that including the following criteria: (1) the Proximity of the river and water body obtained from Sudan's hydrographic network layer, (2) the soil water holding capacity obtained from Soil Geographic databases, (3) the rainfall data from 1992 to 2022 obtained from CHIRPS (Climate Hazards Group Infrared Precipitation with Station data), (4) the land use and land cover data of 2022 obtained from ESRI land use and land cover, (5) the slope, the elevation and topographic wetness index.

  To identify the extent of flooding during periods of heavy rain in Sudan, the change detection method will be employed. This technique involves comparing satellite imagery from different time periods to detect alterations in land cover and water bodies. By analysing these changes, we can assess the spatial and temporal dynamics of flooding events, providing valuable insights into the areas most affected.

- **Keys definitions**
  - **Multicriteria analysis (MCA)** is a decision-making process used to evaluate and prioritize different options based on multiple criteria. It is particularly useful in complex situations where various factors must be considered, such as environmental, economic, social, and technical aspects.
  - **Criteria** is a standard or principle by which something is judged or evaluated. Criteria help to assess options or alternatives based on specific attributes or factors relevant to the decision at hand.
  - **Normalization of criteria** is the process of transforming different criteria or attributes into a common scale, making it easier to compare and aggregate them. Since the criteria may have different units or scales (e.g., cost, time, quality), normalization helps to ensure that each criterion contributes appropriately to the overall evaluation.
  - **Weighting** refers to the process of assigning relative importance to each criterion used in the evaluation.
  - **Change detection** refers to the process of identifying differences in the state of an object or phenomenon by observing it at different times.

3.2 Material

The material consists of software and data used in the frame of this research.

3.2.1 Software

Two software will be used for this research:

- Google Earth Engine for remote sensing analysis,
- ArcGIS Pro for remote sensing geospatial analysis and mapping.

3.2.2. Dataset

The table below presents the data and its characteristics.

Table 1: data and its characteristics per objective

<table>
<tr><th>Global objective</th><th>Specific objectives</th><th>Data</th><th>Format</th><th>Resolution / scale</th><th>Date</th><th>Source</th><th>Utilities</th></tr>
<tr><td rowspan="10">Analyse the effects of climate change in context of conflict in Sudan</td><td rowspan="4">SO 1: To analyse the extension of drought and drought severity in Sudan</td><td>CHIPRS rainfall data</td><td>Raster</td><td>5,4 km</td><td>05/23 to 07/23
05/23 to 07/23
05/24 to 07/24
01/22 to 12/22
01/23 to 12/23
01/24 to 12/24
1980 to 2024</td><td>USGS</td><td>SPI</td></tr>
<tr><td>Sentinel 2 satellite imagery</td><td>Raster</td><td>10 m</td><td>2022
2023
2024</td><td>ESA</td><td>NDVI
VCI</td></tr>
<tr><td>VCI</td><td>Raster</td><td>10 m</td><td>2022
2023
2024</td><td>Output of Analysis</td><td>Drought severity</td></tr>
<tr><td>Livelihood Zones</td><td>Vector</td><td></td><td>2014</td><td>FEWS NET</td><td>Livelihood zones affected by drought</td></tr>
<tr><td rowspan="6">SO 2: To identify the flood susceptibility areas and flood extend in periods of heavy rain in Sudan</td><td>SRTM image</td><td>Raster</td><td>30 m</td><td>2014</td><td>USGS</td><td>Elevation, Slope, Topographic Wetness Index (TWI)</td></tr>
<tr><td>Land use and land cover</td><td>Raster</td><td>10 m</td><td>2020</td><td>ESRI</td><td>Vulnerability of land use units to flooding</td></tr>
<tr><td>CHIRPS Daily: InfrarRed Precipitation</td><td>Raster</td><td>5,4 Km</td><td>1992-2022</td><td>USGS</td><td>Runoff</td></tr>
<tr><td>Hydrographic network</td><td>Vector</td><td></td><td></td><td>Diva-GIS</td><td>Drainage density and distance to water</td></tr>
<tr><td>Soil</td><td>Raster</td><td>30 m</td><td></td><td>Soil Geographic databases</td><td>soil water holding capacity</td></tr>
<tr><td>Population data</td><td>Raster</td><td>100 m</td><td>2020</td><td>WorldPop</td><td>Estimation of at-risk populations</td></tr>
</table>

	SO 3: To assess the impact of the Sudan conflict on change in cropland coverage	Land use land cover data	Raster	10 m	2021 and 2023	Sentinel-2 10m/ ESRI land use and land cover	Cropland analysis
		Sudan food crop statistics by state.	Pdf		2021-2022 2023-2024	FAO (Special report 2023 FAO Crop and Food Supply Assessment Mission)	Analysis of the impact of the conflict on food availability

3.3 Method

SO 1: **To analyse the extension of drought and drought severity in Sudan**

The method used for this assessment will be based on the calculations of SPI, NDVI, and VCI and the estimation of people affected by drought.

- Calculation of Standardized Precipitation Index (SPI)

$$SPI = \frac{P-P^*}{\sigma p}$$

where P = precipitation

p* = mean precipitation

σp = standard deviation of precipitation

- Calculation of Normalized Difference Vegetation Index (NDVI)

$$NDVI = \frac{NIR - R}{NIR + R}$$

With NIR =Near Infrared band and R red band

- Vegetation Condition Index (VCI)

$$VCI = \frac{NDVI - NDVImin}{NDVImax - NDVImin}$$

To estimate the **livelihood zones impacted by drought**, the zonal statistics as a table in ArcGIS will be used. Then, the livelihood zones data of Sudan will be combined with the drought severity layer. The livelihood zones affected by drought will be identified. Figure 1 below presents a summary of the methodology to achieve specific objective 1.

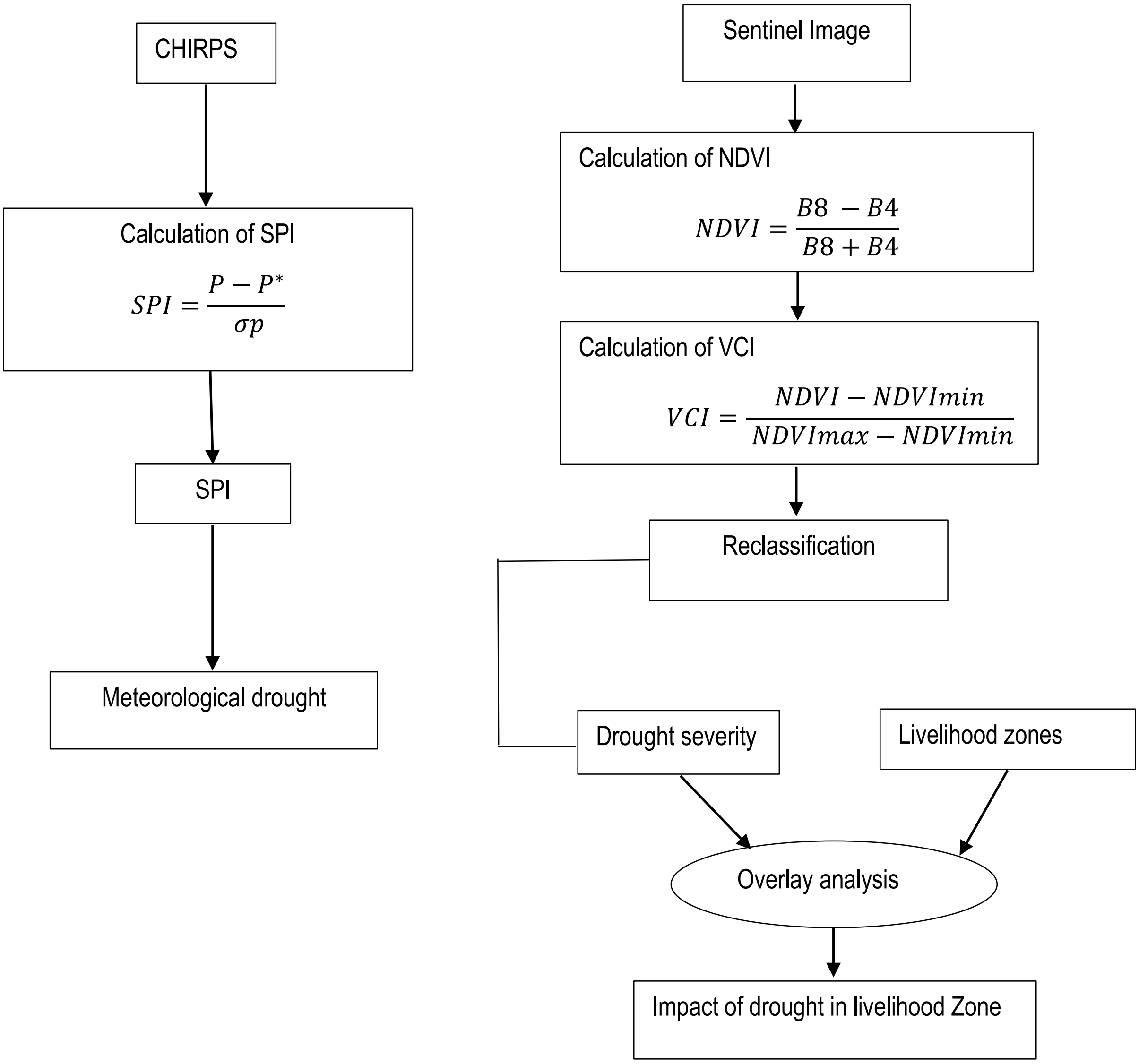

Figure 1: Summary of the methodology for specific objective 1.

SO 2: To identify the flood susceptibility areas and flood extent in periods of heavy rain in Sudan

Flooding results from several factors, both anthropogenic and natural. Thus, the model to be used will be the one that best accounts for all different factors. This will involve multicriteria modelling. The various criteria will be obtained from the processing of the data listed in the section 3.2.2.

- **Topography** will be derived from the SRTM image. Three topographic indices will be utilized: slope, elevation, and the topographic wetness index (TWI). These three will be normalised through reclassification to determine their vulnerability to flood.
- **Land use criteria** will be obtained from land use data through simple normalisation to assess the degree of vulnerability of each land use unit.
- **Runoff criteria**: This results from precipitation and will be derived from daily rainfall data. It will be evaluated based on daily precipitation from CHIRPS Daily data, available quarterly in raster format. This data will be used to calculate the average maximum annual precipitation over 30 years (from 1992 to 2022).
- **Drainage**: Like precipitation, drainage also impacts the risk of flooding. Data from the hydrographic network will be used to calculate drainage density and the distance to various watercourses in the study area by computing the Euclidean distance to water sources.

- **Soil drainage criteria**: Soil drainage significantly influences flooding phenomena. Vulnerability to flooding varies based on the capacity of each soil to drain the water it receives; well-drained soils have a low risk of flooding, while poorly drained soils have a high risk of flooding.

The flood susceptibility areas will be overlaid with population data to estimate the number of at-risk populations. The figure 2 below provides a summary of the methodology that will be used to achieve specific objective 2.

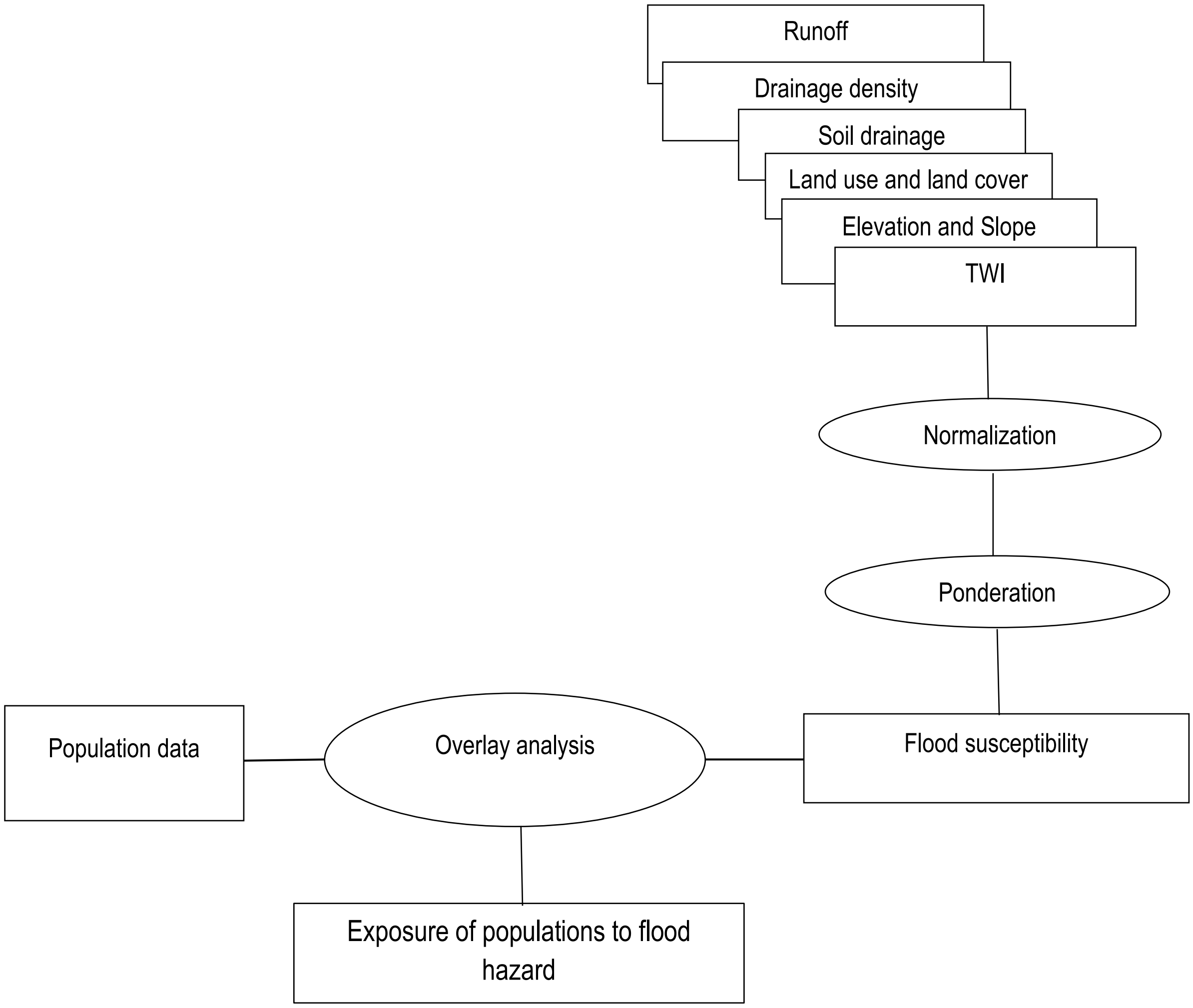

Figure 2: Summary of the methodology for specific objective 2

SO 3: To assess the impact of the Sudan conflict on change in cropland coverage

To assess the impact of conflict on cropland, a change detection analysis will be conducted. This analysis will examine the dynamics of cropland between 2021 and 2023, focusing on gains and losses in the southern part of the country (West Darfur, Central Darfur, East Darfur, South Darfur, West Kordofan, North Kordofan, south Kordofan, Al Jazirah, White Nile and Sennar), which is the agricultural basin, using change detection methods. The detected changes will be correlated with food crop statistics through a comparison of cropland changes and food crop data by state.

Figure 3 provides a summary of the methodology that will be used to achieve specific objective 3.

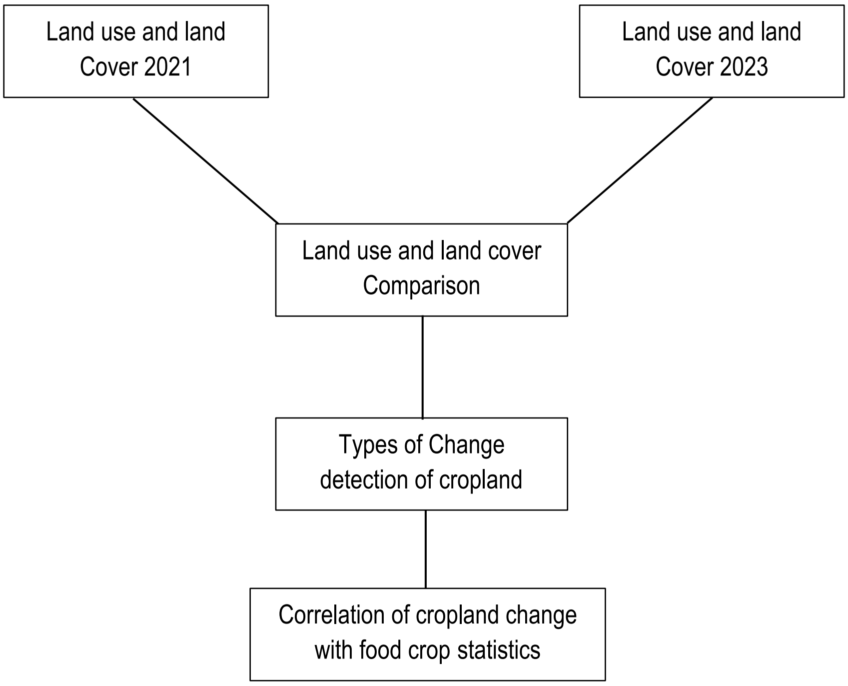

Figure 3: Summary of the methodology for specific objective 3

3.4 Population of interest

This assessment will be carried out across all of Sudan. Therefore, the population of interest for this assessment will be the overall population residing in Sudan, especially the population living in areas more affected by drought and floods.

3.5 Secondary data review

The main secondary data is based on previous work on drought assessment using remote sensing:

- The regional drought analysis in the Horn of Africa (REACH, 2023)[11] and the regional climate analysis in the same area[12]. These assessments carry out the method of assessing droughts through the SPI, the NDVI and the VCI.
- The Handbook of drought Indicators and Indices, published by WMO and Global Water Partnership in 2016 lists indicators and indices for drought assessment, along with their characteristics, ease of use, and input parameters needed for implementation.
- The Standardized Precipitation Index user guide helps users understand the different types of SPI, their characteristics, and the implications of the various SPI scales in drought assessment.
- The flood susceptibility analysis in Mali (REACH, 2022) gives a global view of the methodology for flood susceptibility analysis and how to estimate the number of at-risk populations.

3.6 Limitations

- For the first specific objective, a limitation is that the SPI relies solely on precipitation data, neglecting other factors like temperature, soil moisture, and evapotranspiration, which are also influencing drought conditions.
- For the second specific objective, the analysis aims to highlight the areas that are more likely to experience flooding and are thus at greater risk of being severely affected in the event of a flood, using physical and climate characteristics of the study area. Despite the relevance of the

[11] REACH, 2023. Drought in the Horn of Africa: Regional analysis, REACH, 15 p.
[12] REACH, 2024. Regional climate analysis in horn of Africa: Integration of remote sensing into intersectoral assessments across the Horn of Africa arid zone. REACH, 27 p.

methodology, it is important to notice that the modification of climatic or physical characteristics of the area can have an impact on the result.

4. Key ethical considerations and related risks

The proposed research design meets / does not meet the following criteria:

The proposed research design…	*Yes/ No*	*Details if no (including mitigation)*
… Has been coordinated with relevant stakeholders to **avoid unnecessary duplication** of data collection efforts?	Yes	
… **Respects respondents, their rights and dignity** (*specifically by: seeking informed consent, designing length of survey/ discussion while being considerate of participants' time, ensuring accurate reporting of information provided*)?	N/A	
… Does not **expose data collectors to any risks as a direct result** of participation in data collection?	N/A	
… Does not **expose respondents / their communities to any risks as a direct result** of participation in data collection?	N/A	
… Does not involve **collecting information on specific topics which may be stressful and/ or re-traumatising** for research participants (both respondents and data collectors)?	N/A	
… Does not involve **data collection with minors** i.e. anyone less than 18 years old?	N/A	
… Does not involve **data collection with other vulnerable groups** e.g. persons with disabilities, victims/ survivors of protection incidents, etc.?	N/A	
… Follows IMPACT SOPs for management of **personally identifiable information**?	N/A	

5. Roles and responsibilities

Task Description	*Responsible*	*Accountable*	*Consulted*	*Informed*
Research design	Senior GIS Officer	*Senior GIS Officer*	*Country Representative; GIS and remote sensing Unit; Research Design and Data Unit.*	*Country Representative*
Supervising data collection	Senior GIS Officer	Country Representative	Senior GIS Officer	Country Representative

Data processing (checking, cleaning)	Senior GIS Officer	Research Design and Data Unit	*Country Representative. GIS and remote sensing Unit. Research Design and Data Unit.*	*Country Representative*
Data analysis	Senior GIS Officer	Research Design and Data Unit	*GIS and remote sensing Unit.* Research Design and Data Unit Country Representative	Country Representative
Output production	Senior GIS Officer	*Research Design and Data Unit. Research Design and Data Unit*	*Research Design and Data Unit*	Country Representative
Dissemination	Senior GIS Officer	Manager, HQ Communications	Country Representative HQ Communications Officer	Country Representative
Monitoring & Evaluation	Senior GIS Officer	Country Representative	Country Representative	Country Representative
Lessons learned	*Senior GIS Officer*	*Country Representative*	*Country Representative*	*Country Representative*

Responsible: *the person(s) who executes the task*

Accountable: *the person who validates the completion of the task and is accountable of the final output or milestone*

Consulted: *the person(s) who must be consulted when the task is implemented*

Informed: *the person(s) who need to be informed when the task is completed*

6. Monitoring & Evaluation Plan

IMPACT Objective	External M&E Indicator	Internal M&E Indicator	Focal point	Tool	Will indicator be tracked?
Humanitarian stakeholders are accessing IMPACT products	Number of humanitarian organisations accessing IMPACT services/products Number of individuals accessing IMPACT services/products	# of downloads of x product from Resource Center	Country request to HQ	User_log	x Yes
		# of downloads of x product from Relief Web	Country request to HQ		x Yes
		# of downloads of x product from Country level platforms	Country team		x Yes
		# of page clicks on x product from REACH global newsletter	Country request to HQ		x Yes
		# of page clicks on x product from country newsletter, sendingBlue, bit.ly	Country team		x Yes
		# of visits to x webmap/x dashboard	Country request to HQ		□ Yes
IMPACT activities contribute to better program implementation and coordination of the humanitarian response	Number of humanitarian organisations utilizing IMPACT services/products	# references in HPC documents (HNO, SRP, Flash appeals, Cluster/sector strategies)	Country team	Reference_log	*[List here relevant HPC-documents to be monitored: E.g. Iraq HNO 2018, Iraq Flash Appeal Mosul, Shelter Cluster strategy]*
		# references in single agency documents			*[List here relevant agency-documents to be monitored: E.g. UNHCR Country Strategy, UNICEF WASH Response Strategy]*
Humanitarian stakeholders are using IMPACT products	Humanitarian actors use IMPACT evidence/products as a basis for decision making, aid planning and delivery	Perceived relevance of IMPACT country-programs	Country team	Usage_Feedback *and* Usage_Survey template	
		Perceived usefulness and influence of IMPACT outputs			
		Recommendations to strengthen IMPACT programs			
		Perceived capacity of IMPACT staff			

	Number of humanitarian documents (HNO, HRP, cluster/agency strategic plans, etc.) directly informed by IMPACT products	Perceived quality of outputs/programs Recommendations to strengthen IMPACT programs			
Humanitarian stakeholders are engaged in IMPACT programs throughout the research cycle	Number and/or percentage of humanitarian organizations directly contributing to IMPACT programs *(providing resources, participating to presentations, etc.)*	# of organisations providing resources (i.e.staff, vehicles, meeting space, budget, etc.) for activity implementation	Country team	Engagement _log	□ Yes
		# of organisations/clusters inputting in research design and joint analysis			□ Yes
		# of organisations/clusters attending briefings on findings;			□ Yes