



# **INSTITUTIONAL EFFECTIVENESS FOR DROUGHT EARLY WARNING, EARLY ACTION AND EARLY FINANCE IN KENYA**

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## 1. Introduction

Low- and middle-income countries face increasing threats of climate variability and extremes. The agricultural sector experiences significant risks, with smallholder farmers facing severe risks of increased temperatures, drought, flooding and other climate extremes. These threaten employment, food production, and economic and social systems, with women and youths being the most vulnerable. Therefore, CGIAR’s Building Systemic Resilience Against Climate Variability and Extremes (ClimBeR) aims to deliver science and innovation to transform food, land and water systems to improve smallholder farmers' resilience to severe climate change effects. ClimBeR’s Governance 4 Resilience (G4R) is being implemented as part of the initiative. It focuses on promoting multiscale polycentric governance and innovative tools to build the adaptive capacity of local communities while increasing their resilience to climate-related shocks. A core component of G4R is enabling responsiveness through the development of early warning, early action and early finance (AWARE) platform. The platform will facilitate coordination across ministries, Departments, local government, NGOs / CBOs and development partners to trigger timely early actions and investments before an extreme event strike for a better response to the affected people.

This case study focuses on drought conditions to analyse the early warning, early action and early finance initiatives required to reduce disaster impacts in Kenya. It particularly follows the ongoing multi-

season Horn of Africa drought (2014-2022) where Kenya is located. The case study further investigates the effectiveness of governance and institutional arrangements in place, such that socially inclusive systems and processes for responding to climate change can be developed and implemented.

## 2. Conceptual Framework: Polycentric system of governance for effective Early Warning

### **Early Action and Finance**

This paper grounds on the concept of polycentric governance as a key governance tool to improve early warning, early action and timely disbursement of finance (EWEAEF) to improve communities' resilience to climate-related shocks. Drought EWEAEF normally involves several institutions (public and private) operating at different scales. Given the ever-changing climatic risks, polycentric governance envisions a changing institutional landscape through greater emphasis on decentralisation, local actions and responsiveness to conditions in specific contexts (Jordan et al., 2018). It also advocates for entrepreneurial culture against rigid institutional frameworks (Jordan et al., 2018). Rather than aggregating institutions, polycentrism calls for multiple centres of decision-making, both formal and informal, with binding outcomes and greater coordination (Stephan et al., 2019). It minimises state oversight and allows 'self-organised institution building' to produce a governance outcome that is more effective and better adapted to a given socio-ecological condition (Jordan et al., 2018).

A polycentric governance system can have overlapping jurisdiction, but the institutions and decision centres are better coordinated, orderly in their courses of action and are guided by common principles or a set of laws (Stephan et al., 2019). When faced with social and environmental changes, such as climate change-related ones, the governance system is better able to adapt (Carlisle and Gruby, 2019). In addition, fully polycentric systems avoid the risks of institutional failures and resource losses from redundant decision-makers and institutions (Carlisle and Gruby, 2019). One key feature of the governance system is units of experiments for innovation and learning (Jordan et al., 2018). Jordan et al. (2018) describe a polycentric governance system as robust (if one unit fails, another can step in), with an enhanced system of accountability and legitimacy through the promotion of local action and participation, and more inclusive and equitable. They also identify three core features of the governance system. These are local actions, collaborations and overarching rules. They recognised that different

agencies should deliver different actions at an optimal scale or level. Notably, communities play a central role in polycentrism. They possess knowledge, skills and capacities to overcome several challenges and should participate in all EWEAEF measures. Providing communities with emergency relief without involvement could encourage dependency and long-term vulnerability (Venton et al., 2012). The 2010 Kenyan constitution created a devolved system of governance with 47 counties to address marginalisation and mismanagement at national levels and improve service delivery (Ngigi & Busolo, 2019). The counties reflect multiple decision-making centres. However, polycentrism demands high coordination among these decentralised counties to avoid fragmentation, especially for action on interconnected climate impacts (van der Plank et al., 2022). Section 6 draws on this polycentric governance concept and discusses the institutional gaps, especially related to coordination, policies and community engagement, that slow down EWEAEF progress in Kenya.

### 3. Methodology

This case study employed two methods. The first method involved a systematic literature review to identify existing Early Warning, Early Action and Early Finance, and the existing gaps in the governance and institutional arrangements. The major research questions guided the inclusion or exclusion of papers/documents reviewed for the study. These secondary materials included government publications, publications from international and national organisations, and other institutions. The resultant data was analysed using descriptive statistics.

Secondly, interviews were carried out with Early Warning Early Action and Early finance and the wider climate change adaptation practitioners. The following table presents a list of interviewees and their organisations.

The interview data were analysed using NVIVO and descriptive statistics. The following section discusses drought as a major vulnerability in Kenya and the focus of this paper.

## 4. Droughts and Existing Vulnerabilities in Kenya

Droughts have afflicted more people worldwide than any other natural hazard in the last 40 years, hurting major portions of populations and ruining livelihoods, livestock, and the natural resource base (Rojas, 2021). The drought impacts can be direct, for example, damages to livestock and crops or indirect, for example, disputes that arise as resources become limited. Another indirect impact is a drop in school attendance as children look for water and pastures for animals, especially in pastoralist communities (Government of Kenya, 2018, 2012; Mugabe et al., 2019). The impacts of droughts are experienced more by vulnerable groups such as women, girls, children and those without access to necessary resources and information.

Between 1960 and 2022, 17 drought events were recorded in Kenya, affecting about 60 million people, compared to floods which affected just under five (5) million people over the same period (EM-DAT, 2022). Poverty and vulnerability lie at the root of drought-induced emergencies in the country (Republic of Kenya, 2013a), and it is one of the 11 nations in the world at risk of facing disaster-induced poverty by 2030 (Shepherd et al., 2013). In addition, over 80% of Kenya's land mass is semi-arid or arid, where 30% of the population resides, and half of all the livestock are kept (Republic of Kenya, 2013a; Uhe et al., 2017). The dominant subsistence agriculture in these arid and semi-arid lands is heavily reliant on rainfall (Mugabe et al., 2019). Drought is, therefore, a major constraint to agriculture and a significant multiplier of vulnerability. For example, a 2017 drought following seasons of failed rainfall resulted in high food prices and over 3.4 million people were left food insecure, and approximately half a million others had limited access to water (UNICEF, 2018). Similarly, the ongoing 2021/22 drought has put 3.1 million people in the ASAL counties in dire need of relief assistance (National Drought Management Authority, 2022). Climate change is predicted to worsen the situation and lead to more drought emergencies (Santos et al., 2014).

Drought prediction coupled with early warning and early action, for example, through disseminating weather information to enable exposed individuals, communities and organisations to prepare, could significantly mitigate drought impacts (FAO, 2016). Notably, Kenya has adopted the Sendai Framework for Disaster Risk Reduction, leading to several initiatives, such as Forecast-based financing, to better prepare communities before disasters strike (Emerton et al., 2020).

## 5. Drought Early Warning Early Action and Finance in Kenya

### 5.1 Institutional Frameworks for Early Warning Early Action and Early Finance in Kenya

Several actors are involved in drought management, including Early Warning Early Action and Early Finance. These actors range from less organised and individual actors at village levels to specialised government and non-governmental institutions at the national level and international bodies/institutions. Table 1 summarises the stakeholders involved in EWEAEF at different levels. Most of these entities operate in a fragmented and uncoordinated manner. The core mandate of the National Drought Management Authority (NDMA) is to coordinate and harmonise multistakeholder drought response through an effective institutional framework (NDMA, 2020). However, policies and legislation at national and county levels are still lacking for effective drought management (Office of the Auditor General (OAG), 2020).

**Table 1:** Actors at different levels in EWEAEF

<b>Actors</b>	<b>Examples</b>
Local Communities	Households, religious institutions, local leaders (cultural, religious, etc.), community groups, social movements, etc.
Local Governments	Ward, Constituency & County governments/ departments.
National Governments	Meteorological department, drought management authority, disaster management unit, ministries (and departments), committees, etc.
Civil Society Organisations	International Red Cross and Red Crescent Movements, Community Based Organisations, National Organisations, and International Organisations.
International Technical Organisations, Donors, and Multilateral Organisations	They include UN bodies, regional technical centres, multilateral development banks, donor countries and institutions, etc.
Private Sector	Businesses, private institutions

- **Local Communities**

Communities, at village or ward levels, are the first responders to natural disasters. Therefore, warning information must reach local people to ensure better preparation (IFRC, 2012). Within the communities, there may be institutions such as schools, churches and cultural bodies and leaders such as religious leaders, local-level political leaders and cultural leaders. All these actors are essential for effective EWEAEF frameworks.

- **Local and National Governments**

Local governments range from the Ward, constituency, county, regional and national levels.

Government institutions, whether autonomous or semi-autonomous, are obliged to protect citizens against hazards. They must be held accountable for ensuring that early warning information reaches the population at risk (IFRC, 2012).

Key government institutions for EWEAEF in Kenya include the **Kenya Meteorological Department** in the Ministry of Environment and Forestry. The department is responsible for monitoring weather and climatic changes and issuing early warning information. At the national level, there is also the **National Drought Management Authority (NDMA)**, responsible for coordinating all drought matters in Kenya and implementing measures to end drought emergencies in the country (NDMA, 2020). There is also a **National Disaster Management Unit/ Authority**. The National Disaster Management Bill 2021 mandates the unit to establish and implement early warning and emergency communication strategy and, in general, adopt measures to prevent, prepare, mitigate, respond and recover from disasters (*The Disaster Management Bill, 2021*). The national government institutions in the EWEAEF include the Treasury, Ministry of Labour and Social Protection, National Disaster Operations Centre, Livestock and Fisheries, Ministry of Agriculture and other agencies/ministries (Anticipatory Hub, 2022).

At a local level, **the county governments**, through their various departments, are the primary government institution with the mandate for the protection of communities. Therefore, county governments should have clear mandates and resources for EWEAEF and involve different stakeholders, including the communities, in all the relevant EWEAEF processes (IFRC, 2012).

Several structures are occasionally established to respond to droughts and food security crises. These include the Kenya Food Security Meeting (KFSM) and Kenya Food Security Steering Group (KFSSG) at the



national level, and district/county steering groups (DSG/CSG) and development partners at the county level established under the Arid Lands Resource Management Project (ALRMP) (Republic of Kenya, 2013a).

- ***Civil Society Organisations***

Civil Society Organisations, including national and international organisations, have an essential role in supporting governments to protect local communities (IFRC, 2012). They also act as a bridge between technical/scientific bodies and governments/ communities. They include community-based organisations, national and international organisations.

- ***Private Sector***

Businesses and private institutions from the local to national level are essential in providing goods and services for early warning and action. For example, businesses can stock essential supplies ahead of disasters. In addition, some private institutions, for instance, Virridy<sup>1</sup>, which has been active in Kenya, can supplement efforts to monitor environmental changes.

- ***International Technical Organisations, Donors, and Multilateral Organisations***

Some of these bodies have direct mandates to monitor environmental, health and social conditions and can provide relevant information that supports EWEAEF systems (IFRC, 2012). They include United Nations bodies and regional technical centres. In addition, donors and multilateral organisations such as ECHO, GIZ and World Bank play crucial financial, technical, oversight and coordination roles in EWEAEF initiatives.

## ***5.2 Policy and Legal Frameworks***

There are various policies in Kenya with strategies relevant to Ending Drought Emergencies, such as the National Disaster Management Policy, the National Land Policy, and the National Livestock Policy, among others (Republic of Kenya, 2013a). In line with strategies to end drought emergencies in Kenya, the second Medium Term Plan (Republic of Kenya, 2013b) cites policies related to EWEAEF in Kenya. These include the policy framework for pastoralism in Africa, the policy on Small Arms and Light Weapons (SALW), the transboundary waters policy and management strategy and the National Policy

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<sup>1</sup> <https://virridy.com>

for the Sustainable Development of Northern Kenya and Other Arid Lands (ASAL Policy). The ASAL Policy outlines the institutional arrangements that will ensure the effective management of drought risks in Kenya, mainly establishing the NDMA and the National Drought and Disaster Contingency Fund (NDCF). It also establishes an institutional framework for the multisectoral and multistakeholder growth of ASAL communities.

### *5.3 Existing Drought Early Warning Early Action and Finance Measures*

#### **Early Warning Systems (EWS)**

Regional, international and national initiatives exist to monitor agroclimatic conditions and provide early warning messages to inform actions. Table 2 provides some of the existing early warning initiatives at the different levels. The systems were useful in predicting the current 2021/2022 drought episode. By continuously monitoring climate conditions in Kenya, the FEWS NET predicted that most parts of the nation would suffer challenged food security (IPC 2) owing to low rainfall in the previous year (FEWS NET, 2022a). This mirrored the NDMA’s drought early warning bulletins that revealed 13 counties in the Alert Phase of drought (IPC 2), with several leaning towards a deteriorating scenario. Stakeholders like the Kenya Red Cross Society (KRCS) were then able to use these drought early warnings to activate the corresponding measures of anticipatory action, minimizing negative coping strategies, food insecurity-related morbidities, and mortalities across Kenya.

However, one common concern with the systems, especially the national ones, is their inability to involve communities and enhance their capacities (OAG, 2020).

**Table 2:** *Early Warning Initiatives in Kenya*

<b>EWS</b>	<b>Description</b>
Famine Early Warning Systems Network (FEWS NET)—provides country-specific data	FEWS NET analyses agroclimatology, livelihoods, markets and trades and nutritional data and provides information to institutions responding to food security crises (FEWS NET, 2022a).
FAO’s Global Information and Early Warning System (GIEWS)—Global	Collects worldwide data for technical purposes via country-level earth observation and price monitoring tools (FAO, 2022).

<p>The Intergovernmental Authority on Development (IGAD) Climate Prediction and Applications Centre (ICPAC)—Regional</p>	<p>ICPAC is the World Meteorological Organization’s designated regional climate centre for 11 East African countries. It monitors the climate in member states and provides medium and long-range climate forecasts and early warnings through the analysis of rainfall data. The institution is also involved in improving human resource capacity through research and training, as well as the coproduction of climate services with their users (ICPAC, 2022a). To aid member states in building resilience to climate change, ICPAC created the Forecast-based Preparedness Action (ForPac). By integrating forecast-based action into early warning systems, ForPac aims to improve the use of improved lead times for drought, flooding and rainfall forecasts such that the information can be better utilized (ICPAC, 2022b).</p>
<p>The Information Technology and Indigenous knowledge (ITIKI) drought predictor</p>	<p>ITIKI is a drought forecasting tool developed in 2016 as a mobile platform that combines meteorological data with traditional farming knowledge. It provides over 6,058 small-scale farmers with drought forecasts via an app and SMS messaging at a low cost and in their native language. (ITIKI, 2022).</p>
<p>The Integrated Drought Early Warning System (DEWS)- National</p>	<p>The NDMA’s integrated Drought Early Warning System (DEWS) combines stakeholders’ different early warning systems to deliver quick, reliable early warning information and response triggers (Republic of Kenya, 2013a). The information is in the form of early warning bulletins and food security assessment reports on a monthly and biannual basis, respectively, at both county and national levels. The bulletins provide information on rainfall performance and the drought situation in the relevant county, the impacts observed on vegetation and water, production indicators, market performance, food consumption and nutrition status, as well as the current intervention measures being implemented in the county and the implementing agencies. (NDMA, 2022b). The bulletins also present emerging issues, proposed recommendations, and a rough timeframe by which they would be</p>

	implemented to aid in decision-making for the county members (NDMA, 2022b).
Integrated Knowledge Management System for Drought	The system is an information collection platform for collating and disseminating drought data via websites, actor and beneficiary databases, management information systems, stakeholder mapping, and a contingency fund tracking system, among others (Republic of Kenya, 2013a).

### ***Early Action and Forecast-based Financing Measures***

Early Action and Forecast-based Finance usually follow early warning information for the latter to be relevant. This section identifies some of the Early Action and Early Finance measures that are either established or in various phases of legislation in Kenya. This is not a conclusive list of initiatives, and some of these projects overlap.

**Table 3: Some Early Action and Forecast-based Financing Measures**

<b>EAEF Measure</b>	<b>Description</b>
The National Drought Emergency Fund (NDEF)	This fund replaces the National Drought Contingency Fund (NDCF) to address any urgent and unforeseen events not included in a given financial year's budget (International Centre for Humanitarian Affairs (ICHA) & Kenya Red Cross (KRC), 2019). The contingency fund is expected to reach up to 10 billion Kenya Shillings at the National level and not exceed 2% of the county government revenue for the County Emergency Fund (ICHA & KRC, 2019).
The Hunger Safety Net Program (HSNP)	NDMA and development partners like the Kenya Red Cross Society (KRCS) and the World Food Program (WFP) spearhead this program. It provides cash transfers to low-income and vulnerable households to reduce poverty and hunger in the country (Republic of Kenya, 2013a).  Following the ongoing drought, the government instantiated regular cash transfers (of Kenya shillings 5,400 every two months) to drought-affected households in Turkana, Marsabit, Mandera and Wajir (Mwangi, 2022). The efforts were complemented by other measures such as food assistance and the

provision of WASH services (such as rehabilitation of boreholes, water trucking and fuel subsidies to some boreholes) (Mwangi, 2022).

<p>FAO's Special Fund for Emergency and Rehabilitation Activities (SFERA)</p>	<p>SFERA was set up to enable FAO rapidly initiate emergency operations. It has three components: a working capital component (advances to enable rapid response), a revolving fund component (for emergency coordination, needs assessment and programme development), and a programme component for large-scale emergency programmes (FAO, 2021).</p> <p>In 2016, the programme, through its early action window, provided USD 400,00 to mitigate drought impacts of vulnerable pastoralist households (FAO, 2018). Kenya received USD 99,000 for emergency coordination and another USD 300,000 for anticipatory action in 2020 (FAO, 2021).</p>
<p>The Kenya Agricultural Insurance and Risk Management Program</p>	<p>The government started this programme with support from the World Bank, UNDP, Equity Kenya Commercial Bank, and several insurance companies. This initiative helps maize and wheat farmers deal with production shocks like droughts and floods. Large farmed regions are separated into insurance units for the "area yield" insurance programme, such that if a unit's average production falls below a set threshold, all insured farmers within that unit receive compensation. Bungoma, Embu, and Nakuru counties started the programme, and 33 more were scheduled to join the initiative to cover 87,000 farmers by 2020 (Financial Protection Forum, 2017; The World Bank, 2016).</p>
<p>Disaster Relief Emergency Fund (DREF) Forecast Based Action (FbA) and Forecast Based Finance (FbF).</p>	<p>FbA and FbF were set up in 2017 as part of IFRC's early warning early action approach to provide continuous financial support to national societies to conduct early actions and reduce the impacts of disasters (IFRC, 2019; ICHA &amp; KRC, 2019).</p>
<p>Early Action using cash assistance</p>	<p>In response to the 2019 drought predictions from the FEWS NET and NDMA's drought early warning bulletins, the Kenya Red Cross Society (KRCS) registered households and transferred cash to 25,000 people for at least four months during peak drought (Anticipation Hub, 2019). Community engagement and</p>

accountability measures were also enacted as part of the early actions. In this programme, the average number of days between declaring drought and disbursing response funds dropped from 24 in 2019 to 20 in 2020 (NDMA, 2021).

Other Finance Mechanisms	Kenya Red Cross Disaster Management Fund, Global Risk Financing Facility, Catastrophe Deferred Drawdown Option and others. (ICHA & KRC, 2019).
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In response to the 2016 drought, several initiatives were also implemented. These included the following.

- **The Kenya Livestock Insurance Program (KLIP)**, introduced in 2015 by the government together with partners to safeguard pastoralists against climatic shocks. The programme provided about 14,000 fully subsidized livestock insurance covers for farmers from vulnerable pastoral households reliant on rain-fed agriculture in 2 ASAL counties (Financial Protection Forum, 2017). It was expanded to reach 65,000 pastoralists in 2020 in 12 the remaining 12 ASAL counties by 2020, to reach 65,000 vulnerable pastoralists (Financial Protection Forum, 2017). KLIP employed satellites to monitor the availability of fodder for livestock, thereby activating aid for feed, veterinary care, and even water trucks when animal deaths are imminent (Financial Protection Forum, 2017; Mugabe et al., 2019).
- **The Enhanced animal take-off initiative.** The Kenya Meat Commission (KMC) and other development partners, such as the KRCS, purchased weak livestock at a set price to enable farmers to obtain income and reduce strain on limited water and pasture resources (Uhe et al., 2017).
- Increasing the country's readiness for drought management, and the response was started earlier on in 2013. It aims to improve the country's security, infrastructure and human resources as well as establish institutional and financial frameworks for drought management (Republic of Kenya, 2013a).

## 6. Addressing Institutional Gaps in Drought Early Warning, Early Action and Finance in Kenya

Based on the concept of polycentric governance, this section identifies some institutional gaps that lead to slow progress and inaction on drought Early Warning Early Action and Finance in Kenya. It then proposes recommendation(s) to improve governance for each challenge/issue/gap identified.

### **Issue 1. Limited Engagement of Communities**

Communities are the primary beneficiaries of early warning information and any disaster mitigation measures. Therefore, they are important stakeholders and must be treated as the 'first mile' where warning information must reach, followed by actions (IFRC, 2012). Engaging beneficiaries in a polycentric governance system leads to greater accountability, legitimacy and equity (Jordan et al., 2018). However, community participation in the disaster management processes, including contingency planning in Kenya, is still inadequate (OAG, 2020). Even in cases where efforts were made to engage and communicate with communities, it is not always complete, and information flow usually is one way (Top-down). For example, during the cash assistance programme by the Kenya Red Cross Society in 2019, the response measures were communicated, raising communities' expectations. However, issues regarding delays and frequency of disbursement were not communicated, leading to demoralisation (Kenya Red Cross Society (KRCS) et al., 2019).

### **Recommendations**

- Identify and build capacities of community structures to participate in data collection, risk monitoring, contingency planning, feedback processes and information sharing. The capacities of these structures to participate in EWEAEF processes should also be built in line with the national policy for the development of ASALs (OAG, 2020).
- Timely and clearly communicating all the procedures, rights, target population selection processes and all the EWEAEF processes. NDMA produces monthly drought early bulletins, but clear measures need to be set to communicate this information to communities and translate it into community actions.
- Regarding risk monitoring and assessments, it is essential to develop user-friendly community-centred systems with simple indicators to facilitate monitoring efforts.

Building social inclusivity into the EWS is possible. This is through participatory rural appraisal, forming community-level prevention and mitigation groups, improving infrastructure and planning, creating links

between climate experts and local populations, enhancing communication between local actors, and promoting local development. If appropriately included in early warning systems, these new tools have the potential to drastically reduce disaster risks (Senaratna et al., 2014).

## **Issue 2. Weak coordination among stakeholders at national and local levels**

In multiple decision-making systems, weak coordination often results in fragmented institutions with overlapping mandates (van der Plank et al., 2022), as different line ministries are involved in disaster management without an appropriate institutional framework (KRCS et al., 2019). The drought management act 2016 led to establishment of the National Drought Management Authority (NDMA) to coordinate the implementation of all drought-related matters (NDMA, 2020). However, NDMA is yet to establish an effective measure for coordinating stakeholders at all levels in drought management (OAG, 2020). Coordinating stakeholders in disaster management can only be effective if a common framework guides them. The disaster management bill, once enacted and implemented, could improve coordination. It will establish a National Disaster Risk Management Authority and County Disaster Risk Management Committees “to provide a legal framework for the coordination of disaster risk management activities and connected purposes” (*The Disaster Management Bill, 2021*).

In drought risk management, coordination is relatively strong due to the existence of NDM, which has offices in 23 ASAL counties and community DRR structures (ICHA & KRC, 2019). In addition, the county office develops drought contingency plans under the county steering groups, which bring together local and international organisations (ICHA & KRC, 2019). While these are true, coordination can still be improved, especially across projects and institutions.

### **Recommendations**

- Develop a harmonised EAEWEF framework across all institutions and risks. There are various coordination platforms, for example, the Kenya Food Security Steering Group, Kenya Inter-Agency Rapid Assessment and the Single Register (ICHA & KRC, 2019). However, most organisations involved in EWEA may still use different EWEAEF frameworks, including different data collection tools and trigger levels. Such could lead to duplication of efforts and wastage of resources. It is essential to develop a common framework to guide all those involved in EWEAEF processes. It could be through measures such as setting a common risk monitoring matrix and agreeing on a common threshold. Greater clarity on the responsibilities of different institutions can also be provided. For example, risk monitoring can be done by community structures,



- Map all actors in the EWEAEF to leverage expertise and resources. The mapping exercise can be complemented with awareness raising among the potential beneficiaries and stakeholders to mobilise greater support for EWEAEF. Complementing and improving collective action in a polycentric governance structure would also require identifying and building capacities that the different actors (mainly community-based) already have (Jordan et al., 2018). The community-based actors may not necessarily be ‘big players’ and require extra effort and time to identify them.
- It is possible to complement and improve collective response by building the capacities that the different actors already have and combining ongoing efforts within a polycentric governance structure.
- Integrate EWEAEF into the existing Disaster Risk Management efforts and other projects, as well as ensure that new projects complement EWEAEF initiatives. There are projects already being implemented in communities that are related to Early Warning Early Action (EWEA), such as water projects (drilling of new boreholes, rehabilitation of water systems, etc.), agricultural projects (distributing drought-resistant seed varieties, etc.) and health programmes. EWEA can build on these initiatives. The goal of the EWEAEF should also be to respond to government and community needs that can be sustained by engaging all the relevant stakeholders (IFRC, 2012).
- Have regular coordination meetings. Regular meetings with all the necessary actors at all levels can enable the identification of new players in the field, capacity needs, and the discussion of new risks.

### **Issue 3. Inconsistent monitoring and data gaps.**

Some of the socioeconomic data, for example, livelihood zones used in producing early warning bulletins by NDMA and possibly other stakeholders, are outdated (OAG, 2020). In light of the everchanging socioeconomic, political and risk landscape, inconsistent and incorrect data mislead EWEAEF efforts and lead to the wastage of resources. In addition, community structures involved in data collection are not often well facilitated in terms of equipment and compensation (OAG, 2020).

### ***Recommendations***

- Consider all the steps in Early Warning Early Action as a process as risks evolve, and communities change. Different processes such as unplanned urbanisation, environmental degradation, climate change, population growth, changes in politics and governance and unsustainable development lead to new risks, changing exposure to hazards and changing vulnerabilities (IFRC, 2012). It is

essential to develop community risk profiles that should be updated regularly (at an agreed interval) with new information to reflect the current socioeconomic conditions, institutions and risks.

- In addition to monitoring the status of project implementation, the early warning and early action systems should be constantly monitored and evaluated.

#### **Issue 4. Crisis response is favoured instead of anticipatory action.**

Anticipatory actions seem still to be a new concept among the various (potential) stakeholders (Humanitarian Change, 2022). Therefore, crisis response and reactive approaches to climate-induced disasters may be the most preferred mode of action and, perhaps, politically acceptable and appealing (Government of Kenya, 2018; Ewbank et al., 2019; Vahlberg et al., 2022). Despite different funding arrangements for ‘anticipatory action’, the funds are not always available when needed and are released after situations have deteriorated (ICHA & KRC, 2019; OAG, 2022). For example, the current response to the 2021-22 drought in Wajir, Samburu, Tana River, Isiolo, Marsabit, Garissa, Mandera, and Lamu counties (NDMA, 2022c) came after several people had died and the situation worsened. The FEWS NET 2021-22 drought forecasts and early warning could have initiated actions, but this was not the case (Centre For Humanitarian Change, 2022). In 2020, the average number of days between declaring drought and disbursing funds by the government was 20 (NDMA, 2021). Delay in acting on early warning information encourage reliance on emergency aid and compromises communities’ abilities to build resilience (Republic of Kenya, 2013b; Venton et al., 2012).

In addition, funding is mainly channelled to ‘traditional funding routes’, including emergency activities or traditional livelihood efforts, and decision-making processes are always slow and very bureaucratic, leaving little or no funds for EWEAEF activities (Centre For Humanitarian Change, 2022).

#### **Recommendations**

- As mentioned earlier, raising EWEAEF awareness among stakeholders could encourage greater stakeholder buy-in and support. Awareness could be raised through the different disaster management meetings, the production of policy briefs, etc.
- Earmark funds at the county (local) and national levels for EWEA and response activities.

## **Issue 5. Insecurity in some ASAL counties**

Stakeholder access to some locations in the country, mainly in Marsabit, Samburu and Turkana, can be hampered by insecurity (Anticipation Hub, 2019; 2022). This again highlights the need to involve all the relevant stakeholders in EWEAEF and invest in using local community structures.

### ***Recommendations***

- Encourage local action by engaging community-level stakeholders to minimise risks to external actors.
- Conduct security training for stakeholders working in high-risk areas.

## **7. Conclusion**

This paper built on the concept of polycentric governance to identify institutional inefficiencies and gaps that may impact early warning, early action and finance to reduce climate-induced risks on the most vulnerable population. Key institutional gaps related to coordination challenges, limited community involvement in early warning early action (EWEA) processes, absence of a common framework for EWEA, inconsistent data and skewed focus on emergency and crisis response. ClimBeR's G4R could play a crucial role in addressing these institutional gaps, particularly by identifying and facilitating the formation of local structures and building their capacities for EWEA. Whereas a significant component of G4R is developing a risk monitoring platform, it will be essential that these new initiatives are integrated or merged with existing initiatives, where possible. In other cases, it could serve as a set of best practices for local institutions. The study also recommended a greater focus on developing a common framework for EWEA in Kenya.

## **8. References**

- Anticipation Hub, 2019. Case Study: Drought Early Warning Early Action: Using Cash Assistance in Kenya. Early actions to reduce the impact of drought on vulnerable communities.
- Anticipation Hub, 2022. Innovative Approaches to Response Preparedness. Anticip. Action World. URL <https://www.anticipation-hub.org/experience/anticipatory-action-in-the-world/kenya/innovative-approaches-to-response-preparedness> (accessed 10.21.22).

- Anticipatory Hub, 2022. Kenya: Key facts, country profile and projects. URL <https://www.anticipation-hub.org/experience/anticipatory-action-in-the-world/kenya> (accessed 10.21.22).
- Carlisle, K., Gruby, R.L., 2019. Polycentric Systems of Governance: A Theoretical Model for the Commons. *Policy Stud. J.* 47, 927–952. <https://doi.org/10.1111/psj.12212>
- CCKP, 2022. Kenya-Vulnerability [WWW Document]. URL <https://climateknowledgeportal.worldbank.org/country/kenya/vulnerability>
- Centre For Humanitarian Change, 2022. Anticipatory action to mitigate drought-induced crises: Tracking drought impacts and aid responses in Kenya and Somalia, 2020-2022. <https://doi.org/10.7488/ERA/2280>
- EM-DAT, 2022. The International Disaster Database [WWW Document]. URL <https://public.emdat.be/data> (accessed 9.26.22).
- Emerton, R., Cloke, H., Ficchi, A., Hawker, L., de Wit, S., Speight, L., Prudhomme, C., Rundell, P., West, R., Neal, J., Cuna, J., Harrigan, S., Titley, H., Magnusson, L., Pappenberger, F., Klingaman, N., Stephens, E., 2020. Emergency flood bulletins for Cyclones Idai and Kenneth: A critical evaluation of the use of global flood forecasts for international humanitarian preparedness and response. *Int. J. Disaster Risk Reduct.* 50, 101811. <https://doi.org/10.1016/j.ijdr.2020.101811>
- Ewbank, R., Perez, C., Cornish, H., Worku, M., Woldetsadik, S., 2019. Building resilience to El Niño-related drought: experiences in early warning and early action from Nicaragua and Ethiopia. *Disasters* 43, S345–S367. <https://doi.org/10.1111/disa.12340>
- FAO, 2016. Easing the Impact of Drought in Kenya. Resilience. URL <https://www.fao.org/resilience/news-events/detail/en/c/1047550/> (accessed 9.12.22).
- FAO, 2022. GIEWS - Global Information and Early Warning System. Country Briefs: Kenya [WWW Document]. GIEWS - Glob. Inf. Early Warn. Syst. URL <https://www.fao.org/giews/countrybrief/country.jsp?code=KEN>
- FAO. (2018). Horn of Africa: Impact of Early Warning Early Action. <https://www.fao.org/3/ca0227en/CA0227EN.pdf>
- FAO. (2021). Special Fund for Emergency and Rehabilitation Activities (SFERA) | Annual Report 2020. Food and Agriculture Organisation of the United Nations (FAO). <https://doi.org/10.4060/cb4912en>
- FEWS NET, 2022a. East Africa, Kenya [WWW Document]. Famine Early Warn. Syst. Netw. URL <https://fews.net/east-africa/kenya>
- FEWS NET, 2022b. Kenya Food Security Outlook, June 2022 to January 2023 (Situational report).
- Financial Protection Forum, 2017. Disaster Risk Financing & Insurance Program; Kenya Livestock Insurance Program KLIP).
- Government of Kenya, 2012. Vision 2030 Development Strategy for Northern Kenya and other Arid Lands.
- Government of Kenya, 2018. National Climate Change Action Plan (Kenya): 2018-2022.
- Huho, J.M., Mugalavai, E.M., 2010. The Effects of Droughts on Food Security in Kenya. *Int. J. Clim. Change Impacts Responses* 2, 61–72. <https://doi.org/10.18848/1835-7156/CGP/v02i02/37312>

- ICPAC, 2022a. Delivering Climate Services to Eastern Africa. IGAD Clim. Predict. Appl. Cent. URL <https://www.icpac.net/> (accessed 10.13.22).
- ICPAC, 2022b. Towards Forecast based Preparedness Action (ForPac). IGAD Clim. Predict. Appl. Cent. URL <https://www.icpac.net/our-projects/forpac/> (accessed 10.14.22).
- IFRC, 2022. Kenya: Hunger Crisis 2021-2022 - Revised Emergency Appeal №: MDRKE049. The International Federation of Red Cross And Red Crescent Societies.
- IFRC. (2019). Forecast based Action by the DREF Summary 2019. <http://dref.ifrc.org/fba/>
- International Center for Humanitarian Affairs (ICHA), & Kenya Red Cross (KRC). (2019). Forecast-Based Financing Implementation in Kenya: Opportunities and Challenges. <https://www.forecast-based-financing.org/wp-content/uploads/2020/04/Forecast-based-financing-publication-no.-6-2020.pdf>
- ITIKI, 2022. ITIKI - Drought Prediction Tool. URL <https://urida.co.za/> (accessed 10.14.22).
- Jordan, A., Huitema, D., van Asselt, H., & Forster, J. (Eds.). (2018). Governing Climate Change: Polycentricity in Action? In *Governing Climate Change* (pp. 97–228). Cambridge University Press. <https://doi.org/10.1017/9781108284646>
- Karanja, D.R., Githunguri, C.M., M’Ragwa, L., Mulwa, D., Mwititi, S., 2006. Variety Characteristics and Production Guidelines of Traditional Food Crops. KARI Katumani Research Centre, Kenya.
- Kenya Red Cross Society (KRCS), British Red Cross (BRC), & ICHA. (2019). Case Study: Drought Early Warning Early Action - Using Cash Assistance (Kenya). <https://www.anticipation-hub.org/download/file-1178>
- Mugabe, P.A., Mwaniki, F., Mamary, K.A., Ngibuini, H.M., 2019. An assessment of drought monitoring and early warning systems in Tanzania, Kenya, and Mali, in: *Current Directions in Water Scarcity Research*. Elsevier, pp. 211–219. <https://doi.org/10.1016/B978-0-12-814820-4.00014-6>
- Muigua, K., 2018. Managing Transboundary Natural Resources in Kenya.
- Mwangi, I. (2022, April 11). Govt Continues With Cash Transfers In Drought Stricken Counties. Capital FM Kenya. <https://www.capitalfm.co.ke/news/2022/04/govt-continues-with-cash-transfers-in-drought-stricken-counties/>
- NDMA, 2018. Strategic Plan 2018-2022.
- NDMA, 2020. National Drought Management Authority Annual Report and Financial Statements for the Financial Year Ended. June 30,2019.
- NDMA, 2021. Ending Drought Emergencies in Kenya: Progress Report for 2019 and 2020.
- NDMA, 2022a. Cabinet Secretary Prof. Kobia calls for fast tracking of NDEF guidelines. Natl. Drought Manag. Auth. Latest News. URL <https://www.ndma.go.ke/index.php/latest-news/163-cabinet-secretary-prof-kobia-calls-for-fast-tracking-of-ndef-guidelines> (accessed 10.14.22).
- NDMA, 2022b. Early Warning Bulletins. Natl. Drought Manag. Auth. Resour. Cent. URL <https://www.ndma.go.ke/index.php/resource-center/early-warning-reports> (accessed 10.15.22).
- NDMA, 2022c. NDMA Distributes Livestock Feed Supplements to Save Pastoralists’ Livelihoods. Natl. Drought Manag. Auth. Latest News. URL <https://www.ndma.go.ke/index.php/latest-news/156->

- ndma-distributes-livestock-feed-supplements-to-save-pastoralists-livelihoods (accessed 10.15.22).
- Ngigi, S., & Busolo, D. N. (2019). Devolution in Kenya: the good, the bad and the ugly. *Public Policy and Administration Research*, 9(6), 9–21.
- OCHA, 2022. Kenya Drought Response Dashboard. August 2022. Situational Updat. URL <https://reliefweb.int/report/kenya/kenya-drought-response-dashboard-august-2022> (accessed 10.12.22).
- Office of the Auditor General (OAG). (2020). Performance Audit Report on Management of Drought in Kenya by the National Drought Management Authority. <https://www.oagkenya.go.ke/wp-content/uploads/2021/09/Management-of-Drought-in-Kenya-2020.pdf>
- Republic of Kenya, 2012. National Policy for the Sustainable Development of Northern Kenya and other Arid Lands - 'Releasing Our Full Potential.'
- Republic of Kenya, 2013a. Sector Plan for Drought Risk Management and Ending Drought Emergencies, Second Medium Term Plan 2013-2017.
- Republic of Kenya, 2013b. Second Medium Term Plan: Transforming Kenya: Pathway to Devolution, Socio-Economic Development, Equity and National Unity.
- Rojas, O., 2021. Next Generation Agricultural Stress Index System (ASIS) for Agricultural Drought Monitoring. *Remote Sens.* 13, 959. <https://doi.org/10.3390/rs13050959>
- Russel, A., 2022. A New Kind of Drought Insurance for Women in Kenya's Arid Rangelands. *Feed Future - US Gov. Glob. Hunger Food Secur. Initiat.* URL <https://basis.ucdavis.edu/feature/new-kind-drought-insurance-women-kenyas-arid-rangelands> (accessed 9.25.22).
- Santos, J.R., Pagsuyoin, S.T., Herrera, L.C., Tan, R.R., Yu, K.D., 2014. Analysis of drought risk management strategies using dynamic inoperability input–output modeling and event tree analysis. *Environ. Syst. Decis.* 34, 492–506. <https://doi.org/10.1007/s10669-014-9514-5>
- Senaratna, N., Baudoin, M.-A., Oluoko-Odingo, A.A., Ajuang, L., Wepukhulu, D.W., Mwadali, A.S., 2014. Natural Hazards and Climate Change in Kenya: Minimizing the Impacts on Vulnerable Communities Through Early Warning Systems, in: Singh, A., Zommers, Z. (Eds.), *Reducing Disaster: Early Warning Systems For Climate Change*. Springer Netherlands, Dordrecht, pp. 355–375. [https://doi.org/10.1007/978-94-017-8598-3\\_19](https://doi.org/10.1007/978-94-017-8598-3_19)
- Shepherd, A., Mitchell, T., Kirsty, L., Lenhardt, A., Jones, L., Scott, L., Muir-Wood, R., 2013. The geography of poverty, disasters and climate extremes in 2030. The Overseas Development Institute (ODI).
- Stephan, M., Marshall, G., & McGinnis, M. (2019). An introduction to polycentricity and governance. *Governing Complexity: Analyzing and Applying Polycentricity*, 21–44.
- Sufri, S., Dwirahmadi, F., Phung, D., Rutherford, S., 2020. A systematic review of Community Engagement (CE) in Disaster Early Warning Systems (EWSs). *Prog. Disaster Sci.* 5, 100058. <https://doi.org/10.1016/j.pdisas.2019.100058>
- Teule, T., Couasnon, A., Bischiniotis, K., Blasch, J., van den Homberg, M., 2020. Towards improving a national flood early warning system with global ensemble flood predictions and local

- knowledge; a case study on the Lower Shire Valley in Malawi. (other). pico.  
<https://doi.org/10.5194/egusphere-egu2020-507>
- The Disaster Management Bill, (2021) (testimony of Government of Kenya).  
<http://www.parliament.go.ke/sites/default/files/2021-04/Disaster%20Risk%20Management%20Bill%20No.%2014%20of%202021.pdf>
- The World Bank, 2016. Kenyan Farmers to Benefit from Innovative Insurance Program. URL  
<http://www.worldbank.org/en/news/press-release/2016/03/12/kenyan-farmers-to-benefit-from-innovative-insurance-program> (accessed 9.12.22).
- Uhe, P., Sjoukje, P., Kew, S., Kasturi, S., Kimutai, J., Otto, F., Jan Van Oldenborgh, G., Singh, R., Arrighi, J., Cullen, H., 2017. The Drought in Kenya 2016-2017.
- UNICEF, 2018. UNICEF Kenya Humanitarian Situation Report.
- Vahlberg, M., Khan, R., Heinrich, D., Jemba, E., 2022. Early Warning Early Action (EWEA) in Secondary Cities in South Asia. Guidance Note.
- van der Plank, S., Cox, S.-A., Cumberbatch, J., Mahon, R., Thomas, B., Tompkins, E. L., & Corbett, J. (2022). Polycentric Governance, Coordination and Capacity: The Case of Sargassum Influxes in the Caribbean. *Coastal Management*, 50(4), 285–305.  
<https://doi.org/10.1080/08920753.2022.2078172>
- Venton, C., Fitzgibbon, C., Shitarek, T., Coulter, L., Dooley, O., 2012. The Economics of Early Response and Disaster Resilience: Lessons from Kenya and Ethiopia. , T., , L. & , O. 2012. 84. DFID. DFID.
- Vision 2030, 2022. Small Arms and Light Weapons (SALW) Control and Management. Kenya Vis. 2030. URL <http://vision2030.go.ke/project/small-arms-and-light-weapons-salw-control-and-management/> (accessed 10.10.22).
- WFP, 2022. World Food Programme (WFP) Kenya 2021 Annual Country Report.