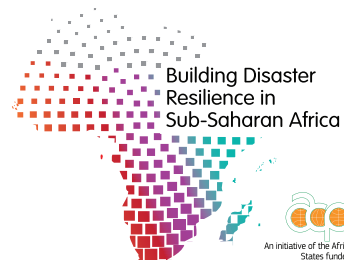


IGAD REGIONAL FLOOD RISK MANAGEMENT STRATEGY

2020-2030



PEACE, PROSPERITY AND
REGIONAL INTEGRATION



Intergovernmental Authority on Development, IGAD Climate Prediction and Applications Centre (ICPAC), Disaster Risk Management Programme



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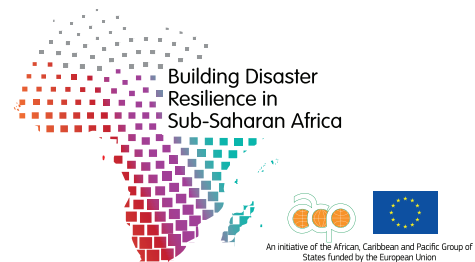




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ACRONYMS AND ABBREVIATIONS

ASAL	Arid and Semi-Arid Lands
BBB	Build Back Better
CDD	Community Driven Development
CSOs	Civil Society Organizations
DMC	Drought Monitoring Centre
EMDAT	Emergency Events Database
FAO	Food and Agriculture Organization
FEW	Flood Early Warning
FRM	Flood Risk management
HAC	Humanitarian Aid Commission
HFA	Hyogo Framework Action (2005-2015)
HYCOS	Hydrological Cycle Observation System
ICPAC	IGAD Climate Prediction and Applications Centre
IDDRSI	IGAD Drought Resilience and Sustainability Initiative
IGAD	Inter-Governmental Authority on Development
IRSDRM	IGAD Regional Strategy for Disaster Risk Management (2019-2030)
LDC	Least Developed Country
M&E	Monitoring and Evaluation
MS	Member State(s)
NAMA	Nationally Appropriate Mitigation Actions for climate change
NAPA	National Adaptation Programmes of Actions for climate change
NDA	National Designated Authority for the Green Fund
NIE	National Implementing Entity for the Green Fund
PDNA	Post Disaster Needs Assessment
PoA	Programme of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Africa.
PPPs	Public Private Partnerships
SFDRR	Sendai Framework for Disaster Reduction (2015-2030)
SWALIM	Somalia Water and Land Information System
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
UN-OCHA	United Nations Office for Coordination of Humanitarian Affairs



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EXECUTIVE SUMMARY

The IGAD region is exposed to multiple natural and man-made hazards, and has a long history of catastrophic events triggered by the materialization of one or more hazards. Some drivers of the region's high levels of disaster risks include: rapid urban population growth, with an accelerated increase in the number of poorly-planned, deficiently managed urban settlements — oftentimes with large concentrations of vulnerable people living in disaster-prone locations, like in Ethiopia, Eritrea, Kenya, Sudan, and Uganda, where high percentages of these countries' urban populations live in slum conditions; severe degradation of natural lands, water bodies, and agricultural lands; compounded by high levels of chronic poverty and social and economic inequality; protracted political and social conflicts, and state fragility; all of which are being exacerbated by climate variability and change. Climate change is projected to increase the frequency and intensity of extreme hydro-meteorological

events, thereby increasing the levels of disaster risk of the IGAD Member States' economies and their most vulnerable populations.

On a regional scale, flood hazards are the second most prevalent of the natural hazards next to the drought hazards. While riverine floods are dominant, flash floods are very common in many parts of the region. In general, floods pose a great threat to populations residing within the river floodplain areas, causing human displacements, loss of life and property; including the damage or destruction of crops and croplands, as well as the loss of production inputs and other assets such as livestock.

Using the global Emergency Events Database (EMDAT) between 1990 and 2016, the report on Mainstreaming Disaster Risk Management and Climate Change Adaptation in ACP Countries shows that a number of major flood events occurred across the IGAD region, with different levels of impacts across

the IGAD Member States. During this period, Ethiopia experienced 20 major flood events, followed by Somalia and Sudan each reporting 18 major floods. The average number of people affected by a single flood event was highest in South Sudan and Sudan, each with about 200,000 persons affected, followed by Kenya with an average of about 150,000 persons affected by a single flood event. Djibouti experienced the lowest number of people affected by floods, when compared to the rest of the Member States. Somalia floods easily become deadly disasters, with large numbers of human fatalities.

The lack of an adequate regional network of early warning systems for hydro-meteorological events as well as effective flood risk management initiatives, both at the regional and the Member States' levels compound to the severity of extreme flood events across the IGAD region. The adverse impacts of floods can be significantly reduced through the establishment of a functional, well-

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coordinated early warning system for flood risk, complemented with the adoption of post-disaster recovery and reconstruction frameworks, at the regional and national levels, aimed at reducing the existing exposure and vulnerability to flood hazard of IGAD's Member States' populations and their assets. This strategy is intended to inform and guide the DRM policy makers in the member state but also to help in the establishment of a regional FRM coordination mechanisms.

This Regional Flood Risk Management Strategy is therefore intended to contribute towards sustainable development within the IGAD region by safeguarding lives, assets and livelihoods of vulnerable peoples and communities in the Member States, through strengthened resilience to flood risk. The strategy's seven objectives were developed based on an assessment of existing flood risk management gaps and challenges, which were documented during a series of technical visits aimed at assessing the status of flood risk management in the Member States. The strategic objectives are to: (i) understand the underlying flood risk factors; (ii) foster communication, and data and information sharing within and between Member States; (iii) enhance capacity development and increase technology transfer in flood risk management in the region; (iv) harmonize the flood risk management approaches in the region; (v) strengthen the existing

flood risk management frameworks at country level for enhanced awareness and informed decision-making: (vi) mobilize and enhance resources allocation for the implementation of flood risk management and; (vii) strengthen the flood early warning systems and post disaster frameworks at community, national and regional levels, under the "Build Back Better" approach to disaster recovery.

To be effective, this strategy is designed to achieve a participatory, inclusive, transparent and realistic flood risk management framework through the provision of S.M.A.R.T (specific, measurable, attainable, relevant, and time-bound) interventions, which their progress will be monitored, using effective implementation indicators.

This Strategy proposal document is developed in the following four-chapters: Chapter 1 is an introduction to the Strategy, including background information about the IGAD region, such as the region's disaster risk profile (i.e. hydro-meteorological and other hazards); the current status, gaps and challenges of flood risk management, at the region level, and at the individual Member States' levels; and the rationale for developing the Strategy. Chapter 2 introduces the Strategy and discusses its strategic goals, objectives, and areas; as well as strategic interventions. Chapter 3 discusses the implementation and operational arrangements needed

for the successful achievement of the Strategy's expected outcomes; including governance and coordination structure, stakeholders' specific roles and authorities. Chapter 4 focuses on monitoring and evaluation of the Strategy. The Strategy is aligned with global and regional best practices for developing disaster risk frameworks, and recognizes the need for periodic reviews to ensure its continued relevance and effectiveness, in the face of evolving needs and changing environments.

- This strategy establishes a regional FRM multi stakeholder platform in line with PoA (2016) and the SFDRR (2015-2030). Specifically, the strategy provides:
- A coordination mechanism for a harmonised implementation and monitoring of FRM efforts in IGAD and Member States;
- Harmonisation of coordination of FRM in the region;
- Advocacy and technical support for a synergized implementation of FRM.
- A mechanism for learning, sharing experiences and good practices on FRM efforts by the Member States and development partners, civil society and academia.

¹https://www.gfdrr.org/sites/default/files/publication/1.4%20-%20IGAD%20-%20Intra-ACP%20Focus%20Day%20-%209%20November%202018%20-_0.pdf.

DEFINITIONS OF KEY TERMINOLOGIES AS APPLIED IN THIS STRATEGY

Climate Change	A change of climate, which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.
Climate Change Adaptation	Refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change.
Coastal Floods	Coastal floods result from storm surges and wave actions. Coastal flooding occurs when normally dry, low-lying land is flooded by seawater. The extent of coastal flooding is a function of the elevation inland flood waters penetrate which is controlled by the topography of the coastal land exposed to flooding.
Contingency fund	is a fund to meet some urgent or unforeseen expenditure of the Government.
Contingency Planning	A management process that analyses specific potential events or emerging situations that might threaten society or environment and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations.
Dam and Levee Failure floods	Overtopping or failure of flood control structures levees, dykes or dam embankment as a result of excess storage beyond their capacity
Disaster	A serious disruption of the functioning of a community or society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community to cope using its own resources.
Disaster Risk	In the context of natural and man-made hazards, disaster risk is the potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity.
Disaster risk reduction (DRR)	The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters including through improved disaster preparedness and emergency response reduce threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce possibility of harm or loss.
DRM Platform	A generic term for national mechanisms for coordination and policy guidance on disaster risk reduction that are multi-sectoral and inter-disciplinary in nature, with public, private and civil society participation involving all concerned entities within a country.
Early Warning	an advance notice of some impending event or development
Early Warning Systems	An early warning system (EWS) is technology and associated policies and procedures designed to predict and mitigate the harm of natural and human-initiated disasters and other undesirable events.
Evaluation	In risk management, evaluation can take two meanings, namely, an assessment of the weightiness of the risk itself or a systematic determination of the merit, worthiness and significance of an initiative or strategy, using criteria governed by a set of standards.
Flash Floods	A rapid and extreme flow of high water into a normally dry area, or a rapid rise in a stream or creek above a predetermined flood level. They are often characterized by a rapid rise in water levels, high water velocities, and large amounts of debris.
Fluctuating lake levels floods	Water levels in the nation's IGAD region's lakes can fluctuate over a short-term (e.g., seasonally) or long-term (e.g., yearly basis) thereby creating floods over the inundated areas.

DEFINITIONS OF KEY TERMINOLOGIES AS APPLIED IN THIS STRATEGY

Ground failures floods	Flooding and flood-related erosion can result from several types of ground failures. Subsidence and liquefaction of soil may cause flooding of areas in the immediate vicinity of the ground failure, while mudflows and mud floods/mudflows may cause damages downstream or downslope of the location where the initial ground failure occurred.
Hazard	A damaging physical event, phenomenon or human activity likely to cause the loss of life or injury or other impact, property damage, loss of livelihoods and services, social and economic disruption or environmental damage.
Mainstreaming	Integrating and institutionalizing disaster risk management in the process of the development of policies and strategies, and in the planning and implementation stages of regular programs across all sectors and at all levels.
Mitigation	Structural and non-Structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards. Mitigation has different meanings in Disaster Risk Management and Climate Change. In DRM, mitigation refers to all measures to be taken in order to minimize loss and damage on lives and livelihoods to a minimum in face of a hazard evolving into a disaster. In Climate Change, mitigation refers to minimizing the carbon footprint arising from human activity in pursuit of livelihoods and development activities. Though both are interlinked, conceptually they mean different things in both disciplines.
Monitoring	In risk management, monitoring can take two meanings, namely. assessing the risk itself or assessing the progress or quality of the implementation of the strategic interventions for the specified risk, in view of the specified objectives and targets over a specified period
Preparedness	Pre-disaster activities that are undertaken within the context of disaster risk management and are based on sound risk analysis. This includes the development/enhancement of an overall preparedness strategy, policy, institutional structure, warning and structural capabilities and plans that define measures geared to helping at-risk communities safeguard their lives and assets by being alert to hazards and taking appropriate action in the face of an imminent threat or an actual disaster.
Prevention	Activities aimed at to providing outright avoidance of the adverse impacts of materialized hazards, and means to minimize related environmental, technological, and biological disasters. Depending on social and technological feasibility and cost benefit considerations, investing in preventive measures is justified in areas frequently affected by disasters. In the context of public awareness and education related to disaster risk reduction, changing attitudes and behaviour contribute to promoting a culture of prevention.
Protection	Measures that address threats to or the vulnerabilities of someone or something and preclude damage or injury that would cause disruption or interference with normal practices.
Reconstruction	Longer-term activities required to restore physical infrastructure and services damaged by a disaster.
Recovery	Restoration and improvement where appropriate of facilities livelihoods and living conditions of disaster affected communities including efforts' to reduce disaster risk factors.
Rehabilitation	The measures applied after a disaster which are necessary to restore normal activities and build resilience to future shocks in affected areas, communities, and economic sectors.
Relief	The provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic substance needs of those people affected. It can be of immediate, short term or protracted duration.
Response	The provision of emergency services and public assistance during or immediately after a disaster in order to save lives reduce health impacts, ensure public safety and meet the basic subsistence needs of the affected people.

DEFINITIONS OF KEY TERMINOLOGIES AS APPLIED IN THIS STRATEGY

Risk	The combination of the probability of an event and its negative consequences.
Risk Assessment	The methodology used to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability which may potentially harm exposed people, property, services, livelihoods and the environment.
Riverine/Tributary floods	When there is too much water, the flow capacity of the river or tributary becomes overwhelmed and burst their banks, flooding areas which are not normally under water. This is called tributary or main channel flooding.
Sustainable development	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains two key concepts: the concept of "needs", in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.
Urban floods	Urban flooding is specific in the fact that the cause is a lack of drainage in an urban area. As there is little open soil that can be used for water storage nearly all the precipitation needs to be transport to surface water or the sewage system. High intensity rainfall can cause flooding when the city sewage system and draining canals do not have the necessary capacity to drain away the amounts of rain that are falling. Water may even enter the sewage system in one place and then get deposited somewhere else in the city on the streets. Sometimes you see dancing drain covers.
Vulnerability	Characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effect of a materialized hazard.

01

INTRODUCTION

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1.1 BACKGROUND TO THE IGAD REGION

The Intergovernmental Authority on Development (IGAD) in Eastern Africa was created in 1996 to supersede the Intergovernmental Authority on Drought and Development (IGADD) which came into effect in 1986. IGAD is guided by a vision where the people of the region would develop a regional identity, live in peace and enjoy a safe environment alleviating poverty through appropriate and effective sustainable development programmes. As such, the vision of IGAD is to be the premier Regional Economic Community (REC) for achieving peace and sustainable development in the region and therefore the mission of IGAD is to promote regional cooperation and integration to add value to Member

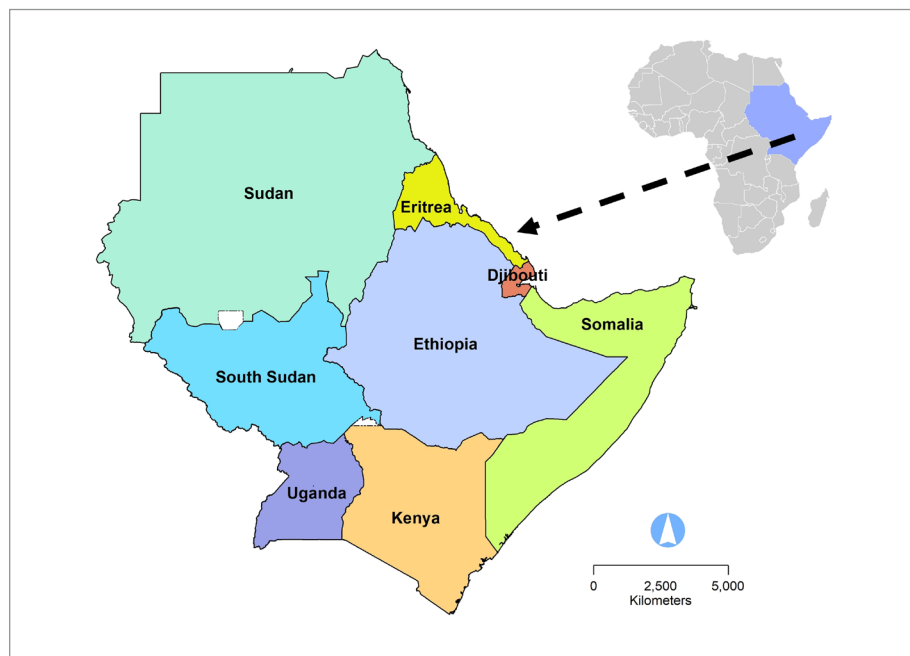


Figure 1: The IGAD Region Map with the Member States

³<https://www.igad.int/index.php/about-us/the-igad-region>

States' efforts in achieving peace, security and prosperity. Figure 1 below shows a map of the IGAD Region and Member States.

The IGAD region covers an area of about 5.2 million square kilometers. The region has a population of about 270 million people characterized by high natural population growth rates. The average population density is about 30 persons per square kilometer (km²). Variations in the population density between the IGAD countries are substantial ranging from 14.5 persons per km² in Somalia to above 95 persons per km² in Uganda. These variations are even more pronounced between the different ecological zones. The demographic age structure shows that some 50 percent of the population are youth, which provides a good opportunity for continued economic growth, but may also lead to an increased risk of unemployment and consequently to a potential of instability in the member states.

Extreme climate and weather phenomena and environmental degradation are prevalent in the region with the economies heavily dependent on agriculture and livestock. Due to protracted conflicts and state fragility, together with extreme weather and climate events, the populations in the IGAD region have faced and continue to face momentous food insecurity and humanitarian challenges.

About 70 percent of the IGAD region is made up of Arid and Semi-Arid Lands (ASALs), which receive less than 600 mm of rainfall annually. The rest of the region has a great variety of climates and landscapes including cool highlands, swamp areas, tropical rain forests and other features typical of an equatorial region. Furthermore, the region possesses diverse

ecosystems and agro-ecological zones at different altitudes ranging from about 157m below mean sea level in Lake Assal in Djibouti to about 4600m above mean sea level over Mount Kenya.

The IGAD region is exposed to multiple natural and man-made hazards, and has a long history of catastrophic events triggered by the materialization of one or more hazards. Some drivers of the region's high levels of disaster risks include: rapid urban population growth, with an accelerated increase in the number of poorly-planned, deficiently managed urban settlements — oftentimes with large concentrations of vulnerable people living in disaster-prone locations, like in Ethiopia, Eritrea, Kenya, Sudan, and Uganda, where high percentages of these countries' urban populations live in slum conditions—; severe degradation of natural lands, water bodies, and agricultural lands; compounded by high levels of chronic poverty and social and economic inequality; protracted political and social conflicts, and state fragility; all of which are being exacerbated by climate variability and change. Climate change is projected to increase the frequency and intensity of extreme hydro-meteorological events, thereby increasing the levels of disaster risk of the IGAD Member States' economies and their most vulnerable populations. This situation will subsequently undermine the coping and adaptive capacity of communities in the region. Thus, there is a need for strengthening DRM strategies by enhancing knowledge and understanding of disaster risks in a changing climate, as well as hazard monitoring and EWSs capabilities, along with a substantial increase of investments for resilience. The following section provides a brief discussion of the hydro-meteorological hazards in the region

1.2 OCCURRENCE OF HYDRO-METEOROLOGICAL HAZARDS IN THE REGION

The IGAD region is not the most water-related disaster-prone region in the world. However, it is the most vulnerable and the impact of disasters is felt most with a higher proportion of mortalities and people affected by hydro-meteorological disasters.

According to the EM DAT database, the ranking of disaster occurrence by country in the IGAD region shows that Kenya has the highest frequency of water and climate related disasters with Eritrea having the least frequency of these disasters as shown on the Table 1 on the next page. »

Generally, there has been fluctuating trend on the number of people affected by hydro-meteorological disasters in the region with the year 2015 recording the highest number (mainly due to the widespread drought in the region) followed by 2008 as shown in Figure 2 on the next page. » The total number of people affected by disasters over the 2008-2017 period is estimated to be 82,687,238 according to the EM DAT statistics.

Due to the regions' low coping capacity, high vulnerability and exposure to hazards, the region is likely to continue facing high disaster risks. With nearly 20 million people displaced in the IGAD region and more than half (61.7%) of the urban population living in slums that are often located in hazard-prone areas, disaster losses are often inevitable. Further, poverty and inequality remain key drivers of disaster risk.

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Country	Occurrence
Kenya	68
Sudan	49
Uganda	42
Somalia	27
Ethiopia	23
South Sudan	21
Djibouti	3
Eritrea	1

Table 1: Number of disasters affecting IGAD countries during the 2008-2017 period

Source; <https://www.gfdr.org/sites/default/files/publication/1.4%20-%20IGAD%20-%20Intra-ACP%20Focus%20Day%20-%20209%20November%202018%20-%200.pdf>

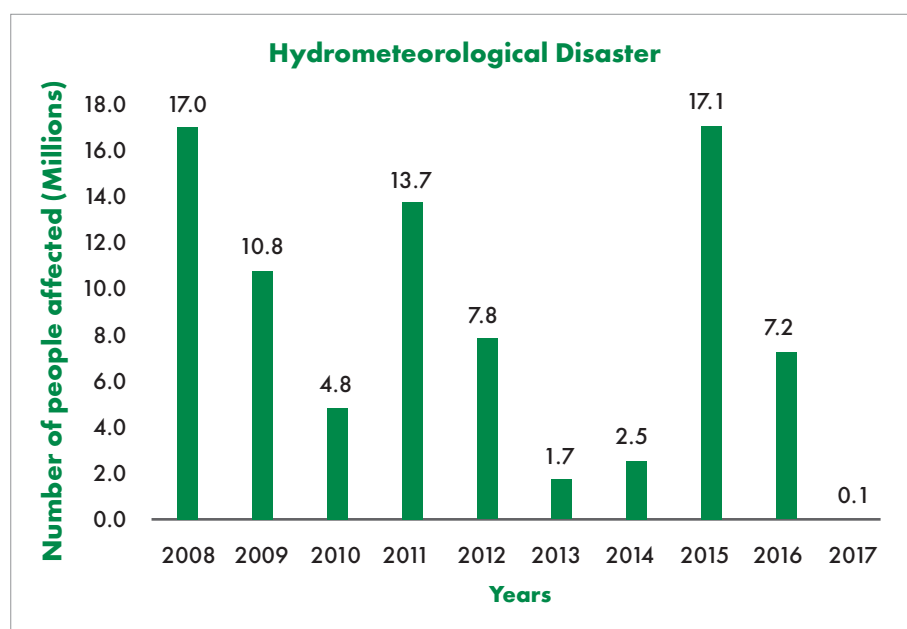


Figure 2: The number of people affected by disasters in the IGAD Region between 2008-2017

Source; <https://www.gfdr.org/sites/default/files/publication/1.4%20-%20IGAD%20-%20Intra-ACP%20Focus%20Day%20-%20209%20November%202018%20-%200.pdf>

1.2.1 Droughts in the IGAD Region

Drought is an insidious natural hazard that results from lower levels of rainfall than what is considered normal. The IGAD region is susceptible to recurrent droughts that immensely devastate lives and livelihoods for millions of people in the region. Additionally, droughts, fueled by climate variability and other environmental and societal challenges, often trigger disease outbreaks, massive displacements of populations, livestock mobility and deaths and conflict over resources. Drought damages critical infrastructure, limits access to schools and health facilities, degrades the environment, affects groundwater table and surface water sources, and disrupts access to other social services. Successive disasters are pushing member states into a downward spiral, where losses outweigh limited development gains and the cumulative adverse effects of previous disasters continue to grow. Increasing disaster loss will seriously compromise and undermine the achievement of the Sustainable Development Goals (SDGs), unless decisive actions are taken to reduce disaster risk.

There are several different types of floods that are experienced in the IGAD region. These are:

1.2.2 Floods in the IGAD Region

- Riverine/tributary flooding
- Inadequate urban drainage flooding
- Fluctuating lake levels flooding
- Coastal flooding
- Ground failure flooding
- Dam failure and levee breaching flooding and
- Flash floods

⁴<https://www.britannica.com/place/lake-assal>

These types of floods are explained in the “Definitions” section and discussed under each of the major river basins in the IGAD region. These river basins are:

- (i) The Nile river basin;
- (ii) The Shebelle, Juba and Lag Dera drainage rivers systems;
- (iii) The Athi and Tana rivers systems,
- (iv) The Red Sea seasonal river drainagesystems in Northern Somalia, Djibouti and Eritrea
- (v) The Eastern Branch of the Africa Rift Valley drainage system.

Figure 3 below shows the distribution of these drainage basins on a sketch map of the IGAD Region.

The following is a brief description of the hydrology and flooding characteristics of these basins

The Nile River Basin

The Nile River basin covers IGAD member states, Burundi, Democratic Republic of Congo, Egypt, Rwanda and Tanzania. The basin can be

delineated into the following river systems, namely, the Tekeze-Atbara river system, the Blue Nile system and the White Nile river system.

Most of the rivers within the Nile Basin are perennial in nature and only a few are seasonal. These rivers are long enough to have the potential to create severe tributary floods. However, severe flash and moderate river-induced floods occur mainly at the foothills of the water towers, over the expansive and widely distributed floodplains (and swamps) in the middle and lower zones of the constituent rivers’ watersheds, and at the confluences of these rivers. Further, for the lake levels of Victoria and Kyoga as well as the many swamps, the water levels rise after heavy rains causing flooding over the surrounding areas through inundation.

The flooding scope in this basin is mainly transboundary in nature, with localized river-induced and flash floods in many low-lying areas. In this respect, South Sudan

and Sudan are most affected by the transboundary floods, being downstream countries and having extensive flatlands and swamps on which local and transboundary river flood waters easily spread to cover expansive areas. As such, flood risk is the main natural shock that affects several regions in South Sudan and the western, central and Southern parts of Sudan, especially those in low lying areas along the Blue Nile, Bahr el Ghazal and Sobat River corridors. Flash floods which are also very common in these countries, are also exacerbated by the weak topographic slopes, as well as poor drainage systems.

The flood challenge in this basin can be managed effectively through concerted and sustained cooperative efforts, between the IGAD Nile Basin Riparian Countries, to improve the hydrometeorological gaging networks and put in place transboundary flood Early Warning systems to mitigate the adverse effects of floods in the basin.

The Eastern Branch of the Africa Rift Valley Basin

The eastern branch of the Africa Rift Valley runs through Djibouti, Ethiopia and Kenya in the IGAD region. This basin is dotted with numerous sub-drainage units which are defined by unique topographic depressions and lakes at the lowest ends of each of these depressions. These lakes are in some cases interconnected. Most of the rivers in this basin, except the Awash and Omo Rivers in Ethiopia and Turkwel river in Kenya, are not long enough to create severe tributary floods. Consequently, floods occur when the main lake levels rise after heavy rains causing flooding over the inhabited surrounding areas through inundation. The shore inundation due to the rise of the water levels in the Lake Turkana (Kenya and Ethiopia) and Lake Abbe (Ethiopia and

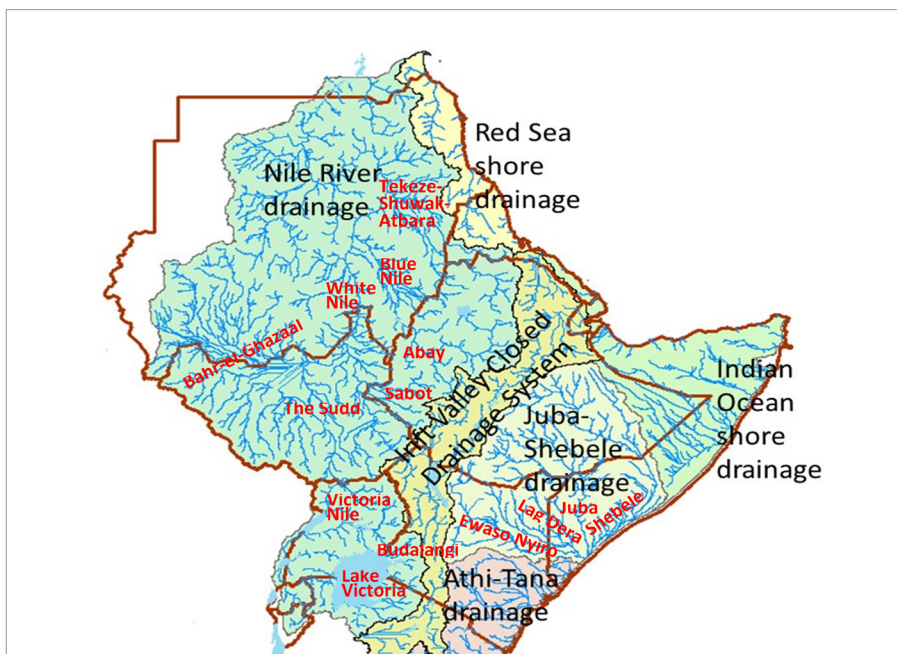


Figure 3 above shows the distribution of these drainage basins on a sketch map of the IGAD Region

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Djibouti) are the only transboundary flooding issues in the eastern Branch of the Africa Rift Valley basin. However, in general, severe flash and moderate river-induced floods occur mainly around the foothills of the corresponding water towers and flood plains which extend to the commonly closed lake (endorheic) shores. Flash floods are very common in this basin. However, recurrent floods are common phenomena of Awash River Basin, with devastating effect on environmental, social and economic loss. The most noticeable factors that cause these hydrologic risks are deforestation, soil degradation, poorly managed urban areas and climate change.

The spatial scope of flooding in this basin is generally at local levels, except in the major river basins of Omo, Awash and Turkwel rivers.

The Shebelle, Juba and Lag Dera drainage rivers systems

The Lag Dera originates from the slopes of Mt Kenya and other surrounding semi-arid areas in Kenya. This river system is called the Ewaso Nyiro in Kenya which joins the broader Lag Dera drainage system, then flows east and finally south-east, passing through Somalia where it joins the Juba River just before it joins the Shebele to empty their waters into the Indian Ocean. The Ewaso Nyiro, being the main tributary of the Lag Dera system has a perennial flow from the runoff and snow melt on Mount Kenya. Most of the other streams in the wide Lag Dera basin network are generally seasonal. The characteristic flash floods in the seasonal streams occasionally reinforce each other depending on how widespread the episodic rains are, and build up into transboundary river floods in the middle and lower parts of the basin.

On the other hand, the upper parts of the catchments of the Juba and Shebelle rivers; lying mostly in Ethiopia contribute most of the flows in the two rivers in Somalia including transboundary floods generated by high intensity rainfall over the source areas in the eastern highland of Ethiopia. Flash floods are very common in the third order characteristically seasonal tributaries of both these rivers

The Athi and Tana Rivers Basins

The Athi-Galana-Sabaki River is the second longest (after the Tana River) river in Kenya. The major source of the Athi River is the southern end of the Aberdare range on the eastern side of the eastern arm of the African Rift Valley in Kenya. The rainfall over the Aberdare range is high and the drainage network of the river is high over the slopes of this mountain range. This drainage includes some major urban centers among them being the Nairobi County. The type of floods that occurs in this upper part of the Athi River are not always river-induced floods, but sometimes caused by urban drainage issues.

The Stoney Athi branch of the Athi River originates from the Ngong hills and the northern slopes of Mt Kilimanjaro and Meru in Tanzania, where the rainfall is slightly lower than that of the Aberdares. The catchment for this branch is relatively flat and is characterized by frequent and severe flash floods which are accentuated by an upsurge of urban development and changed land tenure activities in the catchment. The Aberdare and the Stoney Athi tributaries converge about 20km east of the Nairobi city where very intense floods are experienced. As the river then flows through the middle parts of the basin, it is joined by many other seasonal streams in whose catchments, flash floods are dominant. Major water storage and

water supply systems are found in the few perennial streams that join the Athi in these middle parts of the basin where floods are not common. Coastal areas in Athi Catchment Area suffer from flood damages nearly every year due to heavy rains. Downstream Athi, which is also known as lower Sabaki, has frequent inundation at the lower reaches where there are a lot of small-scale migratory settlements. Floods in Taita-Taveta County frequently occur in the small villages along the Lumi River on the south side of the Taveta urban area.

The Tana River Basin is located in the south-eastern part of Kenya. The Tana River Basin borders on Ewaso Nyiro Catchment Area in the north, Somalia and Indian Ocean in the east. In the upstream reaches of the Tana River, there are major hydroelectric power stations. There are advanced plans to install another dam and power station on this river. After flowing through the hydropower reservoirs, the Tana River flows northeastward and then gradually changes its direction eastward to empty its waters into the Indian Ocean through the Tana Delta.

The dam spills, the tributary inflows and seasonal runoff into the main Tana River downstream of the hydropower dams are the ones that contribute to floods in the lower reaches of the river. Within the middle to lower the Tana Basin, the areas along the Tana River are susceptible to the main channel induced floods as well and a contribution from the flash floods. Flood damage in the Tana basin is the largest in Kenya next to the Lake Victoria areas.

The floods in the Athi and Tana Basins are generally at localized levels but occasionally of national scope and can be easily managed without collaboration with other member

⁶Source: IGAD DRM Programme

states. However, the required data to develop Flood Risk Management (FRM) systems is extremely scarce and therefore there are no institutionalized FRM initiatives in these basins, despite their economic significance to Kenya.

The Red Sea and Gulf of Aden shores drainage systems

These drainage basins cover the Red Sea shore of Sudan, Eritrea, Djibouti and Northern Somalia. These areas are generally characterized by short streams and very episodic rainfall mainly over the sources-areas. The slope profiles of most of the streams in these basins are low. This, coupled with the low stream densities, occasions a low water conveyance as well as high flooding potentials at the middle and lower zones of these basins. However, floods are rare in these basins due to low rainfall environments, but when they occur, they are mainly flash floods, although they can in some rare cases be river-induced floods some of which may be transboundary in nature. Either way, floods cause immense damage to the affected communities due to their exposure and vulnerability to these hazards. In addition, floods also occur in the coastal areas of these basins due to high sea/ocean waves and surges.

A more detailed discussion of the flood risks in the five basins of the IGAD region is given in Country Flood Assessment Report and the IGAD Hazard Maps and Atlas (<http://geoportal.icpac.net/documents/553>).

The map given below shows the flood prone areas of the IGAD region.

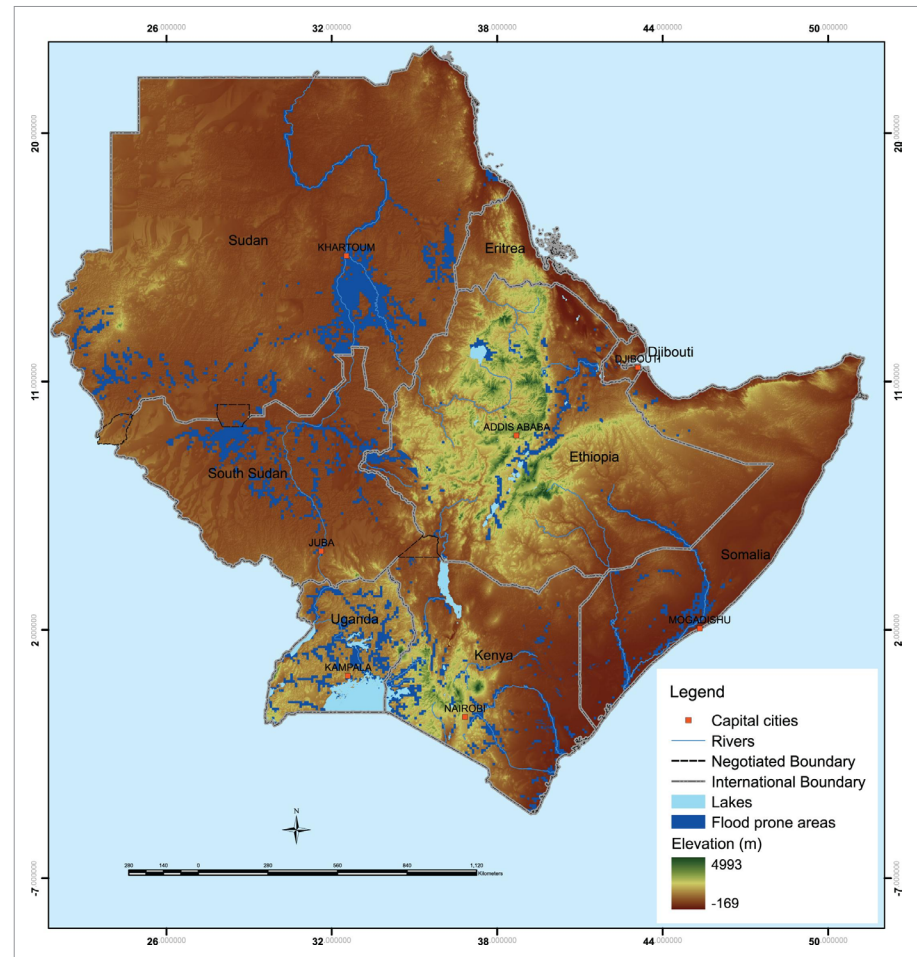


Figure 4: Flood Hazard Map of the IGAD Region

1.2.3 IGAD Member States' Flood Profiles

In general, while there may be many different types of floods, they all share one common attribute: the potential to wreak havoc. They pose a great threat to populations residing within the floodplain areas, causing human displacements, loss of life and property; including the damage or destruction of crops and croplands, as well as the loss of production inputs and other assets such as livestock. Consequent erosion of livelihood capacities exposes populations to vulnerability to food insecurity.

Statistics from EMDAT global database show that between 1990 and 2016 a number of flood incidences have occurred with varying impacts across the region (Figure 5). The data for South Sudan is for the period 2011-2016.

The global Emergency Events Database shows that between 1990 and 2016 a number of major flood events occurred across the IGAD region, with different levels of impacts across the IGAD Member States. During this period, Ethiopia experienced 20 major flood events, followed by Somalia and Sudan each reporting 18 major floods. The average number of people affected by a single flood event was highest in South Sudan and Sudan, each with about 200,000 persons affected, followed by Kenya with an average of about 150,000 persons affected by a single flood event. Djibouti experienced the lowest number of people affected by floods, when compared to the rest of the Member States.

It can be observed that while riverine floods are dominant, flash floods are also very common in many parts of the region. The Figure 6 given below



Figure 5: Number of people affected by floods between 1990 and 2016

shows the average number of displaced persons that occurs when a flood incidence occurs in the region.

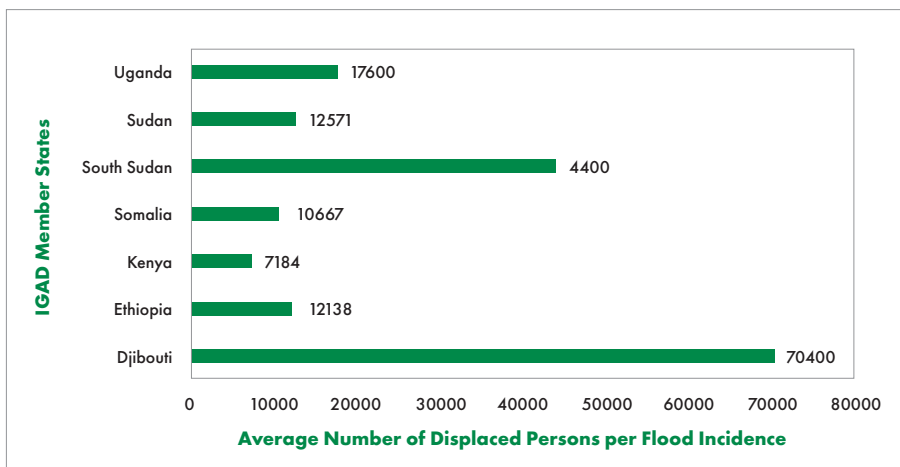


Figure 6: Average number of displaced persons (1985-2018) that occurs when a flood incidence occurs in the region

The figure shows that people who live within the flood prone areas are easily displaced in Djibouti and South Sudan.

The information from this figure indicates that, in Somalia, flood incidences easily become disasters with large fatalities.

On the other hand, Figure (7) on the next page » shows the average number of human fatalities that is witnessed for every flood incidence

In general, the key flood vulnerabilities in the region are mainly the existence of weak national flood EWSs in most of the

⁷Source: IGAD (2013): IGAD Hazard Maps and Atlas - <http://geoportal.icpac.net/documents/553>

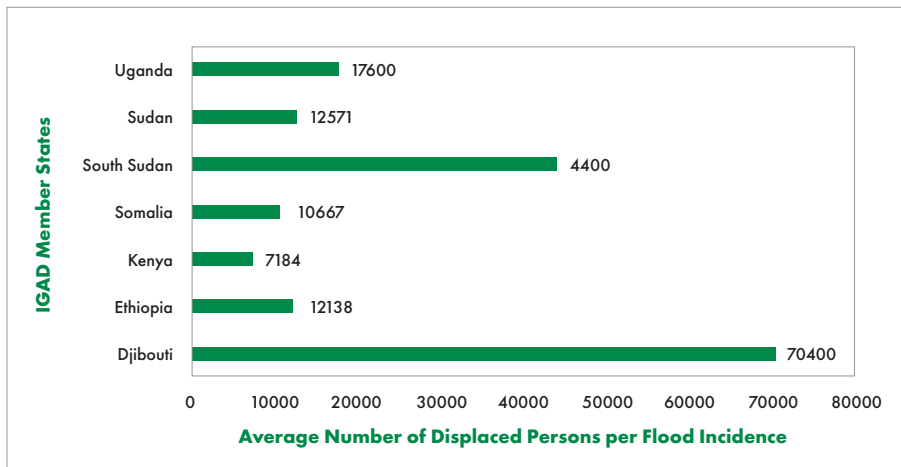


Figure 7: Average number of human fatalities (1985-2018) that is witnessed for every flood incidence

member states and lack of regionally coordinated flood early warning system. Consequently, the IGAD Member States are vulnerable to flood hazards develop to disasters and cause acute human suffering and loss of lives as well as loss of investments. These negative impacts of floods can be significantly reduced through the proper management of the underlying vulnerabilities as well as establishing effective early warning system at country and regional levels. This can be achieved through the implementation of appropriate policies and strategies that can lead to the reduction of flood risks.

Therefore, there exists a potential for reducing or mitigating most of the flood damages due to floods in the IGAD region through the development of coordinated and accurate and effective river and flash flood forecasting and early warning systems, which are location and context specific. That can be instituted at both national and regional levels.

1.2.4 Other natural hazards

The other hazards in the region include earthquake/seismic risk, Tsunami, lightening, hailstones, windstorms, landslides, wildfires and tropical cyclones. The coast

regions of Somalia and Kenya are at risk of Tsunami. Further, the Coastal regions of the IGAD region are also particularly vulnerable to the impact of a tropical cyclone, compared to inland regions. Though their effects on human populations are often devastating, tropical cyclones can relieve drought conditions. The tropical cyclones of the Arabian Sea mainly affect Djibouti, Eritrea and Somalia and usually exacerbate the rainfall and flooding conditions in the coastal areas of these countries.

1.3 STATUS, GAPS AND CHALLENGES OF FOOD RISK MANAGEMENT IN THE IGAD REGION

The high levels of disaster risks remain a serious development challenge for the region. Disasters destroy years of development efforts, squander vast resource investments, and perpetuate poverty, damage infrastructure and the natural environment, impoverish communities, and divert national priorities and development resources to emergency management operations. IGAD Secretariat has responded to these challenges by implementing the Regional Disaster Risk Management Programme (DRM) starting from 2004. The DRM

programme is therefore mandated to deal with disaster risks including flood risks in the region.

The DRM programme has subsequently succeeded in contributing to harmonizing the national policies and activities as well as opening initiatives for regional collaboration, integrating DRM and Climate Change Adaptation (CCA) measures, strengthening institutional DRM capacities and mainstreaming post disaster and recovery needs assessment. The involvement and cooperation of partners in DRM has been steadily increasing since the adoption of:

- The DRM Strategy which is well aligned to the international Sendai Framework for Disaster Risk Reduction (2015-2030) and with the African Union Plan of Action for the Implementation of the Africa Regional Strategy on Disaster Risk Reduction (2016),
- The IGAD HYCOS initiative which provided an opportunity for flood early warning systems in the region.
- Existing data sharing protocols within the World Meteorological Organization (WMO) and Nile Basin Initiative (NBI) Frameworks
- Reliable seasonal rainfall forecasts from the National Metrological Services and ICPAC

However, despite such progress there still remain many gaps and challenges that impede the realization of effective DRM (and by extension also FRM) interventions. The Country Assessment (Annex 2) confirmed that the gaps and challenges which hamper effective flood risk management in the region include:

- Inadequate hydrometeorological monitoring networks in all

member states, but particularly in South Sudan and Somalia

- Weak transboundary and national planning, information sharing and dissemination and coordination between sectors and member states. The mechanisms which were established by the NBI and the IGAD HYCOS are not being exploited. This situation hampers the exchange of flood information between the upstream states where the major river flooding originates to the downstream states
- Insecurity and political instability in some member countries. This condition limits the sustainability of both flood monitoring systems as well as the FRM interventions. This is particularly momentous for South Sudan and Somalia
- Widespread Poverty in most of the member states. Furthermore, noting that all the member states except Kenya are, according to the United Nations, considered Least Developed Countries, most of the member states have not been able to invest and maintain the state-of-the-art flood monitoring systems because the national economies can only support other higher priority developments.
- Over-reliance on external funding. Donor over-reliance, coupled with financial mismanagement and inability to pay-back loans force the economies of most of the member states to response-based planning frameworks which often have very little proactive interventions and “build-back-better” actions. Over time, this

situation has created a culture of reaction to emergencies instead of a culture of emergency preparedness, in most member states

- Poor watershed management practices, coupled with climate variability, exacerbate the hydro-meteorological risks. Rampant poverty and population pressures have been driving communities to practice unsustainable land use practices that contribute to degrading natural and agricultural lands, as well as the built environment, which in turn become major drivers of serious flash and river flooding. Related to this is the weak policy implementation at member state level that has seen fragile ecosystems altered by capital development projects even where other sustainable options exist.
- Low resilience to climate change risks.
- Lack of country-specific FRM strategies. None of the member states has a specific FRM framework. Flood risks, although different from the other hydro-meteorological risks are managed under the broad umbrella of national DRM strategies. This approach may cause specific flood-risk management interventions not being implemented, leading to the materialization of adverse effects, resulting in damages and losses that could be prevented or mitigated if said interventions were carried out in the first place.
- Threats of Historical agreements in the Nile Basin IGAD Member States (Some member states do

not view historical agreements as threats. There is a diverse view on this issue between IGAD member states)

- Huge disparity in national economies and priorities to FRM.

1.4 STATUS AND CHALLENGES IN FRM IN THE IGAD MEMBER STATES

Overall, the IGAD member states have shown a change in the mind-set in embracing DRM in the region over the implementing period of the strategy. The member states are making good progress towards; institutionalizing DRM; developing DRM legislation and strategies; strengthening early warning systems; and, mainstreaming DRM into key sectors. However, progress is slow and a number of challenges exist in technical capacities with resources constraints hampering the progress in disaster risk management and particularly, flood risks. There has been substantial increase in the number of higher education institutions offering DRM related courses, as well as national governments’; gradual shift from the traditional emergency management paradigm towards disaster risk management. However, there are many gaps and challenges as briefly outlined in the following flood disaster management priority areas of the SFDRR (2015-2030). These priority areas are summarized in table 2, on the next page. »

⁹Compiled from data in “ G.R.Brakenridge, “Global Active Archive of Large Flood Events”, Dartmouth Flood Observatory, University of Colorado”, <http://floodobservatory.colorado.edu/Archives/index.html>

¹⁰Compiled from data in “ G.R.Brakenridge, “Global Active Archive of Large Flood Events”, Dartmouth Flood Observatory, University of Colorado”, <http://floodobservatory.colorado.edu/Archives/index.html>

PRIORITY AREA	FOCUS	DESCRIPTION
1	Understanding disaster risk	Disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment. Such knowledge can be used for risk assessment, prevention, mitigation, preparedness and response.
2	Strengthening disaster risk governance to manage disaster risk	Disaster risk governance at the national, regional and global levels is very important for prevention, mitigation, preparedness, response, recovery, and rehabilitation. It fosters collaboration and partnership.
3	Investing in disaster risk reduction for resilience	Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment.
4	Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction	The growth of disaster risk means there is a need to strengthen disaster preparedness for response, take action in anticipation of events, and ensure capacities are in place for effective response and recovery at all levels. The recovery, rehabilitation and reconstruction phase is a critical opportunity to build back better, including through integrating disaster risk reduction into development measures.

Table 2: Description of the Priority Areas of the SFDRR (2015-20130)

1.4.1 Priority Area 1: Understanding risk

The Country Assessments show that the following challenges are constraining understanding of flood disaster risk in the region:

- Inadequate hydro-meteorological monitoring networks
- Confidentiality with data & information that limits transnational flood information feedbacks
- Limited investment on developing IGAD databases on disaster information to support/establish baselines and indicators for measuring progress towards flood risk reduction
- Methodologies, tools, approaches and guidelines for flood risk assessments including flood hazard monitoring and unmanageable urban settlement, and inappropriate land use and management for the flood risks

are not standardized and are yet to be fully developed.

- Watershed degradation
- Low resilience to climate change

1.4.2 Priority Area 2: Strengthening disaster risk governance for FRM

The Country Assessments show that the main challenges facing this priority include:

- Weak transboundary and national planning, information sharing and dissemination and coordination between sectors and member states for planning and decision-making.
- Lack of flood risk coping capacity
- Lack of strong and sustainable institutional structures and coordination mechanisms for response to emergencies
- Lack of standardized tools, approaches and guidelines

to support mainstreaming is a bottleneck.

- Underlying risk drivers, targets and indicators, mechanisms for 'building back better' in recovery and reconstruction are inadequately addressed in the DRM strategies.
- DRM within IGAD has serious technical capacity limitations, disjointed and with a weak political footing. The extent of DRM integration into IGAD regional flagship programs is wanting. There are inadequate structures to coordinate DRM within IGAD Secretariat and her specialized institutions.

1.4.3 Priority Area 3: Investing in disaster risk reduction for resilience

The Country Assessments (Annex 2) showed that the main challenges facing this priority include:

- Huge disparity in national economies and priorities to FRM.
- Political instabilities in some member countries.
- Threats of Historical agreements in the Nile Basin IGAD in some Member States.
- Overall, the funds allocated for DRM in Member States and IGAD secretariat level is inadequate and unpredictable. There is no clear budget line provided for mitigation, preparedness, response, recovery and rehabilitation from the national governments.
- Some Member States are at initial stages of piloting disaster insurance mechanisms targeting livestock and agriculture sectors.
- Public Private Partnerships (PPP) for resilience actions in the Member States, are either dismally low or totally lacking.
- Unexploited FRM financing opportunities under the UNFCCC, World Bank, African Development Bank, International NGOs, US-Aid and other FRM related financing mechanisms.

1.4.4 Priority Area 4: Disaster preparedness for effective response and to 'Build Back Better'

The Country Assessments show that the main challenges facing this priority include:

- Watershed Degradation.
- Low resilience to Climate change.
- Over-reliance on external funding
- Weak dam safety audit mechanisms (valid for small dams only).
- Forecasting, early warning and communication systems are

being strengthened but lack of manpower and resources are hampering their effectiveness.

- Disaster operation centers have been established in MSs but their linkage to FEWSs is weak.
- Gender sensitivity in DRM actions generally being considered but guidelines for its integration is hampering systematic action.

The above challenges notwithstanding, the Member States have achieved the following milestones in FRM:

- Member States are signatory to the Sendai Framework for DRR: 2015-2030.
- Member states are making progress in mapping hazards, sharing risk information and enhancing understanding of disaster risk, development of DRM strategies, strengthening EWSs, etc. guided by the SFDRR (2015-2030).
- A strong willingness and urgency to manage the flood risks in all the Member States.
- Existence of strong institutional frameworks with good experience in the structural options for flood mitigation and in dealing with floods at response and reconstruction levels of flood management, that can be used to implement the FRM strategies in all the Member States.
- Flood Early Warning Capacity and experience exist in State Departments and research Institutions in Ethiopia, Sudan, Kenya and Uganda.
- Capacity to identify the hotspots and flood risk areas in all member states.

- Existence of relevant policy enablers in all Member States including DRM Policies.
- Strong MS Universities with capacity for FRM knowledge development.
- IGAD Member States have made progress in fulfilling UNFCCC requirements climate change adaptation and mitigation including: NAMAs, NAPAs, climate change Finance regulations, NDA and NIE appointments,
- Capacity enhancement on climate change issues conducted at various levels.
- Strengthen coordination system at regional level.
- Facilitate the availability of funding schemes for member states.



02

THE FLOOD RISK MANAGEMENT STRATEGY

PHOTO
© Jean Belley/UnsplashUnsplash

2.1 RATIONALE OF THE STRATEGY

On a regional scale, flood hazards are the second most prevalent of the natural hazards next to the drought hazards. While riverine floods are dominant, flash floods are very common in many parts of the region. In general, floods pose a great threat to populations residing within the river floodplain areas, causing human displacements, loss of life and property; including the damage or destruction of crops and croplands, as well as the loss of production inputs and other assets such as livestock.

The lack of an adequate regional network of early warning systems for hydro-meteorological events as well as effective flood risk management initiatives, both at the regional and

the Member States' levels compound to the severity of extreme flood events across the IGAD region. The adverse impacts of floods can be significantly reduced through the establishment of a functional, well-coordinated early warning system for flood risk, complemented with the adoption of post-disaster recovery and reconstruction frameworks, at the regional and national levels, aimed at reducing the existing exposure and vulnerability to flood hazard of IGAD's Member States' populations and their assets

This Strategy provides national and regional guidance on FRM with interventions for a paradigm shift from response to risk management to preparedness in the IGAD region. This strategy aims to create an integrated and coordinated flood

risk management system that focuses on preventing or reducing the risk of floods, mitigating the severity of floods, enhancing preparedness, rapid and effective response to flood risks, and post flood disaster recovery for a "build-back-better".

2.2 STRATEGIC GOAL

This Regional Flood Risk Management (RFRM) Strategy's goal is to contribute towards sustainable development within the IGAD region by safeguarding lives, assets and livelihoods of vulnerable peoples and communities in the Member States, through strengthened resilience to flood risk.

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2.3 STRATEGIC OBJECTIVES

Based on the analysis of the challenges and gaps in Flood Risk management in the IGAD region, the following are the strategic objectives for the IGAD Regional Flood Management Strategy.

1. To identify the flood prone areas in the member states.
2. To foster Communication and data/information sharing within and between Member States
3. To enhance Capacity development and increase Technology transfer in FRM in the region
4. To harmonize the FRM policies, legislation and institutional settings in the region
5. To strengthen the existing flood risk management frameworks at country level for enhanced

6. To mobilize and enhance resources allocation for the implementation of flood risk management
7. To strengthen the FEW systems and post flood disaster frameworks at community, national and regional levels for "Build Back Better"

3. Investing in FRM for Resilience
4. Flood preparedness for effective response and for recovery to 'Build Back Better'.

The Table 2 below shows the distribution of the strategic objectives discussed in the previous section against these priority areas

2.4 PRIORITY AREAS AND STRATEGIC INTERVENTIONS

In line with the four priorities of the Sendai Framework for disaster risk reduction, the key focus areas of the Flood Risk Management Strategy to support its implementation in the region are:

1. Understanding flood risks
2. Strengthening Flood Risk Governance

Table 3: Distribution of the strategic issues vis-à-vis the Sendai Priority Areas.

Priority Area	Strategic Objectives
Understanding flood risks	<ol style="list-style-type: none"> 1. To identify the flood prone areas in the member states 2. To strengthen Communication and data/information sharing on floods risks within and between Member States and IGAD 3. To enhance Capacity development and increase Technology transfer in FRM in the region
Strengthening Flood Risk Governance	<ol style="list-style-type: none"> 4. To harmonize the FRM policies, legislation and institutional settings in the region 5. Strengthen the existing flood risk management frameworks at country level for enhanced coordination, awareness and informed decision-making
Investing in FRM for Resilience	<ol style="list-style-type: none"> 6. Mobilise and enhance resources allocation for the implementation of flood risk management
Flood preparedness for effective response and for recovery to 'Build Back Better'.	<ol style="list-style-type: none"> 7. To strengthen the FEW system and post flood disaster recovery framework at national and regional levels

2.5 STRATEGIC INTERVENTIONS BY PRIORITY AREA

2.5.1 Priority area 1:

Understanding flood risks

Understanding flood risks: FRMS need to be based on an understanding of the flood risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, the flood hazard and inter-acting factors' characteristics and the environment. Under this Priority Area, there are three strategic objectives, namely:

1. To identify the flood prone areas in the member states.
2. To foster communication and data & information sharing within national sectors and between Member States.
3. To enhance capacity development and increase technology transfer in FRM in the region.
4. To enhance FRM education into the Member States' school curricula.

Strategic objective 1: To identify the flood prone areas in the member states

Intervention for Strategic Objective 1

1. Mapping of flood risks in the flood prone areas.
2. Encourage the Member States to develop frameworks to periodically assess flood risks.

Strategic objective 2: To foster Communication and data/ information sharing within and between Member States

Interventions for Strategic Objective 2

1. Encourage the Member States to assess the adequacy of the data needs for FRM and EW at national and regional levels
2. DRM to assess all the existing data sharing protocols and mechanisms in the region
3. Strengthen and ensure effective operation of the hydro-meteorological monitoring networks in Member States
4. Promote development of National Flood Databases
5. Map the FRM scientist and experts in all the member states
6. DRM to develop a strong FRM information sharing mechanism (flood communication strategy) for the region
7. Support the members states to assess the infrastructures (dams, urban housing, highways, and railways) and sectoral flood resilience.
8. Disseminate FRM good practices and lessons learned across the region.

Strategic Objective 3: To enhance Capacity development and increase Technology transfer in FRM in the region

Interventions for Strategic Objective 3

1. Support Member States to carry out technical and human capacity needs assessment to identify their gaps and challenges on FRM knowledge and technology.
2. Support Member States to develop FRM sustainable

capacity (knowledge and Technology) enhancement plans based on capacity needs of the Member States

3. Support the Member states to promote innovations and technology transfer in FRM/FEW.
4. Strengthen strategic capacity building of key officers in Member States to ensure common understanding and harmonization of approaches in FRM and technology transfer.
5. Building capacity of sectors, universities and establish regional excellence center for regional expert pool

2.5.2 Priority Area 2: Strengthening Governance for Flood Risk Management

Disaster risk governance at the national, regional and global levels is vital to the management of disaster risk reduction in all sectors and ensuring the coherence of national and local framework of laws, regulations and public policies that, by defining roles and responsibilities, guide, encourage and incentivize the public and private sectors to take action and address floods disaster risk. There are two strategic objectives in this priority area, namely:

1. To harmonize the FRM policies, legislation and institutional settings in the region
2. Strengthen the existing flood risk management frameworks at country level for enhanced awareness and informed decision-making

Strategic Objective 4. To Harmonize FRM approaches in the region

Interventions for Strategic Objective 4

1. Undertake assessment of the existing FRM frameworks and approaches in the Member states
2. Member States to adopt a harmonized FRM approach
3. Mainstream FRM into critical sectors such as infrastructure, agriculture, water and sanitation, health, education, urban development and any other relevant sectors to enhance their resilience and build momentum.
4. Establish IGAD Inter-Institutional FRM committees to enhance coordination to address FRM crosscutting concern in the programs within the specialized institutions and programs.

Strategic Objective 5. To strengthen the existing flood risk management frameworks at country level for enhanced awareness and informed decision-making

Interventions for Strategic Objective 5

1. Facilitate Review of the DRM policies to cover FRM issues
2. To set up a FRM Secretariat in all the Member States
3. Implement the NAPAs and NAMAs
4. Support documentation of lessons learnt in flood hazard and vulnerability assessment in all the Member States
5. Create an enabling environment for the participation of the private sector, the civil society, professional and academic institutions in strengthening of the FRM in the Member States

6. Support development of gender-sensitive regional guidelines for integrating FRM into response, recovery and reconstruction.
7. Strengthen of watershed management in urban and rural areas

2.5.3 Priority Area 3: Investing in FRM for building resilience in the region

Member States should invest in reducing flood risk, for instance, budget allocation for FRM, through retrofitting of infrastructure, reducing underlying flood risk drivers and adopting flood risk sensitive building codes. The strategy shall encourage investments that reduce underlying flood risk drivers that could generate new risks and lead to accumulation of risks faster than they are reduced.

This strategy gives emphasis on innovative approaches that prevent generation of new flood risks and thus contribute to progress to achieving sustainable development of the Member States. Member states are encouraged to ensure all new development in their public and private investments are flood risk sensitive. Attention is given to creating awareness and encourage Member States to invest in flood risk resilience through insurance mechanisms such as the African Risk Capacity (a specialized Agency of the African Union established to help African governments improve their capacities to better plan, prepare, and respond to extreme weather events and natural disasters) for anticipated flood risks using the 'no-regrets' or 'moderate-regrets' principle. This risk transfer mechanism would help the member states to develop the needed justification on profit returns for the investors.

Public and private investment in disaster risk prevention and reduction

through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment. These can be drivers of innovation, growth and job creation. Such measures are cost effective and instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation. The specific objective in this priority area as follows:

Strategic Objective 6: Mobilize and enhance resources allocation for the implementation of flood risk management

Interventions for Strategic Objective 6

1. Encourage Member States to provide a budget for FRM and Pre-disaster actions/targeted projects/activities
2. Increase awareness for renewed and increased commitment to invest in FRM among decision makers and development partners.
3. Program for enhancing FRM capacities, including mapping and response, in government departments and research Institutions in Member States
4. Leverage ICPAC on a broad range of funding opportunities in bilateral and multilateral development aid frameworks and assistance programmes including the Green Climate fund.
5. Make a strong evidence for increased risk transfer and risk financing and investment in FRM through research
6. Encourage Public Private Partnerships (PPP) for resilience actions in the Member States
7. Develop, facilitate, adopt and implement a regional resource

¹¹<https://www.africanriskcapacity.org/product/river-flood/>

- mobilization framework by Member States
8. Mainstream FRM into critical sectors such as infrastructure, agriculture, water and sanitation, health, education, urban development and any other relevant sectors to enhance their resilience and build momentum.
 9. Establish IGAD Inter-Institutional FRM committees to enhance coordination to address FRM crosscutting concern in the programs within the specialized institutions and programs.
 10. Encourage investments in community resilience and Cultural coping mechanisms and disaster preparedness for effective response in all the Member States

2.5.4 Priority Area 4: Preparedness for effective response in Recovery, Rehabilitation and Reconstruction, incorporating the Build-Back-Better Approach

Experience indicates that disaster preparedness needs to be strengthened for more effective response and ensure capacities are in place for effective recovery. Disasters have also demonstrated that the recovery, rehabilitation and reconstruction phase, which needs to be prepared ahead of the disaster, is an opportunity to 'Build Back Better' through integrating disaster

risk reduction measures. Women and persons with disabilities should publicly lead and promote gender-equitable and universally accessible approaches during the response and reconstruction phases. There is only one strategic objective for this priority area, namely:

Strategic Objective 7: To strengthen the FRM system, preparedness and responses and post flood risk framework at community, national and regional levels

Interventions for Strategic Objective 7

1. Map, upgrade and modernize flood hazard prediction and early warning system (including indigenous knowledge) through application of state-of-the art science and technology
2. Enhance research programs on flood hazards, models to predict their occurrence, and technology to detect and monitor them and to disseminate warnings;
3. Strengthen FEW cultures in Member States
4. Establish dam safety audit mechanisms (for small dams only)
5. Establish robust monitoring, reporting and verification institutional arrangements
6. Ensure FEWS is informed by climate change scenarios and information
7. Establish monitoring and evaluation reporting system for FRM
8. Establish transboundary FEWS frameworks for the transboundary basins
9. To enhance post disaster needs assessments and recovery actions
10. Support development of gender sensitive regional guidelines for integrating FRM into response, recovery and reconstruction
11. Guide implementation of CDDs as avenue for FRM and Building Back Better initiatives using the Kenya case as an example (moved from priority area 2)

03

IMPLEMENTATION AND OPERATIONAL ARRANGEMENTS

PHOTO © Easton Mok/Unsplash

3.1 IMPLEMENTATION STRUCTURES AND MULTI-STAKEHOLDER PLAYERS

This strategy applies to both the regional and national stakeholders as follows.

3.1.1 Regional Stakeholders

The Table 3 (shown below) gives the regional stakeholders and their roles in FRM leadership

Table 4: Roles of the regional stakeholders

Actors	Areas of Intervention
IGAD	<ul style="list-style-type: none"> • Resources mobilization • Promote Ratification of the related international agreements • Lobbying for political support from member states • Guidance on implementation of the FRM strategies through the Technical Advisory Committees • Promote donor support on the regional FRM initiatives • Promote policy reviews and development in member states • Capacity building and sustainability in the region and within the member states • Integration of existing regional institutions and strategies which are relevant to FRM in the region • Promote negotiations on agreements on trans-boundary initiatives

2020 - 2030

Actors	Areas of Intervention
ICPAC- DRM Unit	<ul style="list-style-type: none"> • Development of Flood Early warning systems • Development of Flood Prediction and applications products • Development of Climate Change, mitigation and adaptation actions to inform FRM • Flood Knowledge development, capacity building and sustainability • Enhancement of FRM communications within and between member states • Host FRM coordination unit • Lobbying for Implementation of FRM frameworks • Lobbying for FRM communications within and between • Member states Gender balance/concerns • Mapping and engagement of stakeholders in FRM • Capacity building and sustainability in FRM • Lobbying for data exchange protocols • Lobbying for support from donor organization • Coordination of Transboundary issues of floods • Coordination of FRM activities and mechanisms in the Member States and the region • Lobbying for FRM budget allocation in Member States • FRM Knowledge development • Synergy of FRM activities between member states

3.1.2 Actors/Stakeholders and Areas of FRM Coordination in Member States

The Table 4 (shown below) gives the Member States' actors/stakeholders and their roles in FRM leadership

Member State	Actors/Stakeholders	Areas of Intervention (All member states)
Djibouti	<ul style="list-style-type: none"> • Ministry of Interior (Department of Civil Protection) • Secretaria Executif pour la Gestion de Risques et de Catastrophe (SEGRC) • Agence Nationale De la Météorologie de Djibouti (ANM) • University of Djibouti • Ministry Agriculture • Ministry of Environment • Ministry of Scientific and Higher Education • Ministry of Social Services 	<ul style="list-style-type: none"> • Implementation of the DRM policy • Assessment and implementation of FRM needs in the Member States



Member State	Actors/Stakeholders	Areas of Intervention (All member states)
Ethiopia	<ul style="list-style-type: none"> National Meteorological Authority (NMA) The Ministry of Water, Irrigation and Energy (MOWIE)/BDA National Disaster Risk Management Commission (NDRMC) (iv). Academic Institutions (Addis Ababa University, etc) 	<ul style="list-style-type: none"> Assessment and implementation of capacity needs in the Member States Reviews of the MS DRM policy
Kenya	<ul style="list-style-type: none"> Regional River Basin Development Authorities National Disaster Operations Centre (NDOC) Ministry of Interior and Coordination of National Government County Governments Ministry of Water, Sanitation & Irrigation Water resources Authority (WRA) Academic Institutions (University of Nairobi, Masinde Muliro University of Science and Technology, etc) 	<ul style="list-style-type: none"> Implementation of the FRM activities and outcomes in the MS
Somalia	<ul style="list-style-type: none"> Ministry of Water, Energy, Petroleum & Mineral Resources Ministry of Humanitarian Affairs & Disaster Management (MOHADM) Somalia Meteorological Department Academic Institutions (University of Banadir, Mogadishu) Ministry of Agriculture Ministry of Civil Aviation and Air Transport (Meteorological Services) 	<ul style="list-style-type: none"> Develop and coordinate FRM synergies within MS sectors FRM data and information sharing within the MS
South Sudan	<ul style="list-style-type: none"> Ministry of Humanitarian Affairs & Disaster Management (MoHADM) South Sudan Met. Department Academic Institutions (University of Juba, etc) Ministry of Water Resources and Irrigation 	<ul style="list-style-type: none"> Structural/non-structural flood risk management
Sudan	<ul style="list-style-type: none"> Ministry of Irrigation and Water Resources. Sudan meteorological Authority Humanitarian Aid Commission (HAC) Academic Institutions (University of Khartoum, etc) (Ministry of Infrastructure and Urban Planning Remote Sensing Authority 	<ul style="list-style-type: none"> Watershed conservation
Uganda	<ul style="list-style-type: none"> (Uganda National Meteorological Authority (UNMA) Ministry of Water & Environment (MWE) DRR Platform Office of the Prime Minister (OPM) Academic Institutions (Makerere University, etc) Uganda Red cross/Crescent Kampala Capital City Authority (KCCA) Ministry of Finance 	<ul style="list-style-type: none"> Ratification of FRM policies and strategies

2020 - 2030



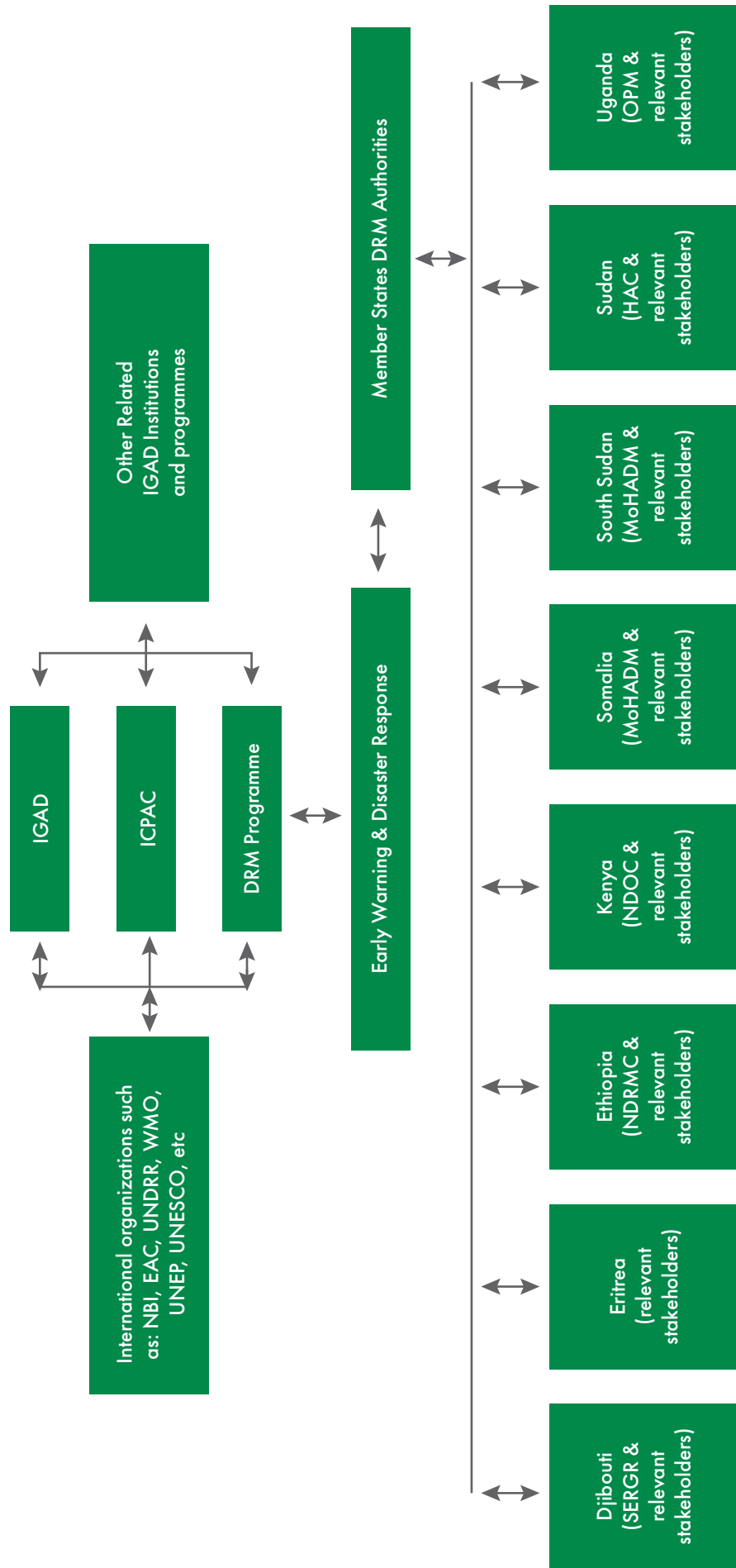


Figure 8: Flowchart for the communication channels between MS and DRM Programme of IGAD for the implementation the FRM Strategy

2020 - 2030

04

MONITORING AND EVALUATION FRAMEWORK

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Monitoring can be defined as the process of continually tracking the implementation of planned programmes or activities to assess their progress and performance. Evaluation is the determination of to what extent set objectives have been successfully met. Monitoring and evaluation (M&E) provide regular and timely information in support of evidence-based decision-making serving as a key driver towards the realization of the envisioned goal(s). The information prepared will include progress made, challenges encountered and identified emerging issues.

This strategy employs best practice principles that calls for IGAD DRM Unit to use a framework that includes indicator identification; frequency of data collection; responsibility of data

collection; data analysis and use; reporting and dissemination to guide the monitoring process; assessment of progress towards achieving planned outcomes; evaluations focused on why results are being achieved, or not; clear logical pathways where results from one level flow towards the next level and so on leading to the achievement of the overall goal.

The monitoring and evaluation framework shall be managed by the IGAD DRM unit. The M&E of this strategy shall be integrated with the IGAD performance management process to eliminate duplication of effort and to make the process more effective. The strategic actions by priority area, expected results and targets shall be used in monitoring progress on the implementation of this Strategy. Progress on the status

of implementation of this Strategy will be evaluated using the IGAD Regional Strategy for Disaster Risk Management (IRSDRM 2019-2030), Programme of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Africa PoA (2016) and SFDRR (2015-2030) frameworks.

It is recommended that Member States prepare annual reports on status of implementation of their activities using an IGAD acceptable format. The annual reports from Member States should be shared with respective national platforms and development partners.

2020 - 2030

4.1 INDICATORS AND TIMELINES

At IGAD regional level, a number of indicators shall be used to monitor progress of implementation of strategic actions in this strategy to achieve the envisaged objectives and outcome. The strategy will operate from 2020 up to end of 2030 in line with the Sendai Framework.

To support the assessment of global progress in achieving the outcome and goal of the Sendai Framework, agreed seven global targets complemented development of appropriate indicators.

The indicators shown in tables given below (Tables 5 to 8) shall be used to monitor progress will contribute to the achievement of the outcome and goal

of this Strategy. The indicators are in line with the Sendai Indicators for Target E , which aims to substantially increase the number of countries with national and local disaster risk reduction strategies by 2030.

Table 6: FRM strategic indicators (Priority Area 1) - Understanding Flood Risks

2020 Short-term	2025 Medium-Term	2030 Long-term
<ul style="list-style-type: none"> • A Flood Risk Management Unit established • FRM needs assessments completed in all Member States • Minimum hydrometeorological gauging network established in South Sudan and Somalia. • Proportion of Member States with functional national and sub national multi stakeholder FRM platforms; • Proportion of Member States with developed frameworks to periodically assess flood risks. 	<ul style="list-style-type: none"> • Optimum hydro meteorological gauging network established in all member states • FRM education developed and integrated into school curricula in the Member States • Proportion of members states with developed frameworks for regular assessment of flood resilience in infrastructural and sectoral systems • Proportion of Member States strengthening technical and scientific capacity to capitalize on and consolidate existing FRM knowledge; 	<ul style="list-style-type: none"> • Proportion of Member States promoting investments in innovation and technology development in long-term to address gaps, obstacles and inter-dependencies in flood risks • Common information systems and data sharing protocols established for cooperation and capacity development to address common and trans-boundary flood risks by way of supporting initiatives like the IGAD-HYCOS project • A comprehensive flood risk and vulnerability mapping completed in the Member States

Table 7: FRM strategic indicators (Priority Area 2) - Strengthening Flood Risk Governance

2020 Short-Term	2025 Medium-Term	2030 Long-Term
<ul style="list-style-type: none"> • Number of technical, financial and administrative flood risk management capacity assessments carried out to deal with flood risks • Regional and national FRM communication strategies developed/strengthened 	<ul style="list-style-type: none"> • Proportion of Member States with integrated and strengthened transboundary FRM systems and strategies • Proportion of Member States with FRM integrated into national and sub national development plans • Proportion of Member States with gender-sensitive FRM strategies aligned to SFDRR (2015-2030) and IGAD strategy 	<ul style="list-style-type: none"> • Proportion of Member States that have reviewed and harmonised FRM policies to enhance sector implementation • Transboundary information systems created for cooperation and capacity development to address common and trans-boundary flood risks

Table 8: FRM strategic indicators (Priority Area 3) - Investing in Flood Risk Reduction for Resilience

2020 Short-Term	2025 Medium-Term	2030 Long-Term
<ul style="list-style-type: none"> • Proportion of member states with completed assessments on investment mechanisms for FRM and resilience • Actions guided at IGAD level to leverage on bilateral and multilateral development aid framework funding opportunities including the Green Climate Fund established (ICPAC to strive to become an accredited GCF NIE) • Proportion of Member States with FRM education integrated into school curricula • Proportion of member states with completed watershed conservation assessment reports 	<ul style="list-style-type: none"> • Actions guided at IGAD level to develop an elaborate regional resource mobilization framework • Number of FRM Green Fund programmes in the region • Proportion of Member States that have set budget allocations to support the implementation of FRM • Proportion of member states with clear and specific watershed conservation frameworks • Proportion of Member States adopting and implementing critical FRM infrastructure flood protection measures. 	<ul style="list-style-type: none"> • Number of reviewed or negotiated trans-boundary agreements/ protocols with regards to the use of structural flood protection measures in shared basins • Functional FRM structural and non-structural flood risk management PPP investment programmes in the region established • Proportion of Member States that have revised or developed new building codes, guidelines and standards in view of flood risks • Proportion of Member States with mainstreamed flood risk assessments guidelines and follow-up tools into land-use policy development and implementation

Table 9: FRM strategic indicators (Priority Area 4) - Enhancing Flood Preparedness for Effective Response and to “Build Back Better” in Recovery, Rehabilitation and Reconstruction

2020 Short-Term	2025 Medium-Term	2030 Long-Term
<ul style="list-style-type: none"> • Proportion of Member States with integrated and strengthened FRM systems and strategies • Proportion of the population covered with flood hazard early warning system • Proportion of Member States with FRM preparedness, contingency and post-disaster frameworks 	<ul style="list-style-type: none"> • Proportion of Member States co-generating transboundary FEW information • Proportion of Member States with reviewed/developed poverty reduction policies • Proportion of Member States with gender-sensitive FRM strategies aligned to SFDRR (2015-2030) and IGAD strategy 	<ul style="list-style-type: none"> • Proportion of Member States with established Community Driven Development (CDD) centres for the promotion of FRM public awareness and as avenue for EWS and “Build Back Better” initiatives • Proportion of Member States with post flood disaster response and BBB programmes for flood prone areas

4.2 SOURCES OF INFORMATION

The existing national flood statistics systems and relevant regional/international databases/institutions will provide the data and means to verify evidence on progress made towards meeting FRM strategy objectives and implementation of strategic actions in this strategy.

A monitoring, reporting and evaluation tool consistent with the Sendai Monitoring guidelines shall be developed by DRM to feed into monitoring requirements of this strategy and the Sendai Framework.

4.3 STRATEGY REVIEW PROCESS

As a standard corporate practice, this Strategy will be reviewed after every three years within established IGAD practices and guidelines for reviewing its strategies, policies and related frameworks.

The experience gained from monitoring and evaluating this strategy will inform the management of the Strategy through effective learning. This information will also be used to promote a culture of learning and application of lessons learned.

This strategy shall support establishment of a regional FRM multi stakeholder platform in line with PoA (2016) and the SFA(2015-2030). The strategy shall:

- Provide a coordination mechanism for a harmonized implementation and monitoring of FRM efforts in IGAD and Member States;
- Harmonize coordination of FRM in the region;
- Provide advocacy and technical support for a synergized implementation of FRM.
- Provide a mechanism for learning, sharing experiences and good practices on FRM efforts by the Member States, partners from UN systems, civil society, academia and development partners.

The experiences of the stakeholders and partners will be documented and shared to enhance better practice of FRM so as to propel the implementation of this strategy and contribute to the regional and national agenda.





PEACE, PROSPERITY AND
REGIONAL INTEGRATION

IGAD: info@igad.int
www.igad.int

ICPAC: icpac@igad.int
www.icpac.net