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Cooperation in Disaster and Climate Risk Management in AAGC

Rajeev Issar

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Key Recommendations

- Recognizing the close nexus between development and disaster/climate risks, both the Sendai Framework for DRR as well as the 2030 Agenda reinforces risk-informed development as an underpinning notion.
- Given Africa's susceptibility to multiplicity of risks including climatic and hydro-meteorological hazards, disaster and climate risk management are key to build national and community resilience and facilitate risk-informed development.
- In view of shared challenges related to disaster risks and climate change impacts on socio-economic development, the countries in Asia especially Japan and India can share their experience and expertise with African countries to help deal with high-magnitude disasters, in saving lives, protecting livelihoods, sustainability of development gains and building socio-economic resilience.
- Under the AAGC, both India and Japan should seek to focus on Africa's development challenges and opportunities with emphasis on human security, environment and natural resource preservation, risk management, governance, as well as inclusive growth through collaborative partnerships.
- Potential areas of collaboration under AAGC are Disaster Risk Information and Climate Services, Data and Statistical Analysis, Risk-informed Urban Development, Capacity Development, Climate Change Mitigation and Adaptation Action, Knowledge Management and Information Sharing among others.

Cooperation in Disaster and Climate Risk Management in AAGC

Rajeev Issar*

Abstract: The frequent occurrence of natural disasters worldwide has caused massive loss of human lives and resources in the recent years, and has amplified the severity in terms of lost output and job loss. In view of the escalation of risks across the affected countries, the Sendai Framework and the 2030 Agenda have stressed upon the importance of the Risk-informed Development. A number of countries in Asia and Africa have faced floods, tsunamis, droughts, earthquakes, etc in the past and continues to remain prone to high-risk natural disasters. In that context, this paper gathers the risks associated with natural disasters in the AAGC region and identifies the possible areas of collaboration between India, Japan and other countries in Asia and Africa. It also highlights the experiences of India and Japan in disaster management which can be adopted in the African countries. The scope of cooperation in AAGC could broadly cover the disaster risk information and climate services, strengthening data and statistical analysis of disaster-related information, risk-informed urban development, capacity building, climate change mitigation and adaptation, and knowledge management and information sharing.

Keywords: AAGC; disaster; risk; capacity building; climate change

Introduction

The increase in the number of incidences, frequency and magnitude of natural disasters reflects a world of increasingly multi-dimensional and persistent risks and uncertainty. Risk-informed development has thus been reinforced as an underpinning notion in the Sendai Framework[1] for the Disaster Risk Reduction (DRR) as well as for the 2030 Agenda. The well-acknowledged link between development

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and disaster/climate risks makes it imperative to ensure that the development choices made by countries and communities help reduce exposure and vulnerabilities to risks. Thus, disaster and climate risk are not exogenous to development; rather development itself is a key driver of risk (viz., urbanization, settlements in hazardous areas, infrastructure development like roads, bridges, dams, embankments, buildings etc.); unless it is risk-informed, for example use of flood-plains for construction or settlements or cutting down of mangroves and land reclamation on sea coasts for hotels or human settlements etc. Risk-informed development, therefore, provides the potential to design a new development paradigm in all countries, and more particularly in the African context.

Sectoral Profile

Building climate and disaster resilience is key for sustainable development, resilient livelihood and prosperity in Africa as well as for overall human, social and economic development. Investing in the entire spectrum of issues connected with the risk prevention, mitigation, preparedness, and response and recovery can be a catalyst for building national, socio-economic resilience and advance sustainable and risk-informed development as envisaged under the global 2030 Agenda, including the Sendai Framework for DRR (SFDRR), the Sustainable Development Goals (SDGs)[2] and the Paris Agreement[3].

African continent is susceptible to a range of natural hazards, ranging from droughts, floods, landslides, sea- level rise, earthquakes, and has been affected even by the tsunamis, originating in the Indian Ocean. However, the primary vulnerability relates to climate-related and hydro-meteorological hazards which have shown, over the past decade, an increasing evidence of translating into extreme events. This is evidenced by the recurrent and protracted droughts in the Horn of Africa and the Sahel regions. The peculiar coalescence of disaster and climatic risks is leading to an increasing incidence, frequency and magnitude of disasters with wide-ranging socio-economic impacts.

Underlying risk factors like climate change, high incidence of poverty, haphazard urbanization, environmental degradation, socio-economic inequalities, overwhelming dependence of key development sectors and community livelihoods on weather and climatic patterns and increasing stress on and competition for natural resources are aggravating vulnerabilities. The combination of weak infrastructure (irrigation, water storage, safe roads, schools and hospitals), weak governance system (limited enforcement of building codes and environment regulations, limited accountability for risk management) and low human development (education, health, gender inequalities), and socio-political "fragility" as defined by G7+ and the Organization for Economic Co-operation and Development (OECD)[4] all contribute to increasing vulnerability. High exposure and vulnerability to low adaptive and risk management capacities, high climate sensitivity of African economies and livelihoods and shifting climatic patterns are having a wide-ranging effects on the key development sectors like agriculture, food security, water, health, environment and forests, eco-systems etc. Community livelihoods are highly dependent on climate-sensitive sectors. In Sub-Saharan Africa, nearly 800 million people are dependent on rain-fed agriculture. On average, 25% of the region's gross domestic product is derived from agriculture, 70% of its work force is in rural sector accounting for most of the region's exports.

The cost of disasters is increasing in Africa due to increased exposure of its population and economies to disaster risks and increase in frequency and magnitude of extreme weather events owing to climate change. Disasters contribute to between 3 and 15 per cent of annual loss of GDP of African countries. Climate change represents a fundamental challenge to the sustainability of Africa's growth momentum. Africa's costs for adapting to impacts resulting from past emissions are estimated to reach between USD 7 and 15 billion annually by 2020, and may increase up to USD 50 billion per year by 2050[5].

The IPCC Fifth Assessment Report[6] presents strong evidence that warming over land across Africa has increased over the last 50–100 years, and that the temperature rise is likely to increase progressively in Africa, and that other climate-related effects such as variability in precipitation pattern and frequency of extreme weather events would exert considerable pressure on the livelihoods and economies across the continent. Precipitation unpredictability would affect approximately 90 million people at risk in Africa due to decadence of renewable water resources in low- rainfall areas. Livelihoods of a vast majority of people and communities as well as national development processes are overwhelmingly dependent on rainfall. A perceptible change in rainfall pattern has been observed with increasing incidence of concentrated precipitation (causing flash floods, floods, landslides, water- logging) and acute shortage of rains (causing droughts, environment degradation, water scarcity).

In Africa, there is a close cause and effect relationship between disaster/climate-related impacts -- including environmental degradation – and social unrest and conflicts, particularly relating to natural resources, which are fundamental to economic development and people's livelihood. Though this leads to by far the smallest portion of CO^2 emissions, still Africa is particularly susceptible as its economy depends largely on zones rich in natural resources which are highly climate- sensitive. In places like the Sahel and the Horn of Africa, intersection of disasters and climate change with competition over land and natural resources is fueling social unrest and conflict.

Disaster and climate risk management would help build national and community resilience and facilitate risk-informed development with an inherent ability to prevent, mitigate, manage and respond to multiplicity of risks and their inter-connected strands to play upon and aggravate one another. The experience of dedicated partners like Japan and India would help contribute in saving lives, protecting livelihoods, sustainability of development gains and building socio-economic resilience at all levels.

Cooperation Scope and Priorities

The cooperation approach shall be based on the shared principles of regional and national ownership as well as partnership building. The approach would seek to focus on Africa's development challenges and opportunities with emphasis on human security, environment and natural resource preservation, risk management, peace and stability as well as inclusive growth through collaborative partnerships. It would focus on strong engagements of technical, research and academic institutions, private sector and civil society organizations, and help identify overall scope and priorities for actions to respond in particular to needs of immediate to medium-term to long-term, articulated by the African countries, institutions and communities as well as in line with global commitments related to the 2030 Agenda.

There is a huge scope for cross-continental cooperation between Asia and Africa due to the shared challenges related to disaster risks and impacts of processes associated with climate change. Countries in Asia, especially Japan and India, have faced high-magnitude disasters, both geological and climatic, over the past decades as is evidenced by the Indian Ocean tsunami, the Great East Japan Earthquake and Tsunami and cyclones/hurricanes and floods.[7]

Japan, one of the most earthquake-prone nations, has the world's most sophisticated earthquake early-warning systems. Japan's tsunami- warning service monitors seismic activity 24×7, and consists of a network of around 380 sensors. It has been designed to predict height, speed, location, and arrival time of tsunami, which heads towards Japanese coast. It has also prepared building guidelines while considering earthquake resilience structures in Japan. The Asian Disaster Reduction Center had been established in Kobe, Hyogo, Japan, to build disaster resilient communities for providing platforms to facilitate personnel exchange.

Japan also invests considerably into raising awareness about disaster preparedness among the people in the form of 'Disaster

Prevention Day' within the framework of Disaster Prevention Week. Comprehensive emergency drills are carried out including several thousands of participants, regional and local authorities and disaster-management personnel.The Japan International Cooperation Agency (JICA) has played an important role in assisting Pakistan to prepare and finalize its National Disaster Management Plan, more particularly, dealing with its capacity- building. From its experience of reducing, managing and recovering from a range of mega-disasters, happened over the past decades, India has strengthened its institutional, legislative and policy frameworks, systems and capacities while at the same time has improved coordination and synergies at all levels among different agencies and stakeholders. The lessons from the Orissa Super-Cyclone, 1999, the Gujarat Earthquake, 2001, the Indian Ocean Tsunami, 2004 and others gave an impetus to the need to focus on the entire cycle of disaster- risk management.

The recognition that a comprehensive disaster and climate risk management approach is needed to prevent, mitigate, manage and recover from their adverse impacts led to the enactment of the National Disaster Management Act in 2005 by Parliament. A dedicated focus on capacity- building has been entrusted to the National Institute of Disaster Management (NIDM) with responsibility to develop training modules and course curricula to cater to a range of capacity needs and to act as a catalyst for cutting-edge research and knowledge on the subject. The need to respond in a timely and effective manner to disaster and crises situations led to the creation of the National Disaster Response Force (NDRF), under the National Disaster Management Authority (NDMA), with trained, skilled and equipped personnel who would respond to the search, rescue and evacuation requirements for multiple disasters.

With a view to strengthen its weather and hazard monitoring and tracking, India has systematically invested in strengthening its capabilities by harnessing potential offered by latest scientific and technological advancements. India has, in the aftermath of the Indian

Ocean Tsunami, deployed a tsunami monitoring and alert system in the Indian Ocean, which is benefitting many Indian Ocean rim countries. The advancements made and the breakthroughs offered by the space technology are also being utilized to monitor, track and relay timely warnings about impending hazards of cyclones, heavy concentrated rainfall, droughts etc. Technological upgrading in technical institutions like the Indian Meteorological Department (IMD), the Indian Institute of Tropical Meteorology (IITM) and INCOIS is helping generate timely warnings and alerts to regions and communities likely to be impacted by adverse climate events. India has recently launched a dedicated satellite to provide geo-spatial services and support navigation and early warnings for disaster and climate risks to the countries in the neighborhood, and has an inherent potential for being extended to other countries too.

As a responsible member of the comity of nations, India is supporting countries in South Asia, South-East Asia and others, and is contributing actively through regional mechanisms like the South Asian Association for Regional Cooperation (SAARC) as well as bilateral agreements. Operation 'Maitri', India's assistance to earthquake-affected Nepal, is the largest relief and rescue mission undertaken by India outside its own borders. India has also undertaken ambitious national programmes to ensure hazard-specific risk management with focus on principal hazards like cyclones, earthquakes etc.; and the technical, knowledge and programmatic experiences gained can be used to undertake similar initiatives by other regions and countries.Thus, there is a considerable expertise and knowledge generated based on the experience of managing and recovering from these disaster events ,which can be harnessed to support disaster and climate risk management practices at regional, national, sub-national and community levels along the corridor.

Specific Projects and Recommendations

The Asia-Africa cooperation in the field of disaster and climate risk management has inherent potential to address a whole spectrum of issues to strengthen risk- management capacity of African countries

and communities while at the same time fostering a risk-informed development paradigm to mitigate their impacts. Some of the potential areas of collaboration are as follows.

Disaster Risk Information and Climate Services

Considering increased frequency and occurrence of disaster (extreme as well as small-scale or localized) events, it would be imperative to strengthen disaster risk and climate information services through a regional and a national level inter-connected monitoring, tracking, dissemination and early warning network. Regional early warning systems are constrained by weak capacities in climate, environmental and disaster risk analysis, monitoring and forecasting, and lack of synergies between local, national and regional levels. A disaster and climate monitoring and an end-to-end early warning system with strong mechanisms for early action with specific reference to principal and recurrent hazards and with focus on instituting capacities would be supported to ensure that information on climate, environmental and disaster- risk is efficiently disseminated and applied to early warning, preparedness and mitigation. A comprehensive risk- management framework would be developed to promote cross- border cooperation.

In this context, collaboration between the meteorological and the disaster management agencies would help incubate technological and human resource capacities. The experience of earthquake and tsunami monitoring and early warning systems as well as the space-based weather monitoring and forecasting system of India (used for predicting the trajectory and intensity of cyclonic systems) can be harnessed to strengthen capacities, systems and institutional mechanisms to inform and support climate-informed development decision-making while considering African countries' high susceptibility to climatic risks and impacts. A number of regional organizations in Africa like the Inter-Governmental Authority for Development (IGAD) and ECOWAS, ACMAD, ICPAC, AGHRYMET etc. have developed some capacities and systems for climate information services and early warning over the past decades.[8] The activity would entail working with regional

climate/weather monitoring and tracking agencies to strengthen their technological and human resource capacity for analysis, generation and dissemination of climate and disaster related information and early warning. This would be for strengthening capability to forecast long-term weather and climate impacts and customize detailed climate data and risk information.

The existing regional mechanisms would be further strengthened and collaboration with counterpart technical and specialized agencies in Japan and India would be established to augment on-going work and collaboration in this regard. The activity would also focus on promoting linkages with identified regional and international technical institutions/organizations to complement capacities and technical resources for enhanced impact. Efforts would be made to provide technical support to conduct disaster and climate -risk assessments for providing actionable risk information to feed into long-term development planning for key socio-economic development sectors. Increased accessibility and application of adaptation and disaster- risk information in development planning by public and private sector stakeholders at the national and at the sub-national levels would help inform about risks in development processes in African countries. Experience from Japan and India as well as from other successful contexts would be shared as part of the knowledge networking and information sharing efforts to facilitate the same.

Data and Statistical Analysis

African countries face huge challenges vis-à-vis instituting and strengthening their data collection and statistical analysis as well as its application for development planning and monitoring. The data constrained environment of many African countries creates a huge information gap to support informed development planning and effective risk management interventions. While the technical expertise and experience of the Japanese technical and academic institutions, with a lot of focus on data collection, analysis and application for policy and development decision-making, can be useful to promote a

risk-informed development planning process. During the Third World Conference on Disaster Risk Reduction in Sendai, Japan, in March 2015, Japan, in collaboration with international organizations, had announced launch of its Global Center for Disaster Statistics (GCDS), and technical expertise can be utilized to institute a data monitoring and statistical analysis approach at the regional and national level. The disaster data and statistical systems in India can also partner in the effort considering their advanced data management capacities. The initiative can also promote active engagement and participation of technical and research institutions as well as the private sector entities to tap into their Corporate Social Responsibility (CSR) resources and technical man-power.

Data and statistical analysis is an extremely important area of collaboration and partnership with African technical and academic institutions, and regional/national statistical agencies can be promoted to build data- management capacities. The tri-lateral cooperation can help exchange of expertise, technical know-how and capacities and help foster a long-term development planning approach.

Risk-informed Urban Development

With nearly 2/3rd of Africa likely to be living in urban centres by 2050, Africa's urbanization rate has been and will continue to be remarkable as it is estimated that 22 out of 34 cities with a population growth of more than 4 per cent are located in Africa. While at present only 40 per cent of Africa's population lives in cities, 900 million more people would be living in African cities by 2050 -- a 190 per cent increase. With rapidly growing urbanization and high exposure to natural hazards, Africa's urban risk would almost certainly continue to rise.[9]

The impacts of climate change pose further challenges, magnifying risks and increasing cost of disasters. A report from the *Robert S. Strauss Center for International Security and Law* reveals that changing weather patterns would compound challenges in the

growing African cities, where chronic poverty, poor infrastructure system, and lack of adequate shelters and social services are inadequately addressed. The convergence of developmental need and disaster and climatic risks in the cities would greatly undermine the development progress in African countries. This calls for a more systematic effort to promote planned urban development with adequate risk- management systems.[10]

Japan, considering its high exposure to disaster risks and high urbanization rate, has already established well-honed systems and capacities for protecting urban infrastructure and socio-economic development sectors. The experience from India under the Smart Cities programme and development of techno-legal regime for sustainable urban development can be complemented with the experience of Japanese cities as centres of innovation, and sustainable development can share valuable knowledge and strategy for risk-informed urban development. Promotion of disaster- resistant construction practices through land-use planning and building codes, building evidence-base through risk assessments, disaster data bases to inform urban development planning, strengthening urban response and search and rescue capabilities as part of the DRR approach is being complemented with a focus on the climate adaptation and mitigation by resilience plans, enhancing adaptive capacity of cities, ensuring energy-efficient buildings, promoting low-emission public transportation and industrial technologies.

Capacity Development

At any point of time, more than a third of all countries in Africa are recovering from disasters. This necessitates a heightened state of disaster preparedness, response and recovery at all levels including local administrations and communities. This activity would facilitate preparedness systems to address effectively the consequences of and responses to natural hazards and other crises. Strengthening institutional, regulatory and preparedness context at the regional, sub-

regional and national levels would be undertaken to enable countries to anticipate, respond to and to recover from disasters and other crises. This will be integrated into and linked with risk information and early warning systems to enhance efficiency of the systems and to implement integrated approaches for risk management. Strengthening national response and recovery capacities would help deploy the same more efficiently and in a timely manner at the sub-regional and regional level.

This would include training and capacity building of specialized response and civil defense agencies with specific focus on urban e-centres to respond quickly and help people recover from ill-effects of disasters. The specialized response organizations like the National Disaster Response Force (NDRF) in India would be used to create a cadre of trained and skilled personnel in designated agencies to support disaster and post-crises response and rescue. This will involve support for developing context-specific training manuals and SOPs etc. Capacity development on disaster preparedness and response will help incubate in-region capacity among countries in the region.

The activity will support establishment of sustainable capacities for recovery planning to ensure that regional and national authorities have processes in place to design and finance recovery to facilitate fast-tracking of planning and implementation of post-disaster recovery, and using recovery planning as an opportunity for reassessing risk and building comprehensive resilience to disasters. The overall focus of the effort would be to create a dedicated cadre of skilled human resource in the field of disaster- risk reduction and climate adaptation to share experiences, knowledge, skills and expertise with recipient countries and also a connect to experts in Asia as well as internationally.

Climate Change Mitigation and Adaptation Action

Africa's susceptibility to climate change and its wide-ranging impacts across a range of sectors is quite high. A heavy reliance on agriculture

and natural resources for livelihoods along with burgeoning expansion of cities with settlements springing up with poor infrastructure and low quality housing further compounds the challenge posed by climatic processes in Africa. This vulnerability is further enhanced due to very low adaptive capacity among people, development sectors and governments. The IPCC assessments indicate adverse socio-economic impacts of climate change on community livelihoods, socio-economic development and resilience.[11] This calls for instituting an effective risk management approach with particular focus on climate sensitive development sectors coupled with an assessment to identify the short, medium and long-term risk management and development priorities.[12]

Technical assistance and guidance will be provided to develop climate change mitigation and adaptation plans to help countries respond to potential climate risks, including rising sea levels, coastal water ingress, urban flooding and to evaluate potential effects of climate change. The experiences from Japan and India as well as other countries would be used to inform the process. The support would include cross-sectoral adaptation policy implementation to be mainstreamed in development plans of the national and local governments. Key climate sensitive sectors like agriculture, water resources and environment would be specifically looked at as key disaster- risk mitigation and climate adaptation tools; as protecting natural resources would also contribute towards building resilience of communities and their livelihoods.

Dedicated programmes to educate and train technical agencies, universities and meteorological departments to build systems for compiling and computing climate change data will be useful for analyzing emerging trends and projections and help develop appropriate risk mitigation and adaptation measures. Technological assistance will be extended to support countries moving towards climate-resilient and green economy and for achieving a zero-emission development trajectory.

Knowledge Management and Information Sharing

The partnership will seek to bring together knowledge, information and experience related to successful disaster -risk reduction and climate change adaptation experiences from Japan and India and also from other countries with corresponding development and risk management context. This will include academia, research institutions, private sector and civil society organizations for informed decision-making and to assist adaptation actions both in terms of their plans and implementation. This will help meet information management needs during and after a disaster event.

A number of formal and informal platforms are to be created for information exchange and dialogue on issues related to disaster management to seek solutions. These would involve government, private sector, academia and other stakeholders. Their experiences which we have discussed today attest to the fact that building resilience is not a one-off, stand-alone affair. It is an incremental and collaborative effort. At its core it is a commitment to integrate risk reduction within the development process, which also seeks to ensure that this process is grounded in functioning governance systems. This necessitates a long-term commitment to change and the Asia-Africa Growth Corridor initiative and the partnerships envisaged under it would pave way for a better, secure and sustainable development in future for Africa and its people.

The Way Forward

The imperatives of advancing sustainable and resilient development in Africa mandate a close attention to risk management perspectives especially considering the preponderantly climate sensitive nature of key development sectors and a high dependence on natural and environmental resources. The well-acknowledged link between development and disaster/climate risks makes it imperative to ensure that the development choices made by countries and communities help reduce exposure and vulnerabilities to risks.

Strengthening the technical capacities of key disaster management and climate change related agencies/institutions as well as fostering greater horizontal and vertical coordination with socio-economic development sectors will be essential. This will help imbue the development processes with due risk management considerations and safeguard hard-earned development gains. The multiplicity of risks and their mutually exacerbating context necessitates advancing greater regional and international collaboration to ensure application of context-specific risk information and to harness the technical, financial and human resources.

Connecting the short, medium and long-term risk management and developmental priorities will help a risk-informed development approach and also institute the culture of risk management as an inalienable part of the development process at all levels in Africa including for community livelihoods. Making risk management an integral dimension of the development process will contribute substantially and effectively towards facilitating the reach of development gains to the vulnerable at the lower end of the social stratum. Strengthening the interface between DRR and sustainable development and reducing disaster/climatic risks to increase resilience to natural hazards especially in relation to the socio-economic development sectors can have multiplier effects and accelerate the achievement of sustainable development objectives.

Endnotes

1 http://www.unisdr.org/we/inform/publications/43291

2 https://sustainabledevelopment.un.org/?menu=1300

3 http://unfccc.int/paris_agreement/items/9485.php

4 A number of political, economic, social, environmental and security factors were considered to develop a 2016 list of 56 fragile country contexts – http://www.oecd.org/dac/conflict-fragility-resilience/listofstateoffragilityreports.htm

5 https://reliefweb.int/report/world/ipcc-5-fifth-assessment-report-whats-it-africa

[6] United Nations Intergovernmental Panel on Climate Change (IPCC) fifth assessment report, 2014

[7] http://asiancenturyinstitute.com/environment/40-natural-disasters-in-asia

[8] http://www.acmad-au.org/

[9] https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap8_Final.pdf

[10] https://reliefweb.int/report/world/urban-disasters-highlight-need-resilience-africa

[11] https://www.odi.org/publications/3485-financing-climate-change-adaptation-and-mitigation-africa-key-issues-and-options-policy-makers-and

[12] http://www.unisdr.org/files/24012_briefingnote04africa.pdf

References

African Centre of Meteorological Application for Development (http://www.acmad-au.org/).

Asian Century Institute: Natural Disasters in Asia (http://asiancenturyinstitute.com/environment/40-natural-disasters-in-asia).

Brown, Jessica., Djimingue Nanasta and Neil Bird. 2009. Financing Climate Change Adaptation and Mitigation in Africa: Key Issues and Options for Policy-Makers and Negotiators. Overseas Development Institute.

CDKN. 2014. The IPCC's Fifth Assessment Report What's in it for Africa?, Overseas Development Institute and Climate & Development Knowledge Network.http://www.oecd.org/dac/conflict-fragility-resilience/listofstateoffragilityreports.htm

Karanja, Evelyne. 2017. Urban Disasters Highlight Need for Resilience in Africa. UNISDR News (https://www.unisdr.org/archive/53015).

SustainableDevelopmentKnowledgePlatform(https://sustainabledevelopment.un.org/?menu=1300)

UNISDR (2011). Effective Measures to Build Resilience in Africa to Adapt to Climate Change, Briefing Note 04, United Nations International Strategy for Disaster Reduction, Geneva.

United Nations Climate Change: Paris Agreement :(http://unfccc.int/paris_agreement/items/9485.php)

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