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Supporting Pastoralism and Agriculture in Recurrent and Protracted Crises

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TECHNICAL REPORT

LOCAL GOVERNMENT-LED ANTICIPATORY ACTION

Lessons from Mali and Uganda

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About SPARC

Climate change, armed conflict, environmental fragility and weak governance, and the impact these have on natural resource-based livelihoods, are among the key drivers of both crisis and poverty for communities in some of the world's most vulnerable and conflict-affected countries.

Supporting Pastoralism and Agriculture in Recurrent and Protracted Crises (SPARC) aims to generate evidence and address knowledge gaps to build the resilience of millions of pastoralists, agro-pastoralists and farmers in these communities in sub-Saharan Africa and the Middle East.

We strive to create impact by using research and evidence to develop knowledge that improves how the UK Foreign, Commonwealth & Development Office (FCDO), donors, non-governmental organisations, local and national governments, and civil society can empower these communities in the context of climate change.

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Thanks to GIZ, who generously provided the map for Uganda (Figure 4) used in this report.

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ABBREVIATIONS

ANMM	National Meteorological Agency, Mali
APCAM	Permanent Assembly of the Malian Chamber of Agriculture
CAHW	community animal health worker
CAO	Chief Administrative Officer
CECOGEC	Crisis and Disaster Management Coordination Committee, Mali
CFA	West African Franc
CoA	Chamber of Agriculture (what APCAM is known as at commune level)
CONASCOPA	Organisation for Agricultural and Fishing Cooperatives, Mali
CSA	Commissariat à la Sécurité Alimentaire (Commission for Food Security), Mali
DDMC	District Disaster Management Committee, Uganda
DNH	National Directorate of Hydrology, Mali
DNPIA	National Directorate of Animal Production and Industries, Mali
DRR	disaster risk reduction
DVO	District Veterinary Officer
EW	early warning
FAO	Food and Agriculture Organization of the United Nations
FMD	foot and mouth disease
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries, Uganda
NARO	National Agricultural Research Organisation, Uganda
NGO	non-governmental organisation
OPM	Office of the Prime Minister, Uganda
PDSEC	Social and Economic Development Plan, Mali
PIDBS	Bani-Sankarani Integrated Development Programme, Mali
RDC	Resident District Commissioner, Uganda
SAP	Système d'Alerte Précoce (early warning system), Mali
UNMA	Uganda National Meteorological Authority
UPDF	Uganda People's Defence Force
WASH	water, sanitation and hygiene
WHH	Welt Hunger Hilfe (international NGO)

EXECUTIVE SUMMARY

Introduction

The aid sector is increasingly thinking about anticipatory action, meaning proactive steps to mitigate crises before they occur. However, local government perspectives are under-represented in this discourse of international humanitarian actors. The Supporting Pastoralism and Agriculture in Protracted and Recurrent Crises (SPARC) programme studied roles, actions and challenges of local authorities in anticipating shocks, to elevate their voices. The motivation was that greater recognition of local contributions, often overlooked due to different practices and terminology, would help lead to improved collaboration with international efforts.

This study engaged with local government staff in two communes in Mopti Region, Mali and two districts in Karamoja in Uganda. After identifying with staff the occasions when they had taken proactive action in response to the warning or threat of a crisis, repeated conversations were used to create a detailed timeline of what was known when and what actions were taken. The conversations also investigated where warnings came from, what strategies were adopted and how they were supported.

The examples that local authority staff gave included floods, droughts, a locust plague and epidemics of human and livestock diseases (Figure 1). The study looked only at the perspectives and thinking of local authorities on forward-looking action: their successes and the opinions of assisted populations was largely beyond its scope.

Findings

All local authorities looked ahead and acted early, despite constraints

All of the local authorities had clear examples of taking anticipatory actions in response to warnings of hazards, ranging from polio outbreaks to floods and droughts. All respondents considered this a normal part of their obligations, and many were surprised that there was a specific name – 'anticipatory action' – for it. No respondents had thought the actions should be documented.

Local authorities undertook a wide range of forward-looking actions in response to warnings, including:

- sharing warnings and advice with the public (all threats)
- reassigning staff to focus on the new threat (e.g. locusts)
- ramping up surveillance and monitoring (e.g. for locusts, epidemics)
- reprioritising infrastructure for maintenance and repairs (e.g. for floods)
- prepositioning supplies (e.g. droughts)
- intensifying activities within their normal remit (e.g. for droughts, floods)
- mobilising formal and informal networks to take action locally (all threats)
- taking conflict prevention measures (e.g. for droughts).

These actions encompass the full range in the typology of possible anticipatory actions presented in Levine et al. (2020: 29).

At the same time, local authorities faced enormous constraints. Local budgets were seriously limited, and no discretionary funds were available for anticipatory action. This restricted what local authorities were able to do. Often, lack of resources meant that they were obliged to play a facilitation and information role, which may have had positive effects in increasing the agency of affected communities. From the accounts of local authority staff, community organisation for anticipatory action has often been significant, although it was beyond the scope of this study to assess what wider benefits this may be bringing. There were cases in which staff had to be creative in finding resources, such as by piggy-backing on other local government operations, looking for help from local partners or even paying for their own transport and communications. Constraints also included insecurity, which in Mali prevented some local politicians from being present in their rural communes.

The study did not seek to evaluate how well any anticipatory actions were implemented. From the testimony of the staff themselves, some of their actions were successful, some made a limited contribution and some did not succeed. Lack of success was sometimes because they had no good ideas on how to help (e.g. with technical advice for farmers before a drought); in some cases, impact was limited where constraints limited what could be done or in areas where communities had less trust in the advice (or in those offering it); and, in cases such as the floods in Mali, failure was simply because the scale of the threat was far too great to be tackled by any anticipatory action on the scale possible.

Well-established informal systems and networks were central to how local authorities worked

Local authorities relied on both formal and informal information networks to receive and to share information. Informal communication between professionals was important when formal channels were causing delays. Local authority staff also considered themselves to be members of their local community and knew how to engage with those around them in the best ways socially, such as by sharing information through elders' meetings or spreading messages through *griots* in Mali. In most stories, local authorities were able to mobilise collective action through informal networks (e.g. in response to floods in Mali), and reflexively incorporated indigenous EW to supplement technical information, which informed their anticipatory action (e.g. on floods in Uganda).

FIGURE 1 THE STORIES OF ANTICIPATORY ACTIONS

LOCUSTS IN UGANDA (2020)

- LAs* were unprepared for locusts, with no EW system in place.
- Warnings from the capital were received at different times in two districts – in one, only days before locusts arrived. Equipment arrived there two months after the locusts.
- The other district had months of warning and acted proactively to establish surveillance and warn communities.
- Warnings were shared widely. Transport to communities was subsidised by staff and local partners.
- Ad hoc spraying began before proper equipment was supplied by the Ministry of Agriculture, Animal Industry and Fisherines (MAAIF)/the Food and Agricultural Organization of the United Nations (FAO).
- Informal networks were mobilised. Community reporting guided spraying locations.
- Concerted spraying was delayed by the need for confirmation of locust presence from the ministry.
- Improved locust EW is now in place.

FLOODS IN UGANDA (2024)

- LAs received local (informal) and meteorological authority warnings of heavy rains before the season started. Traditional signs triggered local authority action, mainly disseminating flood advice.
- Water department budgets and workplans were used to warn rural communities.
- The LA requested early-maturing seeds for farmers from the National Agricultural Research Organisation (NARO) but these arrived too late. The absence of such seeds within the normal input-supply system proved damaging.
- The public works department successfully reprioritised workplans and resource use to ensure critical access roads (including to the school and health centre) remained passable.
- The LA had no budgets for actions beyond warnings and advising people to dig trenches and diversion channels.
- International non-governmental organisations (NGOs) were recruited to fund public works, such as digging drainage trenches, before the rains hit.
- The floods were surprising, affecting a village with no history of flash flooding.

FLOODS IN MALI (2024)

- Good riverine flood warning was in place regionally.
- There were formal and informal warnings of possible floods two to three months before peak flooding.
- One LA mobilised anticipatory action a month before the flood, when warnings were deemed reliable. (The other LA mobilised action only when dykes were first observed to be breached.)
- Local authorities had no operational resources for response. Warnings were issued through radio and *griots*, with informal networks mobilised.
- There was a huge response in efforts to reinforce dykes through local volunteers, including youth associations, in many communities. Some communities mistrusted the LA, and refused to contribute unless the LA provided resources – which they could not.
- The scale of the floods was the greatest in decades, overwhelming even the extensive anticipatory-action efforts that were made.
- Local authorities and communities were left more resolved to have better systems and resources in place for the next flood, including by creating funds from public contributions.

* LA: local authority.

FIGURE 1 CONTINUED

DROUGHT IN MALI (2019 AND 2021)

- One drought had different crisis calendars and three anticipatory action timelines: for farmers, pastoralists and fishing people (see Figure 2).
- The anticipatory-action window of opportunity for farmers was very short, with few possible measures. Farmers were already using drought-tolerant crops; newer varieties were hard to access.
- Local authorities could only offer standard agricultural advice (e.g. on composting and intercropping) which has been ignored for years.
- There was a wider window of opportunity for pastoralists. Standard messaging – advising on destocking, making silage – was largely ignored. There was a better response to promotion of (non-indigenous) elephant grass, a quick-growing complement to poor pasture for the following dry season. Additional feed stocks were prepositioned ahead of expected livestock hunger season.
- Anticipatory action was taken to mitigate resource conflicts between herders and farmers, with a governor-led annual conference to determine when livestock can return, to avoid herd returns before farmers complete harvesting.
- There was a long window of opportunity for fishing, since impacts were expected the following year. To complement river fishing, aquaculture was promoted, including through supply of subsidised fish fry and feed.
- Overall, anticipatory action relied on preexisting building blocks and relationships. The success of elephant grass was due to its familiarity from existing resilience programming; existing relationships with national institutions were mobilised to access subsidised fish fry for communes.

EPIDEMICS IN UGANDA (2017–2024)

Foot and mouth disease (FMD)

- The district was unprepared for FMD in 2017, with poor response and devastating impacts.
- The slow response to FMD in 2018 led to quarantine in 2019. Vaccinations were late and impacts serious.
- Warnings from the neighbouring district in 2023 were shared through an informal district WhatsApp group. Anticipatory action was taken and the epidemic mitigated through anticipatory vaccination and advice to limit livestock movements – warnings which were heeded because of herders' experience in 2017 and 2019.

Polio

- EW in nearby areas led to rapid action by the Ministry of Health.
- The vaccination campaign was a collective effort – the ministry and international partners provided resources, local authorities mobilised local networks of community volunteers – and an epidemic was averted.

WILDFIRES IN UGANDA (EVERY YEAR)

- Wildfires are annual events, causing widespread damage to homes and property.
- Many people are disincentivised from farming due to frequent destruction from fires.
- Fires are spread by hot, dry winds but often started accidentally (from charcoal burning or hunting rats) or deliberately (in disputes).
- Fires are predictable and identified as a local priority for preventative action – but this receives no support. Local authorities have no resources, no viable strategy and no collaborations at community or national level or from NGO partners.
- Fire prevention is not identified as anticipatory action. Because it is an idiosyncratic risk (with each fire affecting only a few people), it is not considered important – except by Local authorities.

Diversity of experiences and their timing

In both countries, comparisons of nearby areas revealed significant differences in the timing of crises and responses. There are several reasons for this diversity. Even when shocks hit a wide area, there can be considerable local differences, and a crisis can have starkly different calendars depending on whose livelihood is being affected (see Box 1). There are also significant differences between communes or districts, linked to their remoteness, local economy and security, for example, which affect how local authorities act. And there are differences between the local authorities themselves, for example linked to how proactive they are, the partners they have and the relationships they have with their communities.

Sometimes warnings were received at different times. For instance, two months separated the first warnings about locusts received by neighbouring districts in Uganda, one from central government and the other from the Food and Agriculture Organization of the United Nations (FAO). In Mali, one commune responded promptly to warnings of impending floods generated from regional river monitoring, while its neighbour reacted only when it saw first-hand that the river banks were being flooded.

Local authority-led anticipatory action required foundations

Trust and learning were critical enabling factors for successful anticipatory action. Where communities had had good experiences with local government initiatives, they were more likely to follow advice. Where pastoralists had experienced the failures of livestock disease control measures because they did not follow them, they were more likely to trust in the measures the next time.

Existing investments in disaster risk reduction (DRR) or resilience were also among the enabling factors. For example, it proved impossible to start from scratch and bring in drought-appropriate seeds in Uganda within the timescale; but where programmes already existed or where good connections had already been established, support was then possible (as in the cases of elephant grass and subsidised fish fry, respectively). Existing institutions were also critical in both countries, such as district disaster management committees in Uganda and national early warning systems in both countries, playing coordinating, information-brokering and mobilising roles.

Networks such as youth associations and health volunteers also ensured community support and responsiveness when swift action was required. Staff in local authorities had spent many years building up relationships with these networks, which play a particularly important role where local authorities lack resources to operate in rural areas.

Local authority-led actions were more effective when supported by central government

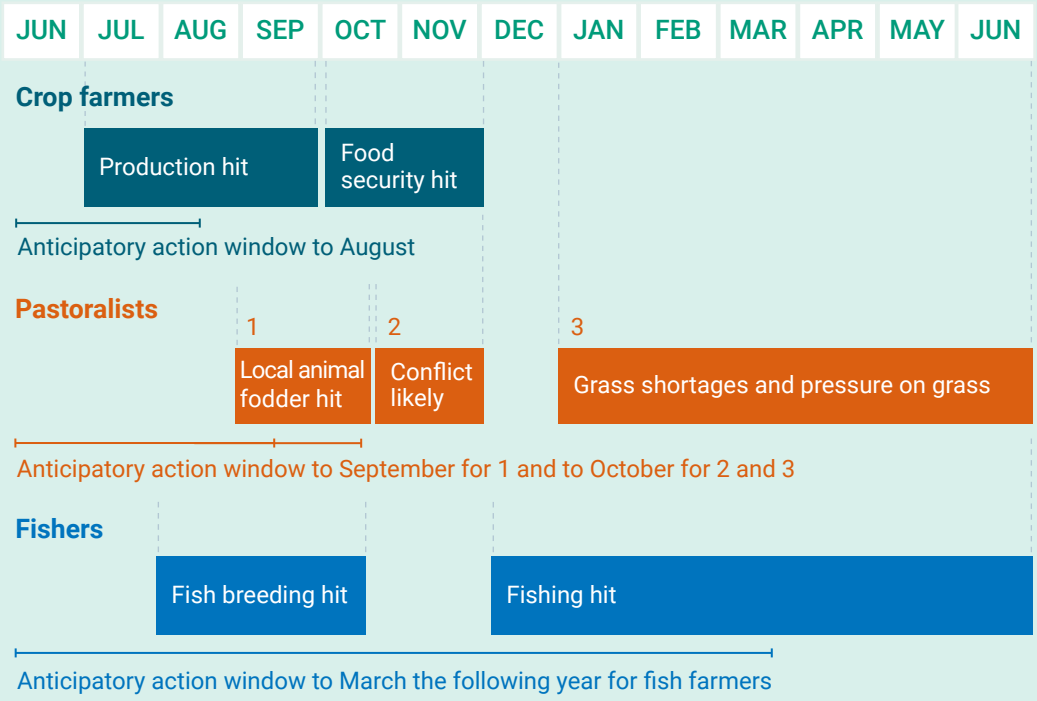
Success was also more likely when national and local agendas aligned. For example, where epidemics were of national concern, central and local governments were more likely to work together, playing highly complementary roles. Local authorities' showed significant expertise in finding workarounds for any delays involved in working with national bureaucracies, such as using informal information channels as triggers for preparation, so that work could start immediately when formal notification or permission came through. In the absence of aligned priorities – such as with fires in Uganda – local authorities' ability to act was constrained.

BOX 1 ONE DROUGHT, THREE CRISIS CALENDARS: THE EFFECT OF LIVELIHOODS ON WINDOWS OF OPPORTUNITY FOR ANTICIPATORY ACTION FOR DROUGHT IN MALI

When drought hit the communes in Mali, it affected farmers, pastoralists and fishing people in different ways – and on very different timelines. The windows of opportunity for anticipatory action ranged from being too brief to support farmers to allowing considerable time for planning and implementation to help fishing people.

- Farmers felt drought impacts shortly after harvest.
  - Local authorities had a window of opportunity for anticipatory action only up to the middle of the rainy season.
- The animals kept at home by pastoralists (e.g. to supply milk) faced local pasture shortages shortly after the rainy season. The main herd, which had migrated, was stressed months later, up to the next year's rainy season.
  - Local authorities had a window of opportunity for some mitigating actions until the end of the rains for stay-at-home livestock. The window of opportunity for averting resource conflicts and to protect the main herds was a little longer.
- Fish breeding was hit by low river flows at the end of the (poor) rainy season and beyond. Low fish stocks started to affect fishing catches a few months later. Effects continued for months, until the following breeding season.
  - Local authorities had a window of opportunity to support fish farming of around four months, starting shortly after the rains ended.

FIGURE 2 THE THREE CRISIS CALENDARS



Source: authors.

The Drought Early Warning System (DEWS) project in Karamoja, Uganda also carries animal health data © EU/ECHO Martin Karimi

Conclusions: policy implications

- Local authorities can play a role in anticipatory action that no one else can – especially when their staff are from the communities they serve. They are institutions of both the state and local communities. They often have staff who know local realities well, both in their sectoral technical knowledge and in their social and cultural intelligence. Local authorities can combine national policy with local realities and make it more relevant to the lives of people locally. They have networks on the ground that are hard to match. They are in many ways duty bearers with responsibility for the welfare of local populations. They have as good a sense of what is likely to happen as anyone else. It is hard to imagine how they could be ignored in efforts to respond in advance of shocks to mitigate them.

- Local authorities are likely to be active in anticipatory action, although this may be invisible, since it is unlikely to be labelled as anticipatory action and may not fit what external actors imagine anticipatory action looks like. All actors interested in promoting anticipatory action should start by finding out what local authorities are already doing and understanding their strengths. No generalisations can be made, since even neighbouring administrative areas can be worlds apart in approaches and strengths.

- It is likely to be unhelpful to impose frameworks and definitions of anticipatory action on local authorities. Given the importance of the informal dimension of their ways of working and the ways in which they blend anticipatory action into their other work, it is likely to

be more productive to take local authorities' own ways of working as a starting point. It will probably be more profitable to look to improve on what they are doing rather than to introduce a whole new jargon and frameworks. This is also likely to lead to more respectful and thus stronger working relationships.

- The fact that local authorities have shown they are forward-looking in their thinking and action, however limited and with whatever weaknesses, means that a partnership for anticipatory action is possible. The diversity of their ways of working and, again, their reliance on the informal, means that imposing or transplanting predefined processes and 'solutions' offers fewer opportunities for sustainable change than a genuine approach to partnership. Such partnership would look for each local authority to find its own way of working, rather than replicating standardised models. This demands a certain co-creation with them of approaches to anticipatory action. Such an approach also values existing local authority knowledge, experience, capacities and ways of working.

- Many organisations will find it hard to embrace how local authorities blend the formal and informal in everything they do – from sourcing EW information to communicating warnings and overcoming bureaucratic obstacles. They should look to overcome their own hesitancy and recognise that this reality offers opportunities. When informal systems are overlooked, opportunities for quicker, more effective anticipatory action are missed.

- Effective anticipatory action requires foundations. Investing in existing local authority structures and systems and supporting local authority initiatives that prioritise long-term preparedness and resilience is to invest in the building blocks of anticipatory action.

- If people – whether local government staff, community leaders or farmers and herders – are to invest their time and efforts based solely on warnings of possible future shocks, there must be enormous trust. That trust cannot be taken for granted. It must be built. This takes time.

- Appropriate anticipatory action at local level requires locally appropriate triggers. Centralised triggers cannot possibly work for shocks in different places and for different livelihood groups. Triggers and calendars for anticipatory action, (the windows of opportunity), need to be adapted to local realities, as a complement to national-level efforts. Local authorities are likely to have a good understanding of this.

1. INTRODUCTION

1.1 Background and purpose of the research

The aid sector is increasingly investing in forward-looking action – taking proactive steps based on forecasts of shocks and crises to minimise their impact, rather than waiting to respond after they occur. In the humanitarian world, this is taking place under the label 'anticipatory action', which has been extensively discussed in literature in the last two decades.[1] There is now widespread acknowledgement that acting ahead of shocks and crises can protect people and their livelihoods, help maintain service delivery and reduce the costs of emergency care and recovery for crisis-affected people (Chaves-Gonzalez et al., 2022; UNDRR, 2024).

Most of what is being written and debated around anticipatory action is from the perspective of international humanitarian actors. Although it is recognised that the design of anticipatory action programmes should better involve local actors and communities (Chaves-Gonzalez et al., 2022), there is little discussion within the literature and the wider discourse on anticipatory action of the experiences and perspectives of local governments, despite their central role in the management of shocks and crises (Gingerich and Cohen, 2015; Schneider, 2024). Local governments are acknowledged as important partners on anticipatory action, but this is 'more often about punctual collaboration' between international organisations and specific government entities than about international actors supporting government-led anticipatory action (Schneider, 2024: 16). Because anticipatory action is not understood from the perspectives of local authorities, it is more difficult for the aid sector to see how best to work with local government on anticipatory action in ways that are locally grounded and owned.[2]

SPARC therefore set out to capture accounts by local government authorities on the extent to which they anticipate shocks and crises, the actions they take (and do not take) in advance to mitigate their impacts, how these actions are carried out, the challenges they face, and the learning that can be drawn from their experiences.[3] The objective is to elevate the voice of local government within international discourse on anticipatory action – helping the aid sector to recognise local authorities' approaches to anticipatory action, which can help foster stronger alignment and collaboration between international anticipatory efforts and state systems. This currently remains a gap (Jameel Observatory, 2024). This is particularly critical in the current context of shrinking humanitarian resources, where coordinated responses are more important than ever.

The hypotheses underpinning this work were that: (1) local authorities probably play a central role in forward-looking action, given their permanent presence on the ground, their mandate to serve their constituencies, their proximity to local communities, and their understanding of local context and needs; and (2) more is likely to be taking place at the level of local

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1 See https://www.anticipation-hub.org/ for a library of literature related to anticipatory action.

2 In line with international policy, the Sendai Framework for Disaster Risk Reduction acknowledges the central role of local authorities in disaster risk management (UNDRR, 2015) and the IGAD Regional Roadmap for Anticipatory Action acknowledges that the 'expansion of anticipatory action must be nationally owned and locally led to be truly effective' (IGAD, 2024: 3).

3 The study contributes to the nascent literature on local government-led anticipatory action – see for example resources under the Global Network of Civil Society Organisations for Disaster Reduction (GNDR) (gndr.org) and Anticipation Hub (anticipation-hub.org). It also complements existing literature on the central role of local government in DRR – see for example UNDRR (2010).

government than is being formally documented and recognised, because local governments may not use the international humanitarian language of anticipatory action (UNDRR, 2024), they often don't document what they do, and their forward-looking actions may appear different from those of humanitarian actors, so their contributions may not be fully visible.

The study addressed the following questions:

1. What examples can be given where local authorities have been able to use forward-looking planning in response to an upcoming shock? What can be learned from these examples?
2. What constraints have local authorities faced in responding proactively to predictions of shocks?
3. What would need to change for local authorities to be more effective in responding to such predictions?

The subsequent sections lay out the study methods and scope; present the findings, reflected through six stories shared by local authorities – five on how they looked ahead and acted early, and one where they did not (Section 2); discuss the findings – drawing out key messages and presenting emerging conclusions (Section 3); and present recommendations (Section 4)

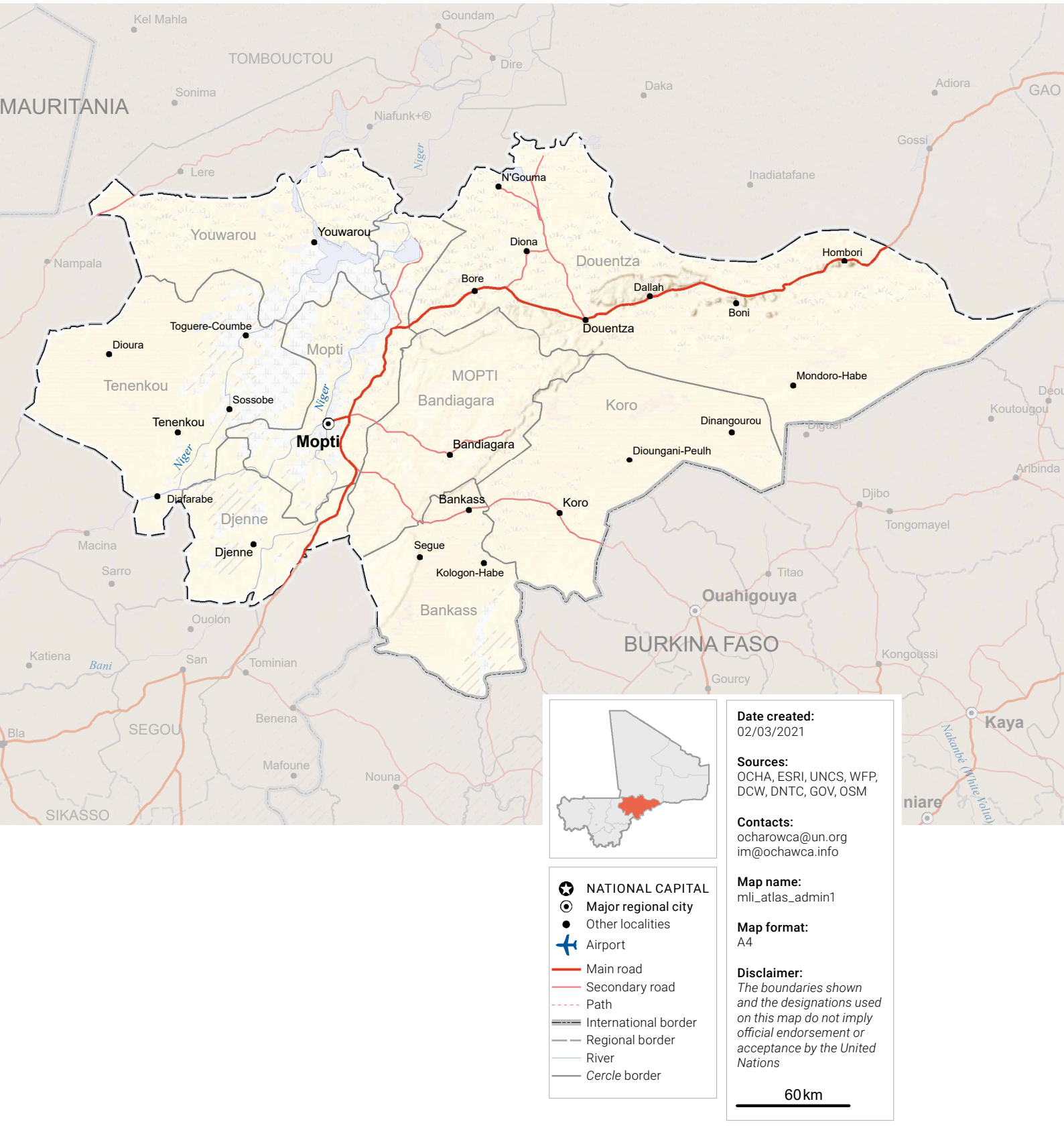
1.2 Methods and scope of the study

A desk review was undertaken at the outset of the work to determine the extent to which anticipatory action led by local government is visible in the literature. Google Scholar was explored using the search string 'local government-led anticipatory action'.

Between December 2024 and March 2025, the research team engaged with local government[4] staff in Dandougou Fakala and Sio communes in Mali's Mopti Region, situated within the Djenné and Mopti prefectures, respectively; and in Moroto and Nabilatuk districts in Uganda's Karamoja Region (see Figures 3 and 4). The team also engaged with a small number of NGO and development partner representatives. The local authorities included in this study were selected based on recommendations of where local government staff were likely to be enthusiastic, active and informed, and open to speak to the team about forward-looking action. The local authorities are thus not presented as being representative of local government overall, in either of the countries.

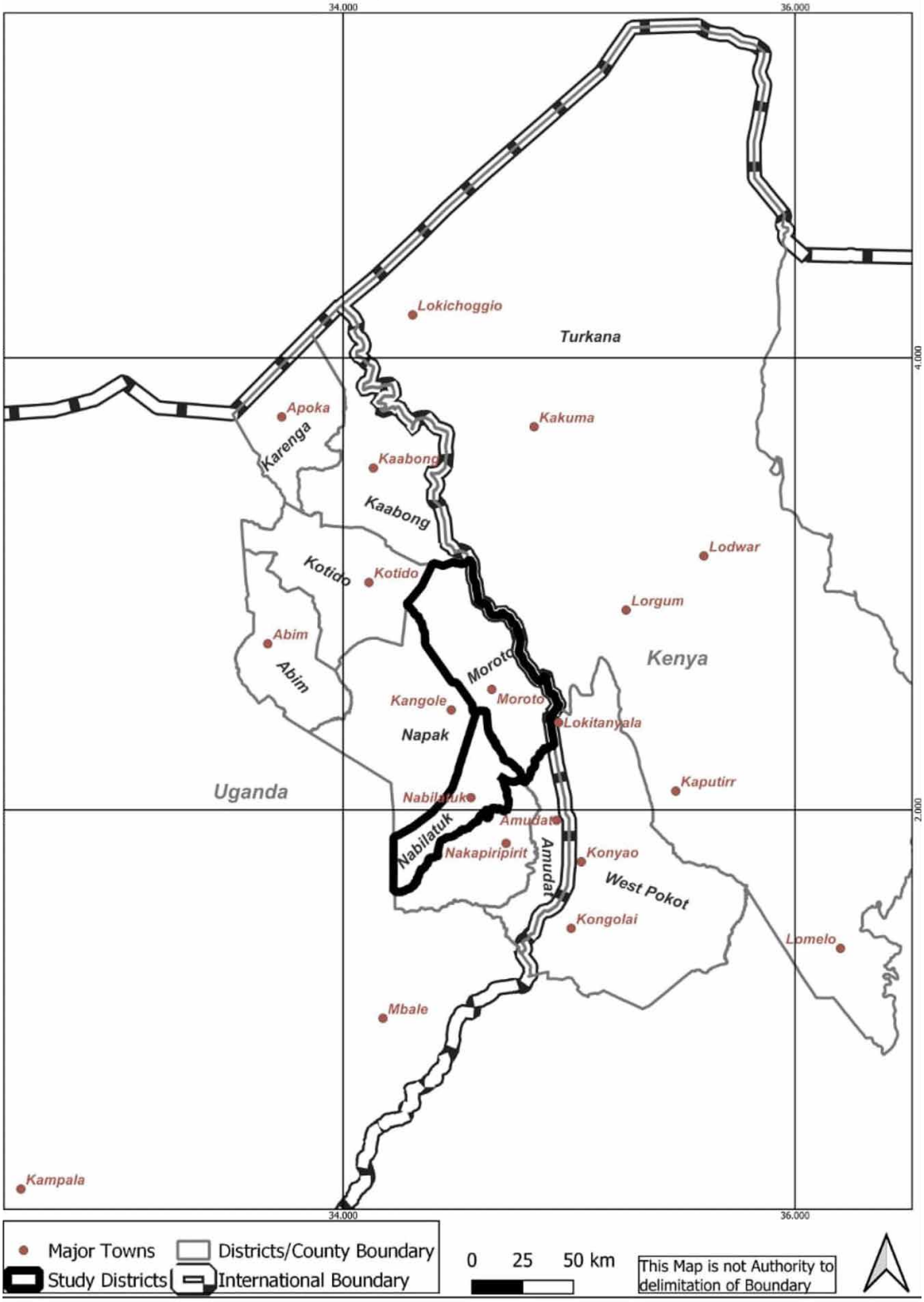
4 Local government here refers to the lowest level of government in which strategy and financing decisions are taken. These are districts in Uganda and communes in Mali.

FIGURE 3 MAP OF MOPTI REGION, MALI, SHOWING THE DJENNÉ AND MOPTI PREFECTURES



Source: OCHA (2021).

FIGURE 4 MAP OF KARAMOJA REGION, UGANDA, HIGHLIGHTING THE MOROTO AND NABILATUK STUDY DISTRICTS



Source: This map was produced specifically for the authors by GIZ (2024)

The research approach aligns with phenomenological study design, where researchers delve into, and make sense of, individuals' lived experience (Wilson, 2015). Forty-five initial informant interviews were conducted, each involving up to three respondents.[5] Many follow-up discussions were then held with these informants over several weeks, as the study team built a rapport with them to capture detailed and nuanced accounts of their experiences and perspectives.

The teams used a snowball approach to find where there was interest in forward-looking thinking; they did not limit the focus to pre-identified departments or to specific shocks. No definition of anticipatory action was given to respondents who were encouraged to explore as openly as possible and in their own terms how local authorities look ahead and respond to events that they see coming. In Mali, due to insecurity in the communes of interest, engagements with respondents were held in the nearest safe towns (Sevaré, Soufourlaye, Mopti and Djenné).

Respondents were invited to recount significant shocks or crises encountered in the previous five years that would illustrate their experiences of looking and acting ahead, based on their own understanding of what this means. Acknowledging that local authorities may not have been able to act early, there was no pressure to tell 'success' stories. Where action ahead of time had not taken place, respondents were encouraged to reflect on why.

The scope of the work was limited to understanding the thinking of local authorities on anticipation, not to evaluate their anticipatory responses. We did not, therefore, assess the effectiveness or impact of the actions recounted. These questions are vital for anyone wanting to support local authorities, given that local decision-makers' priorities and actions do not always align with the priorities or interests of local communities. This requires a separate study.

The analysis presented in this report was shared and discussed at validation meetings with local authority respondents in both countries, and with Mercy Corps representatives in Kampala, Uganda.[6]

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5 There were: 7 interviews conducted in Dandougou Fakala, 8 in Sio, 15 in Moroto, and 15 in Nabilatuk. This count does not include the multiple follow-up discussions held with many of the same individuals.

6 Mercy Corps is one of the members of the SPARC research consortium.

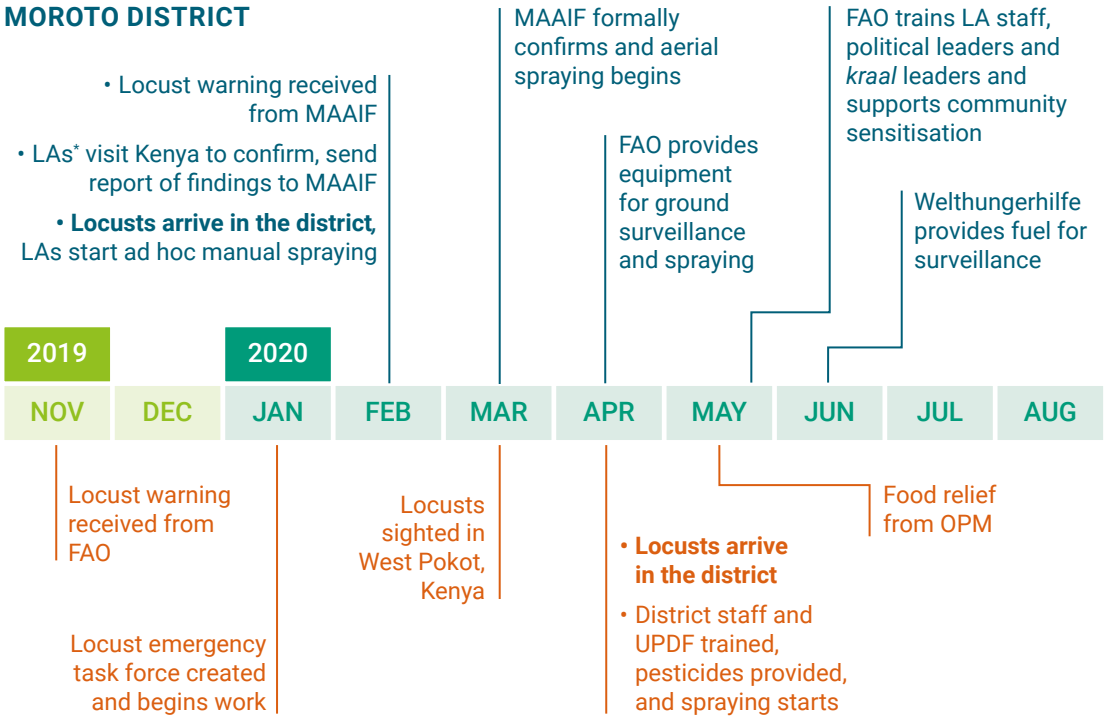
2. LOCAL AUTHORITIES AND FORWARD-LOOKING ACTION: THE CASE STUDIES

The stories recounted by local authorities in both countries are too rich and detailed to present in full. The six examples shared here – five of local authorities acting ahead, and one where they did not – were selected by the research teams to best draw out learning that is of wider relevance.

2.1 Locusts in Nabilatuk and Moroto districts, Uganda (2020)

A locust invasion hit the Karamoja Region in 2020 for the first time in nearly 50 years. None of the local authority respondents had prior experience of locusts. The invasion hit Moroto District in February and Nabilatuk District in April. The following stories demonstrate how even neighbouring districts are not the same in when and how they receive warnings, and how they act on them. Figure 5 summarises the timeline of events and actions to accompany the subsequent narrative.

FIGURE 5 TIMELINE OF MAIN EVENTS BEFORE, DURING AND AFTER LOCUST INVASIONS IN MOROTO AND NABILATUK DISTRICTS



Source: authors

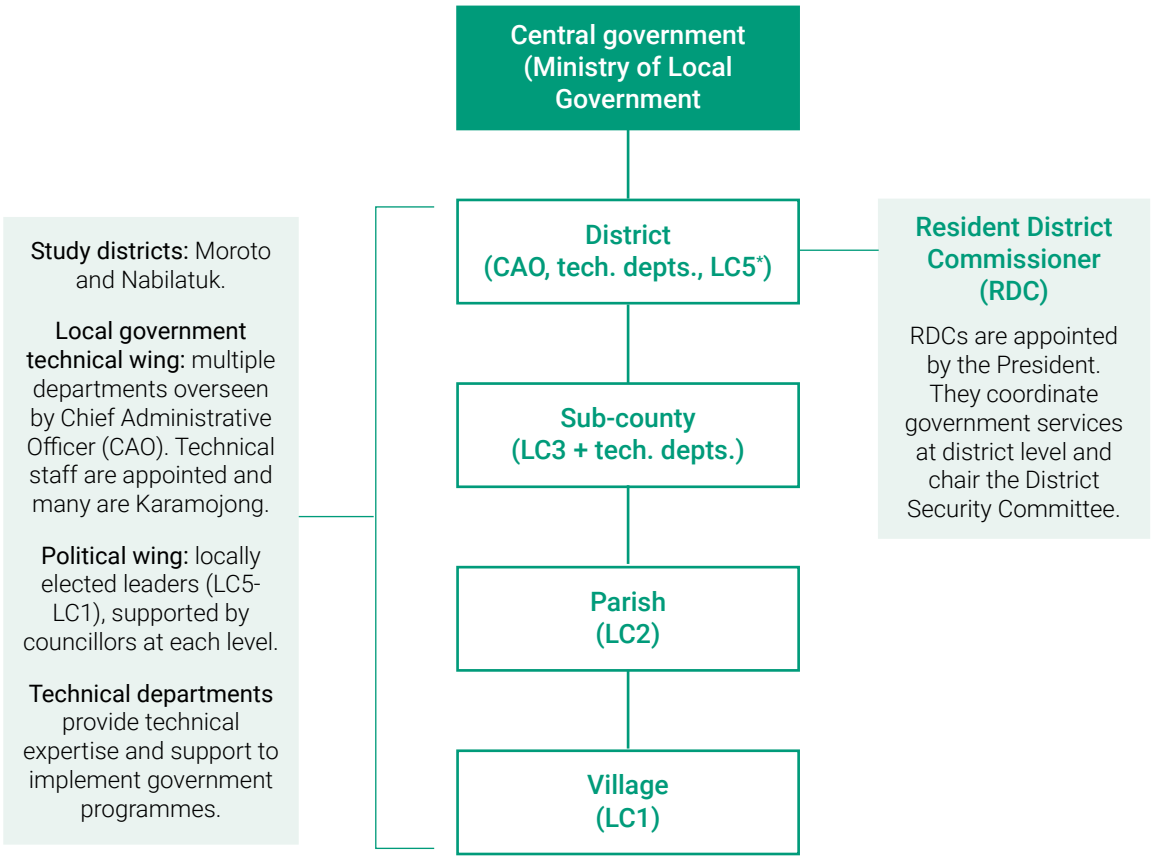
* LA: local authority

2.1.1 Nabilatuk District

Local authorities first received warning from FAO in November 2019, at an end-of-year district coordination meeting,[7] about the likelihood of locusts arriving in Karamoja Region. In February 2020, local authority staff then informally received information about the outbreak in Moroto, and in March from West Pokot, Kenya.

Local authorities had already begun to take action in January. At a regular District Disaster Management Committee (DDMC) meeting,[8] members were tasked to disseminate EW information about locusts, and to collect information regarding locust sightings throughout the district. Members then travelled to the sub-counties, mobilising sub-county staff, parish chiefs and extension workers (see Figure 6 for a simplified overview of local-government levels of administration[9]).

FIGURE 6 LOCAL-GOVERNMENT LEVELS OF ADMINISTRATION IN UGANDA



Source: authors.

* LC: local council

7 District coordination meetings serve as a platform for local government departments and international organisations – including NGOs and other actors – to discuss broader coordination efforts at the district level. While these meetings are meant to take place quarterly, their frequency varies between districts.

8 DDMCs have been in place in Uganda for decades, convene heads of technical departments and others, and are tasked to play a central role in disaster preparedness and response.

9 This overview applies in general, although the levels of governance are slightly different between urban and rural districts.

DDMC members set up an emergency locust task force in January 2020,[10] assigning personnel from the various sub-levels of local government to dedicate attention to surveillance, sharing warnings about locusts with communities, informing people how to identify locusts, and emphasising the need for community reporting of locust locations. Existing district authority staff were also assigned additional tasks as locust officers.

Although no funds were earmarked at district level for unexpected shocks, district authorities sourced small funds from existing departmental budgets, in particular for transport of staff and the task force.

In April, the national Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)[11] trained the Uganda People's Defence Force (UPDF) ground teams,[12] local government staff, and the task force on spraying, and ground spraying began when locusts arrived in the district in April. Pesticides were provided by MAAIF, FAO, the National Agricultural Research Organisation (NARO), and Vision Terudo, a local NGO. Vision Terudo also provided monthly funds to enable the work of the task force and locust officers. Central government mobilised aerial spraying later. During the crisis, the Office of the Prime Minister (OPM) provided food relief to affected people.

2.1.2 Moroto District

Local authority staff received information from MAAIF about the likely locust invasion only shortly before the locusts arrived in the district in February 2020. The warning was triggered by the presence of locusts across the border in Turkana County, Kenya. The following day, the district agriculture department met internally. Although no dedicated funds or resources were earmarked at district level for unexpected events, the department made available fuel for staff to verify the situation across the border in Turkana County. On the way back, staff found that locusts had already reached Moroto District.

The department reported to MAAIF at national headquarters, who sent experts to Moroto to verify. At this point, no formal locust control measures had been mobilised because this had to await formal confirmation by MAAIF to headquarters. However, district staff mobilised ground spraying using motorised spray pumps, knapsack sprayers and pesticides previously sent by MAAIF for other crop pests.

By March, the month after the locusts arrived, MAAIF confirmed the attack, and central government sent a helicopter to conduct aerial spraying. In April, FAO provided equipment, pesticides, and motorbikes for ground surveillance and spraying, and central government mobilised the UPDF to support ground spraying efforts, with logistics and transport provided by FAO. Local authority staff showed UPDF ground teams how to mix and spray pesticides to reduce delay, since formal training by FAO began only in May.

From May onwards, FAO provided training on desert locusts for local government staff, political leaders and *kraal*[13] leaders in the district and supported dissemination of advice to communities, including not to eat locusts after spraying, to keep livestock away from sprayed

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10 Local authorities set up task forces on an ad hoc basis for specific emergencies. The practice of establishing task forces started in response to COVID-19 and has since become a regular practice. Local authorities are not specifically tasked to do this, but they can, so they do.

11 With support from FAO and NARO.

12 Uganda's military – mobilised by central government to support ground-spraying efforts.

13 A traditional pastoralist settlement and cattle camp.

areas, to stay away from sprayed water sources, and to be vigilant. In June, the international NGO Welt Hunger Hilfe (WHH) supported local authorities with fuel for surveillance.

Throughout, local government staff collected and reported the coordinates of locust locations to guide aerial and ground spraying. Respondents used their own resources for phone airtime to obtain information from their personal networks and for fuel for motorbikes to collect coordinates of locust presence.

Locusts had a devastating impact in 2020. Local government staff have since taken advantage of existing opportunities for locust surveillance by including this in other surveillance activities in the district. They are also monitoring the current locust situation in neighbouring South Sudan through the online locust surveillance platform at MAAIF, which provides real-time updates on locust presence. This platform was established in response to the locust crisis in 2020 and remains operational.

2.1.3 What do we learn from these stories?

- Local authorities varied on how they undertook anticipatory actions in preparing for the arrival of locusts in advance. They emphasised sharing warnings and advice with communities, assigned existing staff additional responsibilities, and leveraged their extensive formal and informal networks to share and collect information, which guided aerial and ground spraying. They also began ground spraying and shared warning and advice before central authorities mobilised resources locally.

- They did this in the absence of earmarked resources, using existing staff and equipment, mobilising funds from local partners (NGOs), shifting funds for transport and logistics from within existing budgets, and making personal contributions.

- Addressing the locust crisis was a shared central and local government priority. Aligned priorities boosted local action, through national coordination and resource mobilisation. National authorities mobilised support and resources – through FAO, NARO and others – and local authorities mobilised local partners and networks. However, the involvement of central authorities added to delays in response.

- Local and central authorities have learned from the experience and put in place processes to improve anticipatory action in the future. Local authorities have since made locust surveillance part of regular surveillance for other crop pests and diseases. They have also benefited from an online locust surveillance platform – set up by central authorities following the 2020 crisis – to track locusts in neighbouring countries in real time.

2.1.4 What were the main constraints highlighted?

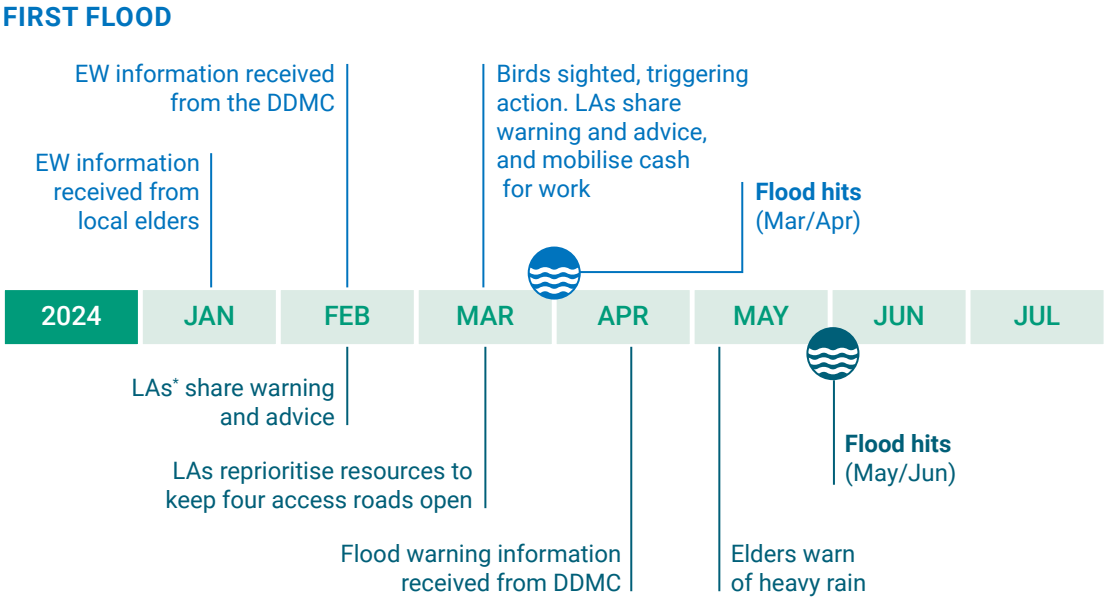
- Locusts were not integrated into the district's EW system, hence information about locusts was mainly ad hoc.

- There were no prepositioned or earmarked resources at district level for locust response.

- Delays from central level were impediments. Sub-county respondents also perceived delays between the district and sub-county, and insufficient involvement of sub-county staff and communities in decision-making.

2.2 Floods in Nabilatuk District, Uganda (2024)

FIGURE 7 TIMELINE OF MAIN EVENTS AHEAD OF FLOODS IN NABILATUK DISTRICT



Source: authors

* LA: local authority

Respondents recounted two flood events in Nabilatuk District in 2024 that affected two different sub-counties. The first floods hit Nabilatuk sub-county in March and April and the second hit Lolachat sub-county in May and June (see Figure 7).

2.2.1 The first flood

The district water department received formal and informal warning about expected heavy rain in March and April. They reported how they had received three kinds of warnings. In January, the department head (also a traditional elder) participated in an annual *akiudakin* meeting[14] where elders predicted heavy rains and advised people to sow seeds early, and to dig trenches to divert water. In February, a DDMC meeting shared the Uganda National Meteorological Authority (UNMA) forecast, which predicted the likelihood of above-normal rainfall for the March–May period for the district. Finally, in the first half of March, the water department head spotted a cattle egret flying in from the east, a traditional sign of imminent heavy rain.

The bird sighting was the decisive trigger for action. Officials had hesitated to act solely on the traditional and UNMA forecasts, viewing the former as unscientific and the latter as lacking local specificity. The bird's appearance was considered a credible, locally grounded confirmation.

The district department staff then agreed a plan to share flood warning and advice with high-risk communities, taking advantage of radio time allocated weekly to the district by a local

14 The *akiudakin* ceremony is where elders (*ngikasikou)* bestow blessings and permission to 'release' cattle to grazing camps in search of better pastures, marking the start of the dry season and the beginning of the seasonal migration of herds.

station. Staff shared warning and advice in their own villages, and visited the sub-counties to ensure information was posted on sub-county notice boards and shared onwards with communities through churches, mosques and markets. The water department had a budget for travelling to inspect infrastructure and water levels, which enabled movement.

District budgets are generally tied to pre-approved plans, so accessing funds for unplanned activities was difficult. The water department was largely restricted to giving warnings and advice. It also recruited support from NGOs to enable other activities, such as cash for work to dig larger trenches and diversion channels.

The floods arrived in late March. Many people had taken precautionary measures but, in one flood-prone village, the water still swept away crops and some cattle. It inundated bridges and caused some drowning. (This was communicated to OPM, who then sent food relief.) Floods also hit another village which had never before experienced flooding, taking everyone by surprise. District staff had thought it unnecessary to visit that village, since it was considered low risk.

2.2.2 The second flood

Sub-county staff in Lolachat sub-county anticipated the floods that arrived in May and June. They received information from the DDMC in April, and local elders sharing warnings of heavy rain in early May. District government requested early-maturing seeds from NARO, anticipating that these could be harvested before floods in June but these arrived too late. Farmers therefore planted their usual varieties, which were later affected.

The water department and public works department also revisited plans for road maintenance, prioritising four roads to be kept passable during floods. This was successfully achieved.

Discussions are underway at district level, between the water and public works departments, and between local authorities and central government, to put in place larger infrastructure to prepare for future floods.

2.2.3 What do we learn from these stories?

- Local authorities used formal and informal sources of warning to prepare and to act. Being both local authority staff and community members, they had access to both.
- In the absence of resources for activities beyond surveillance, local authorities emphasised getting information to people early so they could take their own actions. Some people followed advice; others did not.
- The unexpected sometimes happens. Anticipatory actions can be well targeted at the places most likely to be hit by a shock but events can then occur in surprising places and undermine the best preparedness. This is inevitable when action is taken on the basis of a forecast.
- Local authorities effectively prioritised and implemented activities from existing plans, transforming longer-term DRR interventions (for road maintenance) into anticipatory action (selecting specific roads to keep open in the light of specific forecasts).

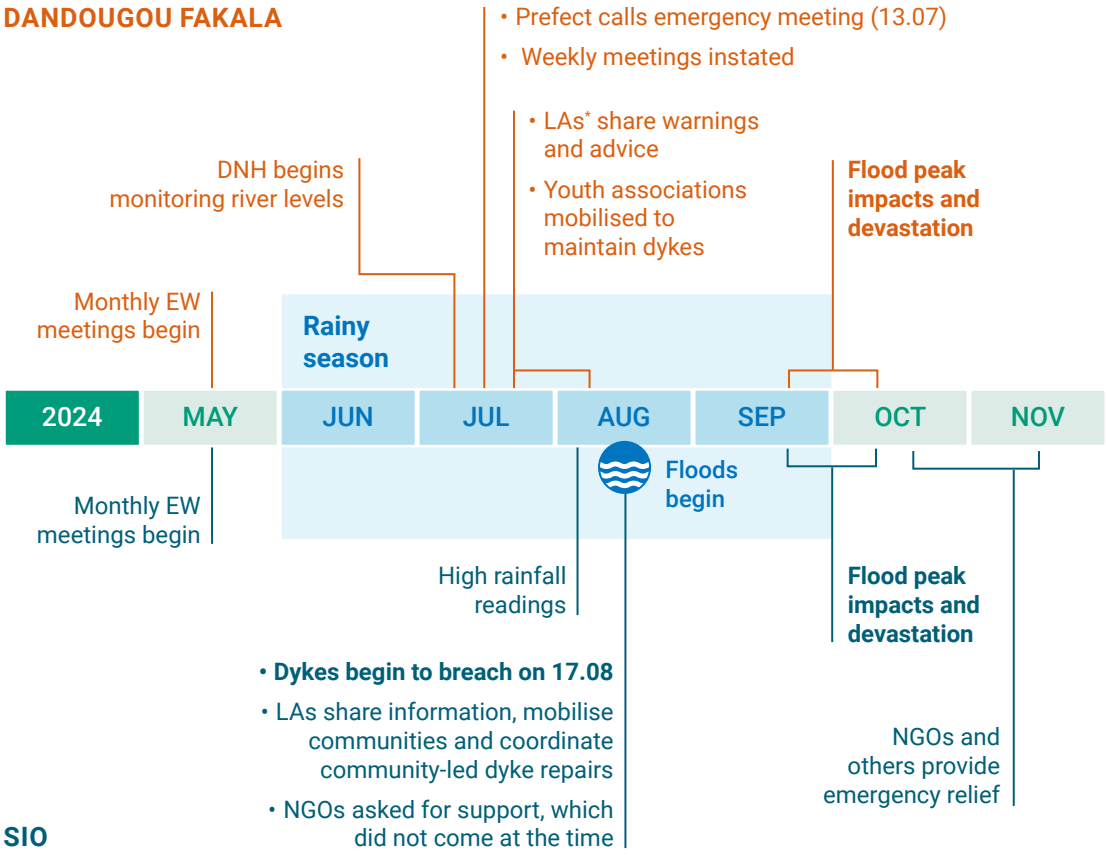
2.2.4 What were the main constraints highlighted?

- Local government does not have access to flexible funds for responding to emerging information. Local authorities could do little beyond information-sharing.
- Bureaucracy and delays at national, district and sub-county levels were impediments; for example, delays delivering early-maturing seeds. In the absence of local access to early-maturing seeds, timely advice to use them was of limited use. This illustrates the dependence of anticipatory action on longer-term preparedness or investment in DRR systems, such as ensuring appropriate input supplies when needed.

2.3 Floods in Dandougou Fakala and Sio communes, Mali (2024)

The following stories show how local governments are not homogenous. The two communes, 100 km apart, had different responses at different times ahead of the same floods. The stories also highlight how local authorities relied mainly on existing informal systems and structures to act, given insecurity, staff shortages and funding constraints. Crucially, the stories demonstrate that even when anticipatory action is taken seriously, it has its limits.

FIGURE 8 TIMELINE OF EVENTS AHEAD, DURING AND AFTER THE FLOODS IN DANDOUGOU FAKALA AND SIO COMMUNES



Source: authors

* LA: local authority

The worst floods since 1967 hit the two study communes in September 2024, caused primarily by rivers bursting their banks. Early warning of a riverine flood was linked to monitoring river levels upstream, even beyond the national borders (see Figure 8). These forecasts have greater certainty, and greater accuracy in the predicted degree of flooding and its timing.

2.3.1 Dandougou Fakala Commune

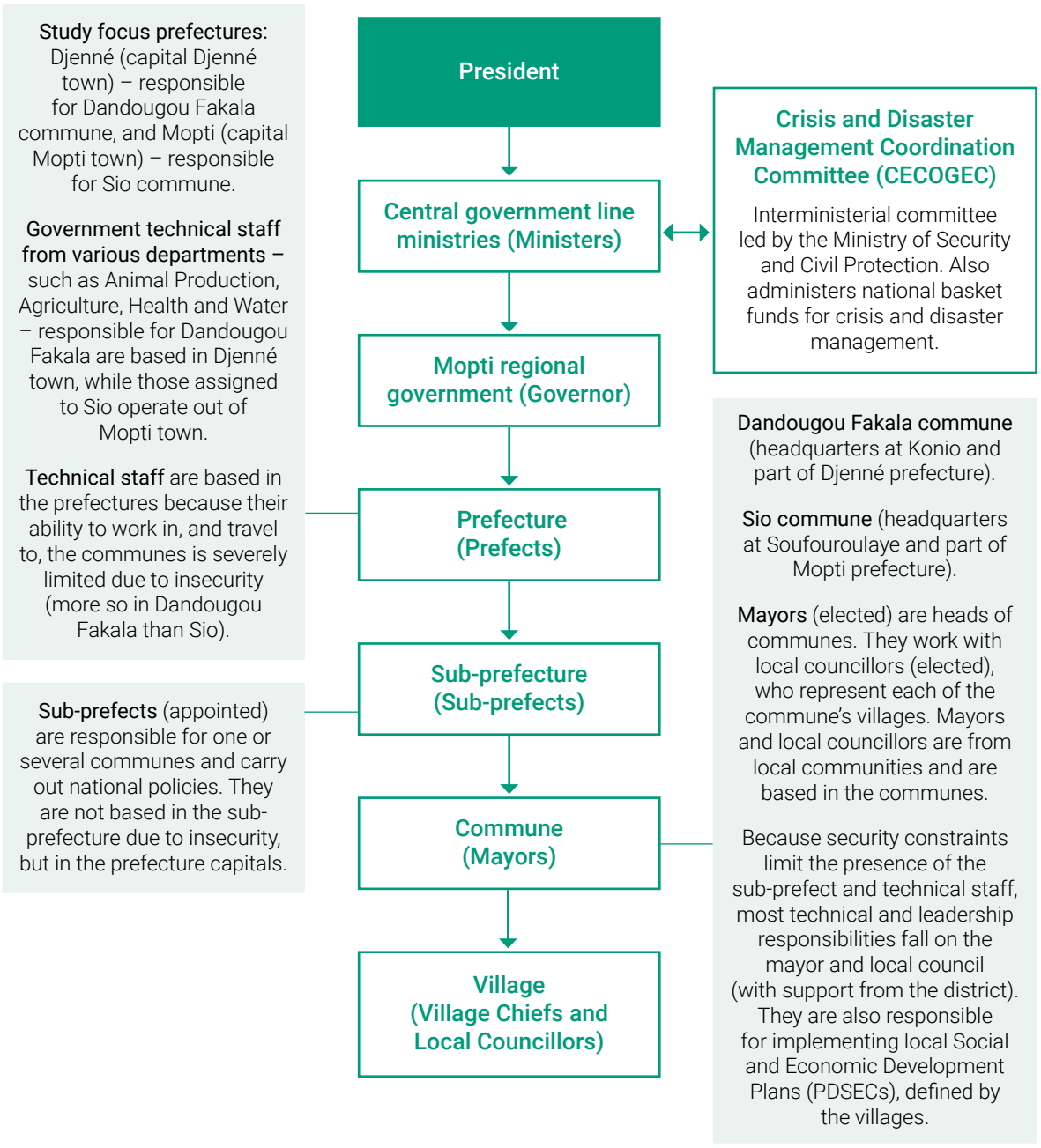
Since May, both formal and informal EW information had increasingly been pointing to likely floods. Formal sources included: daily forecasts, shared on radio and television, from Mali's National Meteorological Agency (ANMM); weekly river-level reports from the National Directorate of Hydrology (DNH), which monitors the region's major rivers (see Box 2); and updates from Mopti's Bani-Sankarani Integrated Development Programme (PIDBS), which monitors water levels upstream and downstream of the region's major dams. This information was gathered and analysed by Mali's early warning system, Systeme d'Alerte Precoce (SAP), represented locally within the prefecture's planning department. The consolidated information was shared with technical departments and NGOs across the prefecture at monthly EW meetings in Djenné, the administrative centre. (See Figure 9 for an overview of administrative structure).

BOX 2 THE IMPORTANCE OF RIVER-LEVEL MONITORING AT MALI'S SOUTHERN BORDERS

River levels in Mopti are dictated mainly by river inflows from Côte d'Ivoire and Guinea to the south, rather than by local rainfall. The DNH measures river levels at multiple stations, starting at the national borders. High levels at the borders signal that waters in Mopti will rise within two to four weeks. River-level monitoring begins in July shortly after the start of the rainy season when river levels in Mali begin responding to rainfall in upstream countries. The main rivers in Dandougou Fakala are the Bani and the Niger, with the Bani – a major tributary – joining the Niger near Mopti.

Several traditional signs also signalled the likelihood of heavy rain and/or high river levels. Birds were nesting on higher-than-usual branches, ants were moving their nests to higher ground and there was unusual migration of hornbills. Commune staff shared informal warnings with technical staff in Djenné, who verified against official data. Technical staff shared formal forecasts with commune counterparts. Strong ties between local authorities, based in different locations due to insecurity, enabled open and regular forecast exchanges.

FIGURE 9 OVERVIEW OF ADMINISTRATIVE STRUCTURES AND LOCAL AUTHORITY STAFF, MALI



Source: authors

In mid-July, action began to be taken. The prefect of Djenné convened an emergency meeting in the prefecture capital, gathering technical department heads, mayors, local council members and Chamber of Agriculture (CoA) representatives[15] from each commune, as well as local NGOs. Commune representatives had to cover their own travel costs, as attendance was mandatory but no government funds were available for travel.

15 Local authority staff are supported by members of the Permanent Assembly of the Malian Chamber of Agriculture (APCAM), a civil society organisation active across Mali. Known at commune level as the Chamber of Agriculture (CoA), this comprises volunteers from various livelihood groups (pastoralists, fishers, farmers) who represent and protect local interests. The CoA works closely with local authorities at commune and prefecture levels and provides direct support to villagers.

At the meeting, the prefect directed all attendees to share warnings and advice with all villages, and to undertake repairs of existing dykes in the communes. He established weekly follow-up meetings in Djenné[16] to monitor progress and to hold local authorities and NGOs to account.

Because the sub-prefect and technical staff were absent from Dandougou Fakala due to insecurity, the mayor and local council were responsible for implementing the prefect's instructions. Local councillors convened the heads of all 10 villages to relay flood warnings and to advise people to avoid riverbanks, to clear drainage canals, and to maintain and repair local dykes.

The village heads mobilised the *griots*, or town criers, in each village to spread the word. The whole communication process took a week. G*riots* are traditional keepers of oral tradition, also used to communicate important information to local people, which they do through storytelling and music. They do this on a voluntary basis, for which they are often compensated with gifts and acts of goodwill. The prefect sent a military-escorted delegation from the prefecture to the commune to emphasise the seriousness of the situation.

Local radio was considered vital for spreading warnings and advice, but prefecture technical staff had to pay themselves, as there were no government funds for this. At commune level, the mayor had some discretionary authority to use the budget for Social and Economic Development Plans (PDSEC) to share information by radio in exceptional circumstances.[17] This had to be agreed by the 10 councillors, each representing one of the villages in the commune.

The mayor and the water, sanitation and hygiene (WASH) department mobilised local youth associations to participate in dyke repairs and other public works, and to help the *griots* spread warnings.[18] Prefecture technical departments drew small funds from their operating budgets – which they do not have every year – to support action ahead of the floods. Again, while operating budgets are not intended for anticipatory action, there is some local discretion at prefecture level on their use.

Funds were pooled at the prefecture level and distributed among communes to purchase materials for dyke maintenance and repairs. From July, local authorities were appealing for support from NGOs, private individuals and other goodwill actors. International NGOs contributed tools and materials, including sandbags, and funded cash-for-work dyke repair.

By August, most people knew that floods were coming. Many heeded the warnings, taking different kinds of action: fishing people prepared for a bumper year, farmers grew rice varieties suitable for flood conditions or shifted cultivation to higher ground, and herders migrated early to Burkina Faso. Many contributed to dyke repairs but others did not.

Trust was seen as a critical factor. Some would not act unless local authorities paid them for repairs in the belief that local authorities and partners had funds but diverted them for other purposes. In one village, people responded by building clay dykes on their own initiative (which successfully reduced the effects of the floods), because the water department had previously improved its water infrastructure and had fostered trust through ongoing support to the local management committee.

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16 While EW meetings are usually monthly, in the case of emergencies the prefect instates weekly meetings.

17 Funds to implement the PDSEC come from local taxes and from central government.

18 The water department had a long-standing partnership with youth associations, who have historically carried out annual repairs and maintenance of dykes and other protective infrastructure. These had been inactive for some years but were re-mobilised for these floods. They work on a voluntary basis but the department then prioritises them when there are paid community projects or cash-for-work opportunities.

When the river began to overflow, efforts and resources were pooled to pump water from flooded areas. Local councils and the rural engineering department provided motorised pumps; fuel was funded by local councils, communities and NGOs; and youth supplied the labour.

Despite these efforts, the scale of the floods overwhelmed preventative measures and had a devastating impact. Lives were lost, homes destroyed, fields inundated and livestock washed away. However, informants believed that, in a few villages, the devastation had been lessened and youth associations reportedly conveyed to local authorities that people nevertheless felt proud of their ability to take action.

The WASH department has since submitted a proposal to an INGO to reinforce dykes and roads along the river, securing $10,000 in funding. Village heads have suggested creating village-managed funds from local contributions, for which a legal basis is being explored. They would then lobby NGOs for co-financing.

Local authorities want to lobby the Crisis and Disaster Management Coordination Committee (CECOGEC) to decentralise crisis management funds and enable local action ahead of time. Commune staff also want to push collectively for the resumption of central government funding for annual maintenance and repair of dams and other infrastructure in the communes, which had stopped following the national uprisings in 2012 – recognising that the potential scale of DRR can be more effective than that of anticipatory action.

2.3.2 Sio Commune

As in Dandougou Fakala, formal and informal warning helped local authorities anticipate flooding. From May, EW meetings shared ANMM forecasts, and high daily rainfall was recorded in village rain gauges by early August.[19] However, in Sio, people were not certain that this would lead to floods. Although informal indicators pointed to high rainfall, these were interpreted as indications of a good season rather than impending floods.

The local authority began to act only in late August, when staff saw the river breach the dykes around their fields. They shared photographs via a young leaders' WhatsApp group,[20] and the village leaders then shared flood warnings at village meetings and mobilised the *griots*.

Dyke repairs began only after the dykes started breaching. The villages collectively contributed sandbags, and young people worked in shifts around the clock for over a week on dyke repairs. People in the villages supported, transporting sand and gravel using their own carts and, later, boats. Residents also provided personal pumps and fuel to drain water.

The town council had not been able to collect any taxes in the commune since 2016, when insecurity began, and, since other funds were absent, everything had to be paid for by individuals. This limited the commune's role to sharing warnings, advice and coordination. The local authority requested support from NGOs and other organisations in late August and September, but the only support given was emergency relief in October and November.

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19 Designated village rain-gauge readers are established in all villages and reported 266 mm rain on 2 August 2025, and 104 mm, 102 mm and 90 mm on the following days.

20 The group was established by an NGO as volunteer liaison between the local council and communities to communicate NGO activities. The council also uses them to share other information.

The floods in Sio were devastating. Respondents estimated that 90% of the commune's cultivated land was flooded. Small ruminants, mainly owned by women, were swept away, while cattle, which had been moved to higher ground, suffered disease and malnutrition and were exposed to theft.

People have reportedly learned from the experience. Respondents noted a shared realisation: communities must first help themselves before relying on external support. After the floods, villages began reinforcing dykes and repairing infrastructure.

2.3.3 What do we learn from these stories?

- The communes were different. One took anticipatory action, based on EW, while the other only reacted when they saw dykes breaching.
- Trust was critical to timely action and collaboration. In villages where local authorities had built trust, communities trusted the local authority. Where trust was absent, weak collaboration was a major impediment to swift action.
- Local authorities focused on sharing warnings and advice with communities and leveraging extensive informal networks to maintain and repair dykes. National EW systems were important.
- Prefecture and commune authorities tapped into existing budgets to support communication and dyke reinforcements. They also relied on voluntary contributions.
- Local authorities tried to mobilise support from NGOs, although this was provided in time only in Dandougou Fakala.
- Sometimes, even the best anticipatory action does not work. The sheer scale of the floods overwhelmed efforts in both communes, highlighting that anticipatory actions – by their nature, modest activities that can be implemented quickly – have limits. They cannot always compensate for lack of investment in longer-term DRR.

2.3.4 What were the main constraints highlighted?

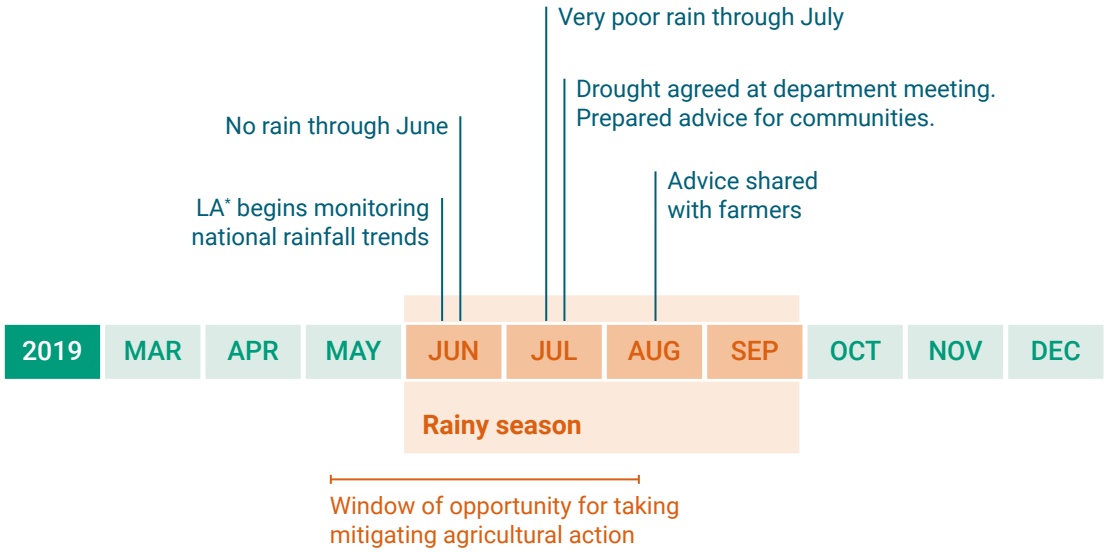
- Absence of dedicated funds to support crisis prevention.
- The lack of trust in some communities, as discussed above.
- Trust in EW in one commune which interpreted forecasts of heavy rain in a positive way, leading to no anticipatory action being taken.

2.4 Drought in Dandougou Fakala and Sio communes, Mali (2019 and 2021)

The following stories illustrate how the same meteorological drought has very different crisis timelines for different people. Different departments looked at the calendars in relation to different livelihoods, and so their anticipatory actions were based on different triggers. This section looks in turn at the different drought calendars faced by farmers, herders and fishing people, before comparing them and looking at the implications of their differences.

2.4.1 Agricultural sector, Sio commune: drought, 2019

FIGURE 10 TIMELINE OF AGRICULTURAL ACTIONS IN SIO COMMUNE



Source: authors

* LA: local authority

The rainy season generally begins in mid-June or early July and ends in late September or October. In June, the agriculture department began monitoring ANMM forecasts and rainfall trends via radio and television. Local rain-gauge readings[21] showed that no rain fell throughout June and very little throughout most of July (see Figure 10).

Farmers normally sow at the beginning of July but, by late July, there was consensus that it would be a drought year. Drought warning and technical advice was shared in early August (i.e. based on evidence of drought, not on seasonal weather forecasting). This is considered the latest that farmers can take meaningful action. Local radio gave free airtime for broadcasting advice, also shared by village chiefs and *griots*.

Advice included: improved water and soil conservation techniques; sowing early-maturing and drought-resistant crop varieties; using organic fertiliser; and intercropping. These are the department's standard agricultural extension messages but they were given renewed emphasis because of drought warnings.

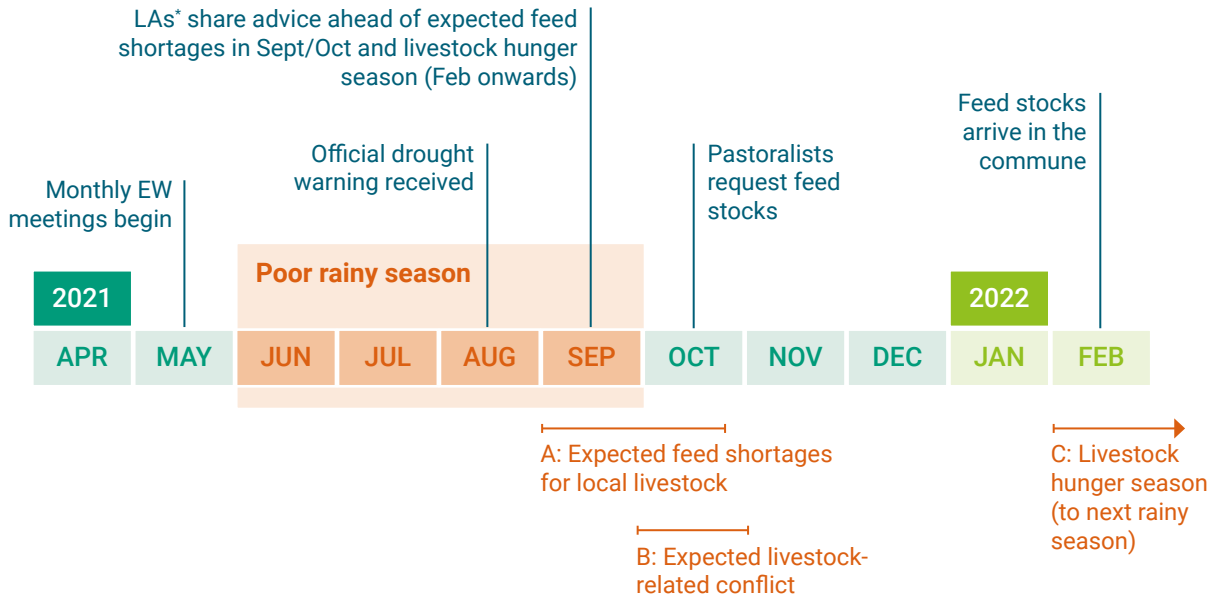
The department acknowledged that its advice is not widely adopted. Barriers include the cost and difficulties in accessing recommended seeds, and the time required to implement measures such as compost-making. Department staff felt obliged to share whatever guidance they could, and they can only promote technical advice that has been approved by central agricultural authorities.[22] (In Uganda, too, respondents noted that advice offered little to no benefit in droughts.) Informants in Sio noted that local farmers switch anyway to traditional early-maturing crop varieties when poor rainy seasons are expected, and they also switch to their own rainwater-harvesting techniques.

21 Local rain-gauge readers are present in all the villages and record daily rainfall.

22 Much of this technical advice has not changed in decades.

2.4.2 Animal production sector, Sio commune: drought, 2021

FIGURE 11 TIMELINE OF PASTORAL ACTIONS IN SIO COMMUNE



Source: authors

* LA: local authority

The expected drought of 2021 signalled different challenges for the livestock sector at three distinct periods. First, local pasture was likely to be poor in September and October, a problem for milking cows and older cattle who do not migrate (line A in Figure 11). Second, herds would probably return from migration in October, earlier than usual and during crop harvest time, increasing the risk of crop damage and conflict with farmers (line B in Figure 11). Third, an extended hunger season for cattle was likely the following year, starting around January/February (line C in Figure 11, see Box 3). When respondents spoke of preparing for an expected drought, they were referring to these three problems, extending into the next rainy season.

BOX 3 THE IMPORTANCE OF *BOURGOU* GRASS

Agro-pastoralist herds in Mopti mainly depend on *bourgou* grass (burgu millet or hippo grass, *Echinocloa stagnina*) on their return from transhumance. *Bourgou* grows in the floodplains and serves as a vital feed source for cattle during the dry season – from April until the onset of the next rainy season – when other pasture is scarce. *Bourgou* yields are also affected by drought, when feed shortages are expected from January or February until the next rainy season.

Forecasts pointing to poor rains and a likely drought were shared at commune monthly EW meetings from the start of the rainy season. Pastoralists and traders had also observed informal signs, including poor growth of forage species and unusual bird migration. The animal production officer received an official drought-warning letter from the National Directorate of Animal Production and Industries (DNPIA) only in August. At September's EW meeting, the animal production department began to take action, mainly sharing advice. Although this was already in the middle of the *meteorological* drought, these actions were still anticipatory, aimed at mitigating predicted later impacts (the *agricultural* drought for the livestock sector).

The advice was aimed at expected feed shortages and included: destocking, to help fund feed purchases; planting fast-growing elephant grass (a newly introduced species) wherever possible; storing crop residues for feed in the dry season; and producing urea- and molasses-treated silage. Although this advice is routine, it was emphasised in September because of the drought. A respondent noted, 'the department has no operating budget let alone funds to support preventive measures for livestock keepers in the face of shocks and crises, so our role is limited to advisory support'.

Silage was considered too time-consuming by herders, and destocking as undesirable. Elephant grass was well received, as it is easy to plant and people had previously seen good results (see Box 4).

BOX 4 ELEPHANT GRASS

Elephant grass requires little water, propagates fast and regrows quickly after cutting. A cutting provides yields within a month, and the purchase of a small number of cuttings (at 150 CFA per cutting) can help buffer feed stocks for a family's livestock through the rainy season and into the next. Respondents reported that the grass was introduced to Mali five years ago. It is available at the animal production department in Mopti, and once cuttings are established in a village they can easily be passed on.

In October, pastoralists and their associations requested additional feed from the local authority in anticipation of shortages in 2022. The request was passed to regional and central authorities, and the Ministry of Livestock and Fisheries then supplied feed at subsidised prices. Although this reached the prefecture only in January, and the commune villages by February, it was still in time for the cattle-lean season.

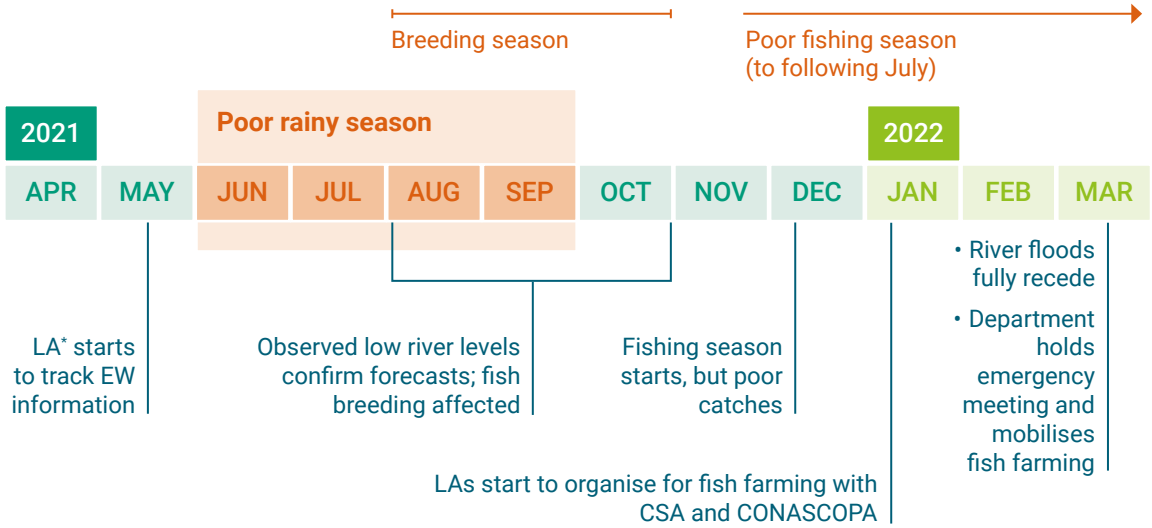
In order to regulate competing demands of herders and crop farmers, the *bourgoutières* conference is held every year by the Mopti regional government.[23] This sets the earliest time when herders can return after the rains. The conference is an age-old mechanism, relied on to prevent conflict in expected dry years. In drought years, the timings are strict. Cattle keepers must not return before November, only after the harvest in October. The governor schedules the conference earlier in expected drought years to ensure advance notice. All herders track the timing of the conference and its decisions but the decisions are not always respected, triggering conflict. This reinforces the need to repeatedly emphasise its importance to everyone ahead of the drought being felt.

Following the drought experience, the local authority is prioritising DRR measures more, ramping up the promotion of elephant grass as preparedness for future drought.

23 In times past, this annual meeting was convened by traditional authorities, chaired by Fulani chiefs called *Diorros*. Since independence, the regional governor has assumed the role of traditional authorities.

2.4.3 Fisheries sector, Dandougou Fakala commune: drought, 2021

FIGURE 12 TIMELINE OF ACTIONS IN DANDOUGOU FAKALA COMMUNE



Source: authors

* LA: local authority

Fish breed from August to October when the rivers are at their highest. The fishing season starts in December and extends to July the following year, with peak production from December to March. Therefore, when fishing people spoke of an anticipated drought, they meant a poor fishing season in January–July in the year following a poor breeding season due to low river flows in August to October (see Figure 12).

Technical staff in the fisheries department followed ANMM forecasts, and particularly the DNH reports of river-water levels from upstream (see Section 2.3 above) from the start of the rainy season in June. Low river-water levels from August confirmed the predictions. In response, the commune's fishing council promoted fish farming, for which there are training sessions throughout the year (see Box 5). Participants were asked to share information onwards in their villages.

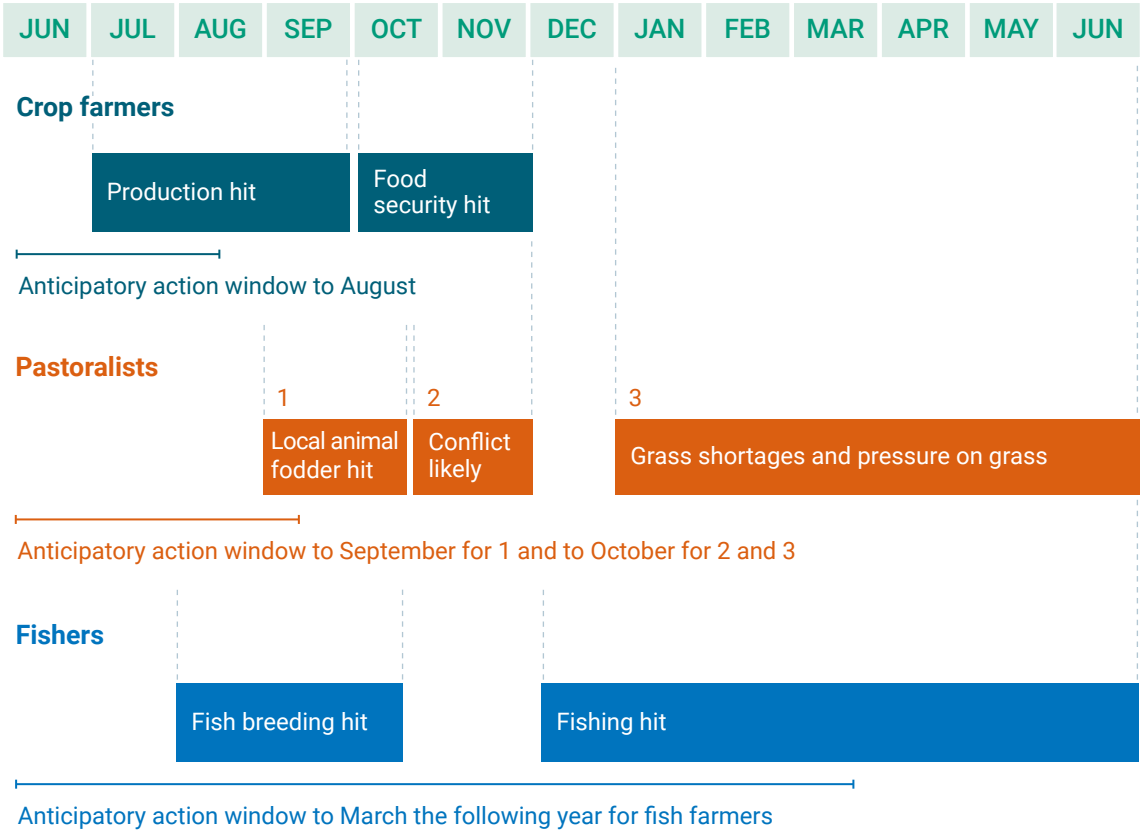
BOX 5 CHANGING FISHING PRACTICES AND HEIGHTENED EMPHASIS ON FISH FARMING

The fisheries department considers fish farming to be the future of fishing in Mopti, as the traditional fishing sector is declining, driven partly by climate change (greater variability in river-water levels) and partly by increased pressure on stocks, as the number of people fishing in the area has soared. Even people from pastoral communities have started to fish. The newcomers are often blamed for the reported breakdown in well-defined traditional river management, being accused of disregarding established fishing rules, such as by using illegal nets. Determining the fairness of the reported misconduct was beyond the scope of this study.

In January 2021, the department began ensuring a sufficient supply of fry and feed locally, and organising subsidies for the fry, through central government institutions with whom they have long-standing ties.[24] They asked NGOs to provide support to new fish farmers. Fish farming itself could begin around March, when the receding flood allows fish farming in the deeper sections of the main river channels. The hotter months, from March to June, are when fish grow most rapidly.

An additional emergency meeting at the beginning of March discussed the importance of respecting traditional no-fishing zones in light of an expected poor fishing year and an expected influx of large numbers of people fishing. The main focus, however, was on starting fish farming promptly, to secure harvests by June or July.

FIGURE 13 DIFFERENT LIVELIHOOD CALENDARS OF A DROUGHT FOR FARMING, HERDING AND FISHING



Source: authors

24 The Commissariat à la Sécurité Alimentaire (CSA) and Mali's Organisation for Agricultural and Fishing Cooperatives (CONASCOPA).

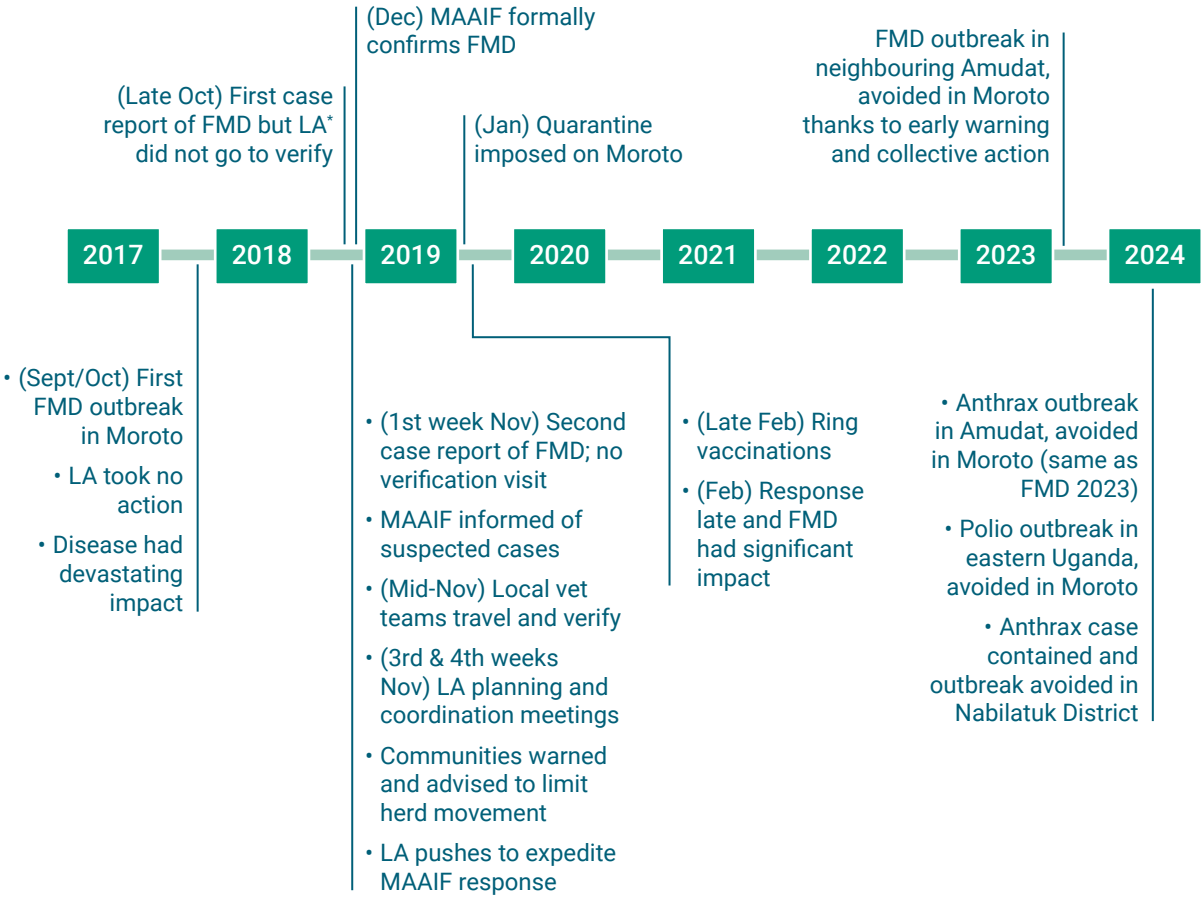
2.4.4 What do we learn from these stories?

- Resilience programming or DRR served as a foundation for anticipatory action. For example, elephant grass and fish farming were options for rapid anticipatory action because they were already familiar and an infrastructure and technical know-how were in place. The use of these as anticipatory action has reinforced their prioritisation as longer-term DRR.
- Timely anticipatory action depended on established longer-term relationships, for example in enabling subsidies and prepositioning of fish fry and feed, the *bourgoutières* conference, and the trust of villagers enabling them to accept elephant grass rapidly.
- The windows of opportunity for anticipatory action vary enormously by livelihood and sector (see Figure 13). Staff at different technical departments paid attention to EW on different timescales, too.
- There were few options for supporting crop farmers, partly because of the short time between the drought warnings and the closing of the window of opportunity for any action by farmers.
- Little anticipatory support could be offered to livestock remaining in the area, for the same reason. However, there were longer lead times to take action to prevent or mitigate conflicts between herders and farmers and the lack of grazing in the following dry season.
- The longest lead times were for anticipatory actions to support fishing. No options for helping fishing people were identified, though, apart from fish farming.
- Anticipatory action can be social and political as well as technical, for example in establishing times for herd migration. This too depends upon having an institution already in place.

2.5 Human and livestock diseases in Moroto and Nabilatuk districts, Uganda

The first story in Moroto is about local authorities learning from experience. In the span of eight years, during which a succession of livestock health shocks occurred, a clear progression was seen – from taking no action, to scrambling to react to try to head off a crisis, to successfully implementing anticipatory action averting disease outbreaks in the district (see Figure 14). The stories collectively show how central government and community support enabled anticipatory action by local authorities and the importance of personal initiative.

FIGURE 14 CRISIS CALENDAR OF DISEASE OUTBREAKS IN MOROTO AND NABILATUK DISTRICTS



Source: authors

* LA: local authority

2.5.1 Foot and mouth disease (2017, 2018, 2023) and anthrax (2024) in Moroto

First outbreak

In October 2017, Moroto experienced its first major foot and mouth disease (FMD) outbreak in recent history. Caught off guard, local authority staff were overwhelmed and the outbreak had devastating impacts.

Second outbreak

In late October 2018, while abroad, the District Veterinary Officer (DVO) received an informal alert about a suspected case of FMD from an NGO. However, funds for fuel were not readily available for local vets to verify it. In the first week of November, a Community Animal Health Worker (CAHW) reported another suspected case. Lack of transport again meant local authority staff did not go to verify.

An FMD outbreak has to be formally announced by the Animal Health Commissioner, and this depends on official confirmation by MAAIF. They sent a verification team only in December, two months after the first case in the district.

In advance of the official confirmation, the Chief Administrative Officer (CAO), the senior civil servant in the district, convened technical staff, the district councillor (local council 5) and NGOs, and instructed them to advise communities to minimise herd movement. Mobilisation took place by the end of November and continued until mid-December. Support to enforce limiting herd movement was sought from the police, who showed limited responsiveness because of the unofficial status of the disease.

The local council 5 called the Animal Health Commissioner in Entebbe in November to raise concerns about MAAIF's slow response and followed this with an in-person visit. (Entebbe is a whole day's drive from Moroto.) MAAIF finally sent a team to confirm the outbreak in December, and the Animal Health Commissioner imposed an official district quarantine in mid-January. Once official, the quarantine was strictly enforced. Markets were closed, with a significant impact on livelihoods.

In late February, ring vaccinations were conducted. The epidemic was controlled only by August, and FMD again had a devastating impact in the district.

Third outbreak

In 2023, the DVO received an informal warning of an outbreak of FMD in a neighbouring district through a WhatsApp group for DVOs, set up after the previous FMD outbreak. He convened CAHWs and political leaders in the border areas of the district and participants used their networks to share information with communities. They advised herders to limit livestock movement and to vaccinate their herds. Having learned from the devastating experiences of the earlier outbreaks, herders largely heeded the advice.

Vaccines were by now in ample supply in Moroto,[25] and a ring vaccination campaign was mobilised and financially supported by NGO partners. The disease was contained. In 2024, an anthrax outbreak was avoided in Moroto in similar fashion. The veterinary department took advantage of the anthrax vaccinations to administer routine FMD vaccinations.

2.5.2 Polio in Moroto, 2024

The Ministry of Health confirmed polio in the east of Uganda at the end of May, following routine surveillance. In June, an outbreak was formally declared, and central authorities instructed local authorities to share warnings and to begin vaccinations.

The District Health Office (DHO) initiated a vaccination campaign in June, supported by international partners and an established network of voluntary community health workers at village level. Information was shared through village elders, cultural and religious leaders, local radio, in markets, churches, schools, and taking advantage opportunistically of other known gatherings. An epidemic was averted.

2.5.3 Anthrax in Nabilatuk, 2024

In May, a community member called in a suspected case of anthrax to a CAHW, who promptly alerted the DVO. They informed the police, who went to the site to limit livestock movement. The area has had serious problems from anthrax in the past and the instructions were largely heeded.

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25 They had not been available during the previous outbreak in 2018. The DVO had to travel to Entebbe to collect vaccines – a whole day's journey and at personal expense. By late 2019, FMD had been designated a matter of national priority, and vaccine supplies were prioritised.

Following an emergency district meeting, CAHWs were instructed to report further cases and to sensitise people about anthrax and the importance of early reporting across the area. Information was also spread through community elders' meetings and at churches. CAHWs visited early in the morning, during milking hours, to inform women about the dangers of collecting or drinking milk from sickly-looking animals. They also spread the message during women's group savings meetings.

Anthrax was successfully contained. Respondents noted the critical role of the voluntary CAHWs in the district.

2.5.4 What do we learn from these stories?

- Action to prevent crises was possible only because longer-term preparedness, or DRR measures, had been put in place. For example, DVOs had set up an informal communication channel, networks of CAHWs and health volunteers were in place and, by 2019, adequate stocks of FMD were held nationally.
- Longer-term relationships and learning were also critical, for example with the CAHWs and health volunteers. Local authorities and communities both learned from painful experiences, including how to work together.
- Timely central government support was critical. When absent, it delayed action and left local authorities without resources to act. When present, as with the national stock of FMD vaccines in 2023 and robust national systems for polio, the local authority had the support it needed to act quickly.
- The first warnings often came informally, including from volunteers in the community.

2.6 Seasonal fires in Moroto and Nabilatuk districts, Uganda

Seasonal fires are a common disaster every year in both districts. Every year, homes and crops are lost, so much so that this has reshaped how people farm. Many no longer farm in the second season because of the risk of fires. Local government staff returned to this issue again and again, recognising that they could do very little.

Local authority staff understand the triggers: the dry winds, the hunger seasons that drive wild-rat hunting and charcoal burning, and the fires deliberately set in pastoral disputes. But there are no obvious options for anticipatory action for either local authorities or communities, despite everyone knowing when fires will arrive. Local authorities have few resources, and community practices are tied to survival strategies that cannot simply be prohibited.

Without support from both above and below – both community alternatives and central government backing – local government sits in a familiar position: aware and engaged but constrained.

3. CONCLUSIONS: WHAT THE STORIES TELL US

This study does not attempt to draw any conclusions on the quality of local authorities' efforts to act in an anticipatory way. It did not assess the effectiveness, targeting or impact of any actions recounted. The study sought to understand how local authorities think about shock warnings and how they try to respond. By doing so, it has documented the role that local authorities can and do play ahead of shocks and crises. This role is significant. It can provide an important starting point for networks of partners working locally on anticipatory action.

3.1 Local authorities can be forward-looking but without the 'anticipatory action' label

All four local authorities studied had taken anticipatory actions based on warning information – even when insecurity made the work challenging (see Table 1). All of them considered this a normal part of their work. Many respondents were surprised that there was a special name for this – 'anticipatory action'. Unsurprisingly, most of these actions had gone undocumented. Local authorities did not distinguish resilience-building and DRR from anticipatory action in the ways that international organisations often compartmentalise them (Gingerich and Cohen, 2015). Local authorities accelerated existing DRR or resilience activities as anticipatory measures and then invested in DRR or resilience as preparedness for future anticipatory action.

In a similar way, some of the forward-looking actions taken by local authorities might not be immediately labelled as anticipatory action by the international anticipatory-action sector. Examples include vaccinations to control epidemics or a conference to set the dates for herd movements.

Across the stories, local authorities' main anticipatory action was the dissemination of warning information and advice. This was partly due to limited resources for other kinds of action. However, there were three compensatory benefits to resource limitation: local authorities had to concentrate on supporting people's own agency; it encouraged collective and collaborative action, with local authorities, communities and volunteer networks having to work together to achieve anything; and it forced local authorities to be creative and find solutions in real time. Much relied on the commitment and creativity of individual staff members. This creativity is a necessary way of working for local authorities at all times, where resources do not allow for plans to be accomplished by relying on following regular planning.

TABLE 1 RANGE OF ANTICIPATORY ACTIVITY TYPES UNDERTAKEN BY LOCAL AUTHORITIES IN MALI AND UGANDA

Action	Example
Shared warning and advice with communities	All cases
Coordinated collective action by communities	All cases
Reassigned staff to focus on new crises	Locusts
Ramped up surveillance and monitoring	Locusts, all health cases, floods
Reprioritised infrastructure maintenance and repairs	Floods
Prepositioned supplies	Drought, floods (Mali)
Training in advance for quicker response	Locusts
Provision of inputs to support livelihood activities	Drought, floods
Mobilised NGOs, recruiting funds (e.g. for preventative public works)	All cases
Mobilised formal and informal networks to share and collect information and to implement anticipatory action	All cases
Established rules to prevent herder–farmer conflicts.	Drought (Mali)
Vaccinations	Polio, FMD, anthrax
Set and enforced preventative public health (including livestock health) measures	FMD, anthrax

Source: authors

While anticipatory action in the humanitarian sphere usually takes the form of discrete projects with dedicated funding, local authorities largely do not have such funding. Local authorities have very limited discretion in how they could both use their budgets and manoeuvre resources. (Local authorities in Mali had slightly more discretion.) Although this limits what they can do, as a result, their forward-looking work fits more seamlessly into everything they do. The activities in Table 1 cover all six typologies of anticipatory action in Box 6.

BOX 6 A TYPOLOGY OF ANTICIPATORY ACTIONS: SIX WAYS TO BE FORWARD-LOOKING

1. Discrete assistance projects with dedicated funding
2. Heightened surveillance
3. Investment in preparedness
4. Ensuring that relevant planned work is accomplished
5. Redirecting resources from previously planned interventions towards actions to mitigate predicted crisis
6. Provision of information to potentially affected people

Source: Based on Levine et al. (2020)

Local authorities also showed interdepartmental collaboration, for example by sharing resources such as transport, in disseminating information and in maintaining roads ahead of floods (in Uganda).

3.2 Anticipatory action requires foundations

3.2.1 Existing systems and structures

Established systems and institutions played a central role in all the cases discussed. These ranged from coordination bodies in local government (e.g. DDMCs in Uganda and SAP in Mali) to the voluntary networks of health volunteers and CAHWS, and youth and women's organisations that have become established partners of both communities and local authorities over many years. They were essential for two-way communication, providing local authorities with information and acting to help disseminate information, and for implementing activities in all the cases discussed.

3.2.2 Investments in resilience programming and DRR

Anticipatory action was largely possible only where it could be built on foundations of existing DRR or programming for resilience. Sometimes, DRR could be 'repurposed' as anticipatory action, e.g. rapidly reprioritising roads for flood prevention measures or scaling up distribution of elephant grass cuttings. In other cases, emergency anticipatory action measures would not have been possible without networks of CAHWs and health volunteers that were established to provide resilience (although probably not with that label in mind).

Investments in DRR and resilience provided the technical capacity, the institutions and networks, and, critically, the trust needed for rapid collective action. Building these takes time and a long-term relationship. Local authorities were well aware of this. All four local authorities studied had responded to challenges in taking anticipatory action by investing in DRR or network-building (e.g. for surveillance) as preparedness for future anticipatory action.

The mandate and ways of working of humanitarian actors is less suited to accomplish these long-term relationships and to build these foundations. International ways of thinking about anticipatory action are often focused on discrete emergency pre-crisis projects. It is not impossible to embed such projects into the local networks, or to link them to the necessary foundations, but it does not happen automatically. Equally, international partners working on resilience or DRR can design their work in ways that will enable future anticipatory action (by themselves, by local authorities or others) but this too does not happen automatically. Local authorities proved less siloed in this respect than international agencies.

3.2.3 Learning and trust

The longer-term foundations for rapid and short-term anticipatory action were also seen in the role played by learning – both institutional and at community level – seen most obviously in the three stories of FMD. Learning over time is essential for anticipatory systems to evolve and succeed. It occurs best when the same personnel are in the same place for several years, and when local authority staff are themselves local (Gingerich and Cohen, 2015).

Effective anticipatory action requires trust. The case studies showed how trust was built through consistent engagement, shared experiences and from demonstrated reliability. Trust is needed in EW information, in the advice given and most of all in those offering advice and in organising support. In the cases where trust in the local authority was weaker, collaboration faltered and timely action was hindered.

3.3 The importance of both formal and informal systems

In both countries, local authorities were rooted enough in their communities to know the informal networks that would maximise the reach of warning information, enable them to collect real-time information and help them mobilise communities ahead of time. They used a wide variety of local channels for ensuring the spread of information and advice, from traditional *griots* in Mali to women's savings groups in Uganda.

In several of the stories, the first warnings were shared through personal relations or informal channels. Formal information flows sometimes took longer, and sometimes the information came from individuals in rural areas such as CAHWs who had informal connections with the local authority.

The crucial role of informal networks of volunteers linked to local authorities has been discussed above (in Section 3.2 under 'Existing systems and structures'). Networks such as youth associations, traditional elders and health volunteers make up an important part of civil society. Staff in local authorities had spent many years building up their relationships with these networks, which are of particular importance where local authorities lack resources to operate in rural areas (see Box 7). Again, this stresses the importance of established local actors in leading anticipatory action.

BOX 7 TAPPING INTO THE ADJACENT POSSIBLE TO ENABLE ANTICIPATORY ACTION

Kauffman (1996) describes 'the adjacent possible' as the set of all things that are realistically possible as a next step, based on what exists now. Because of local authorities' connections to their communities in all the case studies, they knew the best social structures to use for anticipatory action, the ones that were 'adjacent' to them and to the communities. Rather than looking for major innovations or introducing new mechanisms, they tapped into what existed, including informal institutions and networks. Because these institutions are also 'the adjacent' for the communities, they found it easier to accept the warnings, advice and activities proposed by local authorities. The dual identity of many local authority staff – as both community members and officials – gave them credibility and access, elements not easy to manufacture when time is critical.

3.4 The need for support from central government and from communities

Evidence from Mali and Uganda shows that local government-led anticipatory action was more effective when backed by strong support from both central government and communities. In Uganda, strong national prioritisation, coordination and resource mobilisation helped avert a polio outbreak in Moroto and to contain locust invasions in both districts. Similarly, strong community engagement and trust enabled timely responses to floods in Mali and Uganda, and to FMD and anthrax in Uganda.

By contrast, when support from above or below was weak or absent, local authority-led anticipatory action was constrained. When the local population did not endorse measures, from volunteering to repair dykes to respecting the control of livestock movement, anticipatory action was not successful. Delays from central authorities sometimes caused delays or the lack of enforcement of livestock curfews. The continued absence of an endorsed legal framework for disaster risk

management in Uganda has meant that no central government funds are allocated to support the work of the DDMCs or to implement existing district contingency plans (Aklilu et al., 2021). Similarly, without broader and more systematic institutional and community engagement and support, local authorities remain constrained in terms of what is possible ahead of seasonal fires.

3.5 The limits of anticipatory action

In Mali, the scale of the 2024 floods overwhelmed all efforts. Disasters of this magnitude demand substantial investment in protective infrastructure and preparedness, far beyond what anticipatory action can achieve in the few days or weeks leading up to a crisis. These limitations highlight the need for sustained investment in DRR, which cannot be substituted with short-term anticipatory action.

Anticipatory action by its nature is not meant to substitute for longer-term preparedness and disaster risk management. It simply fills a niche along a continuum that begins with long-term preparedness (Wilkinson et al., 2020; UNDRR, 2024).

The case studies in this paper were looking for successful anticipatory action, but some less appropriate initiatives were discussed. Farming extension messages ahead of drought and advice to pastoralists to destock were largely ignored because they were unhelpful for farmers in normal years and unhelpful in response to drought. It is not enough for anticipatory action to be timely: it must also be good. Inappropriate or unhelpful action remains inappropriate or unhelpful even when it is anticipatory.

3.6 Context!

3.6.1 Different operating contexts

Local differences even across nearby local authorities' changed how anticipatory action was done and how it had to be done. This is most obviously seen in the story of floods in Mali. In the commune that was better connected to the centre, NGOs delivered support late and largely by-passed the local authority. However, in the more rural and remote commune, there was stronger collaboration across stakeholder groups. The local authority worked closely with local associations, and NGOs were supportive of the local authority – possibly because the difficult operating context made this the only way they could work. There were also differences between districts in the case of locusts in Uganda, with no obvious explanation for the different time-frames in which warnings were received and action taken.

The strength of local authority-led anticipatory action, discussed above, is when it has a close connection to the affected populations. These vary enormously in their situation, attitudes and trust of others. Anticipatory action therefore sometimes had to take a slightly different form in each community. Systems for supporting anticipatory action worked best when they were able to be context-led and not designed externally.

3.6.2 A different calendar – and different triggers – for each place and livelihood

The same shock created a different crisis calendar for different livelihood groups and different places. Each anticipatory activity had its own calendar and windows of opportunity. A single centralised trigger for a single approach to anticipatory action defined at national level has limitations. Local authorities were able to make decentralised decisions based on their understanding of local populations and their livelihoods. As most clearly illustrated by the case of drought in Mali, they were able to tailor their calendar of support to the different livelihood calendars in their areas.

3.7 Constraints faced by local authorities

Resource constraints have been mentioned throughout this report. All four local authorities suffered overall from severe constraints in funding, equipment, transport and staffing. In addition, they all lacked discretionary funds for anticipatory action or access to funds they could quickly tap into.

Central authorities were sometimes slow to respond to local government (e.g. in response to locusts and FMD in Uganda), and this delayed action by local authorities where they relied on the centre for support (e.g. for spraying against locusts) or where local authorities could not take action without official sanction (e.g. declarations of health emergency). Higher tiers of local government were also sometimes slow to respond to lower levels of local government (e.g. in the account of locusts). NGOs and other partners were sometimes slow to respond to requests for assistance (e.g. in the case of floods in Sio, Mali).

In some cases, local authority creativity was constrained by a reliance on standardised technical measures, such as offering the same extension advice or a reliance on their standard sectoral policies such as fish farming. This narrows the field of possibilities for support. At times, local authorities showed that they can be rooted within their communities, highly attuned to how people live and work locally. At other times, the dominance of a technical and standardised approach (Hermans et al., 2022; Schneider, 2024) has influenced local authority mindsets, creating tension between their formal and informal worlds.

3.8 The potential role for local authorities in anticipatory action?

Local authorities work with many constraints and nothing in this report suggests that their work will always be unproblematic. But they have unique strengths that are directly relevant to effective and timely anticipatory action.

Local authorities are uniquely positioned to support anticipatory action. This study found that:

- Local authorities served as a critical bridge between national authorities and local communities.
- They brought a grounded understanding of local realities that national actors, by nature, cannot fully grasp.
- They have the ability and mandate to exercise autonomy.
- They can leverage existing local systems and structures in a unique way.
- Local authority staff, often from the communities they serve, are often seen to be both representatives of the state and also part of the community. This dual identity gives them both credibility and access, enabling them to act as conduits of information between communities, government and supporting partners.
- They are a permanent structure with a long-term presence and the ability to work with a long-term vision and strategy.
- They can combine anticipatory action, service delivery and DRR seamlessly, and precisely because they do not use a distinct technical language for each.

4. RECOMMENDATIONS

1. All actors interested in promoting anticipatory action should find out what local authorities are doing and understand their strengths. It is likely that they are undertaking some anticipatory actions although these may be invisible because they may not be labelled as anticipatory action or fit within a standard definition of anticipatory action. It is impossible to generalise about how forward-looking they will be or what their capacities are, because this can vary enormously, even within one country.

2. Support for forward-looking action by local government should avoid imposing frameworks or definitions of anticipatory action. It is better to observe how local authorities are forward-looking and to identify where this can be strengthened. This can best be done within the frameworks and languages that local authorities are already using.

3. Effective anticipatory actions require foundations. Investment is needed in strengthening and building these. Anticipatory action cannot be supported in isolation from the structures and systems that enable it: these too need support. Investment in supporting local authority initiatives that prioritise long-term DRR, resilience and preparedness is also an investment in creating opportunities for future anticipatory action.

4. It is important to prioritise partnership over prescription. It is better to co-create approaches to anticipatory action with local authorities rather than replicating predefined processes and 'solutions'. In this way, respective strengths and complementarities can be identified and leveraged, and local priorities and learning can be built upon. Such an approach also values existing local authority knowledge, experience, capacities and ways of working. This may be different from standard and formal approaches. During this process, a difficult balance needs to be maintained between creating space for local autonomy, creativity and innovation, while also maintaining minimum standards.

5. It is essential to understand that local authorities work in ways that blend the formal and informal in everything they do – from sourcing EW information, to communicating warning and overcoming bureaucratic obstacles. This might not fit standardised ways of working but it offers an enormous opportunity in societies where so much depends on informal norms and systems. When informal knowledge and systems are overlooked, opportunities for quicker, more effective anticipatory actions are missed.

6. National systems that prescribe a single set of triggers for standardised programming across a country cannot support locally appropriate anticipatory action. Local authorities need to work within a decentralised framework with triggers and calendars for anticipatory action that are adapted to local realities. All efforts to support such a decentralised and context-led approach to anticipatory action increase the possibilities of harnessing the unique potential contribution of local authorities to anticipatory action.

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