

POLICY BRIEF

TEN WAYS TO CREATE PEOPLE-CENTRED EARLY WARNING SYSTEMS IN CONFLICTS AND RECURRENT CRISES

Emma Gogerty and Simon Levine

Key messages

- In places affected by conflict, **early warning systems (EWS) must consider how conflict, insecurity and state fragility shape vulnerability.** Conflict also affects what can be done and who benefits from it, so conflict analysis must inform all decision-making.
- **People's circumstances and information needs vary too much for prescriptive advice to be generally helpful.** An EWS must encourage people to think about options and how to cope with uncertainty. Strengthening also means creating more spaces for ideas to be exchanged and reflected on, so that people can make more informed decisions for their own situations.
- **A people-centred EWS must maximise the chances that people will receive, understand, interact with, trust and act on the information that they need.** To serve the most marginalised, efforts are needed at every stage to prioritise their interests, understand their information needs and build trust with them.
- **Supporting a people-centred EWS does not mean creating a perfect technical system for forecasting.** It is about improving the knowledge system – how people receive and share information about what is forecast. This requires social, political, institutional and knowledge management skills.
- **The next shock is unlikely to look exactly like previous shocks because everything is constantly changing in insecure places.** A rigorous EWS is useful but it is risky to rely on it. Flexibility is essential. It is good to keep one eye on the data dashboard but necessary to keep the other eye on what is happening outside the window.

About this brief

This policy brief draws on five years of research conducted by the Supporting Pastoralism and Agriculture in Recurrent and Protracted Crises (SPARC) programme, which has aimed to inform policies, practices and investments to support the resilience of dryland communities in Africa and the Middle East.¹ It is one of a series of three policy briefs that draw out the specific policy implications from SPARC research. The other briefs offer learning for conflicts and recurrent crises from SPARC research on anticipatory action (Levine and Gogerty, 2025) and disaster risk reduction (DRR) (Gogerty and Levine, 2025).

The briefs do not attempt to summarise all the existing knowledge and understanding on the topics. They present only the lessons emerging from SPARC research.

Introduction

The earlier that individuals, businesses and countries receive accurate warnings about likely threats and shocks, the better prepared they can be, and the more likely that exposure to the hazard can be reduced and its impacts mitigated. Because many places and many people are vulnerable to different hazards that can be interconnected, early warning has to look at more than one hazard at a time – a ‘multi-hazard’ EWS.

Over the last decades, investments in EWS have brought huge improvements in the provision of forecasts, particularly those based on hydrological-meteorological data.² There are two current concerns, both of which demand thinking about EWS as much more than any single agency’s ‘project’. The first concern is to ensure that information serves the needs of everyone – hence calls for ‘people-centred EWS’, such as by the Early Warnings for All initiative (WMO, n.d.). Extending EWS to those who arguably need

early warning information the most – those living in conflicts and places suffering recurring crises – is a second and further challenge. Such places tend to lack the institutions, capacities and government support needed to deliver early warnings effectively (Opitz-Stapleton et al., 2023). Trying to create standard models of EWS in such places without thinking differently is unlikely to be helpful.

This brief does not offer a comprehensive analysis of people-centred EWS in fragile situations of conflict and recurring crises.³ It looks rather to capture learning from SPARC research projects over the past five years that contributes to the analysis of the challenges of creating a multi-hazard EWS in conflict and recurrent crises.⁴ After briefly considering terminology, we look first at what it means for EWS to be ‘people-centred’; we propose a knowledge-system approach to thinking about EWS and consider the implications of doing so; we analyse why improving people-centred EWS in conflicts and recurring crises cannot be business-as-usual; and finally we offer 10 recommendations for ways forward.

What does the ‘system’ in EWS mean?

The United Nations Office for Disaster Risk Reduction (UNDRR, 2017) definition of EWS is technical but comprehensive: an EWS is ‘an integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities systems and processes that enables individuals, communities, governments, businesses and others to take timely action to reduce disaster risks in advance of hazardous events’.

Two limitations have been apparent in how this way of thinking about EWS has been applied in practice. Although this definition does not restrict early EWS to hydrological-meteorological-related hazards, warnings of likely heightened conflict, violence or insecurity are rarely included in EWS (Jaime et al., 2024). Data-centric approaches have not tried to

1 The countries covered by the SPARC programme are: Burkina Faso, Chad, Ethiopia, Kenya, Mali, Mauritania, Niger, Nigeria, Somalia, South Sudan, Sudan, Syria, Uganda and Yemen.

2 Hydrological-meteorological (‘hydro-met’) information includes weather-related (meteorological) information, e.g. rainfall, temperature, wind speeds, and water-related (hydrological) information, such as river flows, water levels, soil moisture and groundwater availability.

3 See, for example, Anticipation Hub (2025), GFDRR/World Bank (2024), Jaime (2024), IFRC Climate Centre et al. (2024) and UNDRR/WMO (2024).

4 There are several limitations to the scope of SPARC research. For example, SPARC was not able to research in areas of high-intensity conflict or on the provision of early warning in areas not under state control. It looked only at rural areas and learning did not include lessons on early warnings for displaced populations.

predict conflict and violence. Forecasts based on data modelling struggle to capture the signs of impending trouble, even when these can be picked up by people locally.⁵

The UNDRR (2017) understanding that an EWS must be an ‘integrated system’ that can combine the generation of predictions, their analysis, the production of advice and the dissemination of information seems to be well-made. It appears, though, as if it is sometimes interpreted as meaning that the system must be managed, and that the ‘system-owner’ is responsible for integrating its many elements into a coherent strategy. The problem is that, even if this were possible in stable countries (which is doubtful), it can never be achieved in conflicts and recurring crises, or what we call ‘difficult places’. There is no system manager. No one agency, including government, can ever manage the myriad contributions that have to be made if the EWS as a whole is to work effectively. An integrated system is indeed needed but with the recognition that a system has to emerge from the loosely collaborative efforts of many actors, most of whom probably do not think of themselves as EWS actors.

What does a ‘people-centred’ EWS mean?

There is no standard definition of a ‘people-centred’ EWS. REAP (2024) characterises a people-centred EWS as ‘embedding the needs, rights, and priorities of the at-risk populations that most require the warnings’.⁶ It emphasises that people’s needs must be appreciated in relation to each of the four elements of an EWS identified in UNDRR (2017):

1. an understanding of disaster risks
2. detection, monitoring, analysis and forecasting of the hazards and possible consequences
3. dissemination and communication of timely, accurate and actionable warnings and associated information
4. preparedness to respond to the warnings received.

This makes clear that a people-centred EWS is defined by its purpose, not how it operates. Being people-centred does not mean that it has to be ‘locally led’ or ‘community-based’. Its premise is that everyone in society needs, and has a right to, the best possible forecast information so they can make the best-informed decisions for themselves, as individuals, families, communities, businesses or governments. The interests should be prioritised of those who need early warning information most – those who are most exposed and vulnerable to the hazards about which warnings can be given.

To serve its purpose, it is not enough for an EWS to generate timely and accurate forecasts. A people-centred EWS must maximise the chances that people will receive, understand, interact with, trust and act on the information that they need. This takes an EWS out of the purely technical world, because it is necessary to understand and address how and where people access information, what makes them trust and share it, what makes them act on information and what constraints they may face in doing so. This makes the design and operation of an EWS partly a social function, requiring social expertise.

This brief focuses only on the first three elements of the UNDRR (2017) definition of EWS (outlined above). These three aspects relate to the information and communication functions of an EWS and can be discussed more easily in isolation. The fourth element of preparedness, and ensuring that everyone has realistic opportunities to reduce their exposure to crisis or mitigate its impacts, can be discussed only within the broader context of a disaster risk reduction (DRR) strategy. Of course, although some aspects of the information and communication aspects of EWS can be discussed on their own, it remains essential that an EWS is designed and operated as part of a wider DRR strategy.

A knowledge-system approach to EWS

It is obvious that no single institution can ever be capable of creating and disseminating messages that are understandable and useful to everyone about the full range of potential hazards they face.

5 For example, in South Sudan, a local nongovernmental organisation (NGO) recognised signs of youth mobilisation for cattle raiding – youth not attending church, buying rehydration salts in the local market and collecting water bottles (Davies et al., 2024).

6 REAP (2024) stresses the need for people-centred EWS to engage with local organisations and communities, understand social dynamics and structural barriers, consider the diversity of needs and capacities within communities, and to pay attention to many dimensions of marginalisation (e.g. ethnicity, gender, socioeconomic status, disability and age).

This is true even before considering how institutional capacities are often low or degraded in situations of conflict and recurrent crises. This is not to admit defeat but to recognise the need to think of an EWS as a society-wide knowledge system. A knowledge system is, roughly, the whole network of channels in the society through which knowledge, beliefs and information are generated, shared and adapted. Such knowledge systems provide many different kinds of entry point for people to be involved in sharing information (of many kinds) and creating spaces for it to be discussed and thought about. Many kinds of actors at all levels of society should be encouraged to 'volunteer' and think of themselves as a part of a society-wide EWS.

Taking a knowledge-system perspective helps us to see that everyone who passes on a weather forecast to their neighbours is a part of the EWS. Every social media group through which people share warnings or their own reactions to warnings, and every radio station where weather forecasts are discussed, are as much part of the EWS as the national or international meteorological offices that generate the weather forecasts (Weingärtner et al., 2022). The task of ensuring that different individuals across the country receive the information they need, in forms that they can understand and trust, becomes less overwhelming once this society-wide knowledge system is recognised as part of the EWS.

This is not a semantic change: it fundamentally alters how the design and management of an EWS is thought about. Such an EWS is decentralised and fundamentally democratic, in that there are no barriers preventing anyone from playing their desired role. How scientific institutions collect and analyse data to generate and disseminate forecasts remains critical, but this is only part of the work of developing the knowledge system. The full early warning knowledge system can still be shaped, but in a facilitatory way and by a wide variety of actors, with the objective of ensuring that knowledge is collected and spreads more widely. More spaces have to be created or claimed for knowledge to be discussed and analysed, so that people's ability to understand information (and to make better judgements about what to trust) are enhanced. This society-wide work must be recognised as an integral part of contributing to an EWS.

The dual challenge of people-centred EWS in conflicts and recurrent crises

Situations of conflict and recurrent crises present an additional double challenge to people-centred EWS: the task is harder; and the operating environment is more difficult.

The task is harder

People living in the countries suffering most from conflicts and recurrent crises usually experience crises caused by several shocks together. For example, between 2019 and 2022, people in Somalia experienced plagues of locusts, Covid-19 (and its accompanying economic impacts), floods and recurrent droughts (Levine et al., 2023; SPARC, 2020). These all occurred with a background of long-term conflict, insecurity and mass displacement, and where vulnerabilities are heightened by a hierarchical society in which many members are marginalised, for example because of their (clan) identity.

A multi-hazard EWS must forecast each of these shocks individually, then analyse how they will interact in order to predict their impacts on different population groups. This is more difficult in situations where conflicts and related political factors affect the trajectories of crises and shape how natural hazards impact people in a society. These impacts affect every chain in the link from shock to personal crisis. A flood, which may appear to be a purely hydro-met shock event, can be caused by politics – such as when powerful people have been able to protect their own downstream land by opening dykes on rivers upstream, causing floods for other people (Reliefweb, 2011; Gulf News, 2018). An EWS based on only hydro-met data would struggle to predict such floods.

Causation can also work in the other direction, where a shock that reduces the availability of water, grazing and fodder could lead to increased resource competition and potential conflict – in turn exacerbating crisis (Reid, 2024). The EWS must then predict who will be affected, and when, by shocks. This may require detailed local knowledge. For example, in Mali, pastoralists, fishing people and farmers living in the same area can be affected by a drought on very different timescales (Nassef et al., 2025). Finally, EWS need to incorporate people's underlying vulnerabilities into their predictions and warnings.

These two levels are always needed, but conflicts and recurring crises make them more complicated. Governments and other agencies associated with EWS prefer to focus on vulnerabilities that appear less political, such as those caused by age or disability. Vulnerabilities, though, are most often related to unequal power relations (including due to gender). A people-centred EWS has to provide these most at-risk and vulnerable people with the specific information that can help them. Since they have fewer options to respond to warnings and to escape crises, this information may be different from the information needed by most others.

This raises a political challenge for all those wanting to support a people-centred EWS in countries where there are conflicts and marginalised communities: how is it possible to develop an information system that prioritises the needs of the most marginalised if that information system is managed by those with most power?

The operating context is more challenging

State fragility, insecurity and recurrent crises are not simply hazards or factors that exacerbate natural hazards. They are the context within which risk management is most needed. Countries or regions experiencing conflict or crisis are diverse in many ways and should not be stereotyped. Even the labelling of ‘fragile and conflict-affected states’ (FCAS) or areas of ‘fragility, conflict and violence’ (FCV) can be contentious. However, common features of many difficult places include the following, all of which make it more difficult to support risk management and a people-centred EWS:

- contested governance – a significant trust deficit between the state and its citizens and often between different population groups
- weak rule of law, leading to high levels of corruption and low levels of accountability
- high degrees of volatility in many domains, including economics, markets and security
- insufficient resources for state functions, degraded institutional capacity in the state and private sectors, and difficulty in finding and retaining high-quality technical expertise (partly because of competition from the international aid sector, which itself may suffer from disruptions in its smooth functioning)

- limited good-quality, multi-hazard data relevant to EWS; limitations may be exacerbated by damaged infrastructure related to information gathering and communication (GFDRR/World Bank, 2024; IFRC Climate Centre et al., 2024)
- insufficient good data on demographics and socioeconomics, which can lead to either the perspectives and priorities of the most marginalised being missed (or excluded) from EWS and decision-making processes or the use of assumptions and stereotyping rather than evidence
- state presence limited largely to urban settings, with few essential services in under-represented or remote areas (Jaime et al., 2024).

The implications of such problems are that crises may come from unexpected directions, and there will never be the system capacity to keep an eye on everything at once. It is necessary to make the forecast system as good as possible – but also necessary not to rely on it entirely.

Because countries with conflict and recurrent crises face more types of threat, EWS require more data than in richer and more stable countries. Therefore, scenario prediction is more complicated precisely where data is hardest to collect, manage and analyse. Investing simply in data collection does not work in countries where institutional performance is poor. The more data, the slower the system; and where the institutional culture is more bureaucratic, it is harder to provide timely and appropriate information.

Setting out this challenge is not intended to demoralise. Attempting to build something too sophisticated will not work, so other ways have to be – and can be – found. Different kinds of information sources always exist. Gradual progress can be sought by decentralising knowledge management, which can be built on over time.

Ten things to consider in supporting people-centred EWS in conflicts and recurrent crises

The following is not an exhaustive list of how to think about people-centred EWS. These ten recommendations are SPARC’s contribution to an ongoing debate, lessons that have emerged from SPARC’s own research projects over the past five years. SPARC has learned that progress is most

likely where challenges are seen in social, not just technical, terms. SPARC's approach to people-centred EWS reflects this.

These recommendations are not only for people who already consider themselves to be working on EWS. They are also intended to encourage many others, including the communities facing the threat of hazard events, to identify their own knowledge systems and to be active in creating, looking for, reflecting on and sharing information about future threats.

1. If conflict is part of the problem, it must be part of the EWS

Conflict is not just a hazard that needs to be considered within a multi-hazard EWS; it is also the context in which all the hazards occur. Conflict shapes the impact of all other hazards because it shapes the lives and opportunities of everyone affected by it. An EWS can be people-centred only if it incorporates a consideration of how conflict and insecurity, together with state fragility, shape how hydro-met hazards affect people.

2. Take system thinking seriously

EWS are always talked about as systems but the system boundaries – what people think of when they talk about the EWS – are sometimes drawn narrowly. The focus tends to be on the generation and dissemination of good forecasts, and system thinking may refer principally to collaboration between a handful of large agencies working at national level. This is important but only part of a wider knowledge system. System thinking for an EWS is about supporting information flows between hundreds of independent institutions that interact with each other in myriad ways. The challenge for governments and large agencies involved in EWS is that, while they can, and must, assist this wider knowledge system, it is not something that they can or should control. It can be difficult for some agencies to work in systems where they do not feel in control.

3. There are reasons why marginalised people remain marginalised

Unless efforts are made at every stage to prioritise the interests of the most marginalised, the forces that created their marginalisation in the first place will tend to re-marginalise them. These efforts require a good understanding of what their particular information needs are (for each of the

different populations who are vulnerable), and what is constraining information flows from reaching these populations.

4. EWS don't have to be perfect to be useful

Some crises will be missed, some false alarms will occur and no predictions will ever be good enough for everyone. But, although there will never be enough resources in the most difficult countries to build an optimal EWS, that should not be the goal. It is enough to help something emerge that is better than what was there before, and to ensure that it will still be there tomorrow. And tomorrow, to learn from shortcomings and failings in order to make it a little better.

5. Warnings have to be trusted – and trust can be built

People only respond to information that they trust. It is therefore just as important to invest in building trust with the wider population, and especially with those who most need early warning information, as it is to improve forecast models. Nothing destroys trust more than certainty that proves to be false, so acknowledging the uncertainty inherent in every forecast and explaining why some forecasts proved incorrect all helps to build confidence. Trust-building takes time and cannot be achieved with one single set of actions. It must be done on many fronts, with many different population groups and in many different ways. Again, it may never be perfect, but each improvement in trust is a step forward.

6. Helping people to think about options in relation to uncertainty is part of the early warning function

People in conflicts and recurring crises live with uncertainty on a daily basis and make decisions based on uncertain conditions (Derbyshire et al., 2024a). The more information that people receive and can discuss, and the more they are exposed to different perspectives and opinions about it, the better informed they will be. Exposure to different opinions about what to do with early warning information should also improve their trust in it (as discussed in point 5, above). This does not remove uncertainty from their lives, but it improves their ability to manage uncertainty. Not all disagreement involves contradiction. For example, radio programmes can encourage people to express different opinions in a constructive debate about early warning advice and different options for action, each from their own risk perspective. Supporting this is as much part of supporting people-centred EWS as is designing weather-forecast bulletins.

7. Early warning does not have to be omniscient: find ways of working with imperfect knowledge

It is highly likely that the situations of the most vulnerable will be those that are least understood. That is not a barrier to providing them with good information but it means that we need to think differently about what we are trying to achieve. The success of people-centred EWS does not lie in giving everyone recommendations that they then comply with. The objective is to see a diverse population group all taking different well-informed decisions, in accordance with their own priorities and situations, and their personal levels of risk tolerance. It will result in a wide diversity of responses being taken, all informed by the best possible information about likely hazards and their own personal situation. Those running EWS do not have to approve of these decisions or to recommend those actions. Ultimately, it is not up to anyone else to decide how people should act.

8. Build on what already exists – and embrace the informal

People have many sources of information. A people-centred EWS has to engage with these local knowledge systems (Derbyshire et al., 2024b). Whether or not early warning forecasts should incorporate indigenous weather forecasting is a contentious question but, whatever the views on this, EWS need to engage with the different ways in

which people think about and share ideas about what is likely to happen. Attention has to move outside the 'formal EWS world' of scientific data. Wherever people are sharing information about future hazards and shocks is a place that can be networked into a people-centred EWS. Engaging a range of local and non-state actors to collect and share information can help ensure that under-represented or marginalised populations are reached and included in an EWS (GFDRR/World Bank, 2024).

9. EWS are social, not just technical, networks – and social skills and capacities are needed as much as technical skills

Ensuring that people have the information they need about future weather events is far too important to leave entirely to meteorologists or climate scientists. The technical analysis of data or information requires scientific expertise but the overall task of supporting an EWS is mainly a social task, requiring political, institutional, sectoral and knowledge management skills.

10. Be ready for the unexpected

The next shock may not be of a kind that an EWS was designed to pick up. It is good to develop a rigorous EWS but, especially in conflict and recurring crises, it is risky to rely on it. Flexibility is important. It is good to keep one eye on the data dashboard, but necessary to keep the other eye looking outside the window.

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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, agropastoralists 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 and Development Office (FCDO), donors, nongovernmental organisations, local and national governments and civil society can empower these communities in the context of climate change.

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