Masterclass: anticipating and responding to disasters

Thursday 13 November 2025 | Hosted at The Netherlands Red Cross

Summary report

About the event:

The masterclass was organised by KUNO, the University of Twente (UT)/ITC, the Hague Humanitarian Studies Centre-ISS, the Netherlands Red Cross' data and digital team, 510, and Vrije Universiteit Amsterdam. It consisted of four parts, including interactive parts and a plenary. The first part is an introduction to anticipatory action, part two was a panel where three NGO's presented their work on anticipatory action, part three was the four break-out rooms that dived into the specifics of anticipatory action, and the last part was a closing panel with panellists from the academic and NGO sides. This masterclass aimed to raise awareness and build knowledge of the motivations for, as well as the 'how' of, anticipatory action in more detail. The masterclass was designed for humanitarian practitioners, policy makers, academics and students.

Anticipatory action refers to actions taken to reduce the humanitarian impacts of a forecast hazard before it occurs, or before its most acute impacts are felt. The decision to act is based on a forecast, or collective risk analysis, of when, where and how the event will unfold (IFRC 2020). It is a type of pre-emptive intervention informed by early warnings; for example, distributing cash transfers to farmers ahead of a predicted drought. It has been used to reduce the impacts of crises by triggering early actions before disasters unfold. It is used as an extension of humanitarian aid.

Anticipatory action is gaining increasing attention, also within the humanitarian field, and sees a rise in funding, for example, in the Netherlands and Germany. Anticipatory action started with small pilots in 2016. Since then, over 154 active frameworks have been developed in 48 countries, with at least 285 UN/Red Cross and NGOs involved and several donors

Table of contents

Part 1: Introduction to anticipatory action

Carla Jonkers, manager Disaster Preparedness & Response Unit of The Netherlands Red Cross, opened the masterclass and welcomed participants from diverse backgrounds and organisations. Carla introduced anticipatory action and explained that AA represents an important humanitarian shift toward preparedness and acting early, especially in fragile contexts. Carla illustrated how AA works with an example from South Sudan. The Red Cross works in South Sudan on anticipatory action. Projects in South Sudan include disseminating warning messages, reinforcing dikes and waterways, giving training and distributing Non-food items. This contributes to the mitigation of the impact of floods and ensures a timely response and community-led early action. Subsequently, Carla outlined the goals of the Masterclass in terms of raising awareness, reflecting critically, and engaging in interactive exploration of solutions.

Marc van den Homberg, Professor of Data4Disaster Resilience (UT/ITC) and Scientific Lead of The Netherlands Red Cross' data and digital team, 510, introduced anticipatory action. anticipatory action is a relatively recent evolution that builds on traditional early warning systems by turning forecasts into triggers. Once these triggers are reached, funds are released automatically to enable actions shortly before a hazard strikes. Anticipatory action is more effective than post-disaster response as it reduces the losses and avoids the heightened dependency that often follows a disaster. It puts people at the centre of risk reduction, as, e.g., through cash-based assistance they can make decisions how to anticipate the hazard themselves, making support more dignified and tailored to their needs.

This is what anticipatory action is at its core: a set of actions taken to prevent or mitigate potential disaster impacts before a shock or before acute impacts are felt. Anticipatory action consists of three prior agreed-upon components: financing, early actions, and trigger mechanisms.

<u>Financing</u>

Organisations currently work with crisis response emergency funds, which are pooled funds where multiple donors contribute to. Out of these funds, and event-based payments are done after each shock. Anticipatory finance pays out before the shock. Until date, only around 1% of all humanitarian funding is spent on anticipatory action. The Disaster Response Emergency Fund (DREF) of the International Federation of the Red Cross totals 65,1 million euros. From this number, 10% is used for anticipatory action activities, but the goal is to go towards 25%. The challenge with financing anticipatory action is the level of uncertainty: what level of uncertainty (false alarms) in anticipatory action can be accepted? Another challenge is how funding should be divided among the different disaster risk management phases, as the other phases than anticipatory action need funding as well.

<u>Early actions</u>

Early actions aim to reduce priority risks, and they should be adapted to the local context. Furthermore, they must be implementable in the lead time before an extreme event and with the capacities that are available with local actors. It is important to align early actions with the priorities of communities and local disaster risk management actors, but it also needs to fit into government disaster risk management policies and regulations. Early action activities can vary from drought-tolerant seed distributions to health/WASH kits. The most used early action

activity is cash transfers. Because the people themselves know best which action is most beneficial for their household, it also supports the local economy.

Early actions also come with challenges, as it is not easy to evaluate how early actions prevented impact from happening. Also, anticipatory actions come with uncertainty as we are acting on forecasts, so cost-benefit analyses must take this into account.

Trigger mechanisms

A trigger is a statement of the conditions that must be met to release the funds for anticipatory action and includes a forecasting system, a hazard/impact-based threshold, and the available lead time. Triggers are developed based on hazard and/or impact forecasts. Impact-based forecasting provides detailed information on what the hazard would do, where, how and at what scale, to contribute to informed decision-making.

Trigger models are developed in collaboration between organisations, communities and institutions in the country. A trigger model depends on the type of hazard and the available lead time, the period between a reliable forecast and the event onset. For example, a tropical cyclone may be forecasted days in advance, whereas droughts can be predicted weeks or months ahead. Early action is taken when the forecast is sufficiently reliable to act on and there is enough time to implement the actions, Clearly, this has to be before the hazard begins as the impact can no longer be reduced once the disaster is happening.

The balance between performance and explainability of trigger model development has proven to be difficult. Choices need to be made between local knowledge or an expert-driven model and a statistical or AI-based model. Another decision is whether trigger mechanisms should be locally, nationally or even globally owned and used.

Marc van den Homberg, closed by quoting Hugo Slim on the moral responsibility to act: *“Knowing what will happen places a new moral responsibility on us to do something about it in advance. Ignorance is no longer an excuse for inaction – and if we can act, then we must act. This makes anticipation a moral obligation and thus a new guiding principle for humanitarians” (Slim, 2023).*

Part 2: Panel with three humanitarian organisation and their work on anticipatory action

Three NGO representatives, from Oxfam, Zoa and Dorcas, presented their experiences with anticipatory action and the challenges they encountered, focusing on a specific case study.

Oxfam Novib works on anticipatory action in an estimated 21 different projects that focus on natural disasters. An example is B-READY, a programme that provides early cash transfers via debit cards to vulnerable people. The distribution is done before a disaster hits, and the timing to do so is chosen based on forecasts. anticipatory action is also practised in advocacy papers that discuss how to predict, for instance, droughts, and the need to act on them before they hit.

Climate resilience and localisation are two of ZOA’s strategic priorities; anticipatory action as a community-led approach is increasing in importance. ZOA is exploring to integrate it into the disaster risk management projects by means of a position paper. ZOA is also currently in the process of developing a multi-hazard risk management system in Nigeria. In South Sudan, two projects are being implemented that focus on anticipatory action, with, setting up of an early warning system and proposing disaster-resilient livelihoods strategies.

The asset-based community development approach builds resilience and links to the anticipatory action strategy of Dorcas. Their anticipatory action projects are implemented in Yemen, Ethiopia and South Sudan. In Yemen, where flash floods occur, the team started with a vulnerability and capacity assessment, including a hazard identification executed by a local committee. The committee found that there was a need to be more efficient and to upscale the rainwater catchment. A team of community health workers was also established. The sustainability of Dorcas' projects improved significantly due to collaboration with the local community.

Challenges and discussion:

The three NGOs also came across challenges. All three organisations mentioned the need for flexible funding, which is needed as a commitment to start community-led processes. A second challenge has to do with whether anticipatory action should be labelled as part of activities for development or humanitarian action. All three organisations have a double mandate, but for organisational ad budgetary reasons it should be assigned to one of the two options. It leans toward development by sustaining government preparedness, but many actions could be considered as humanitarian action, and donors classify it as humanitarian action too.

The room posed the question whether evidence from other projects is used and incorporated into new projects. NGOs are working on this but also find it difficult as their budgets do not always cover this. Another question concerned the coordination between organisations and institutions, their efficiency and how to get stakeholders to collaborate. ZOA shared an example of inviting stakeholders to a workshop, including both the local community and government representatives. When frameworks are designed with the stakeholders this helps to maintain the connection for the execution of the project.

Part 3: the break-out sessions

Break-out session 1. Risks and Dilemmas: *What can go wrong when anticipatory action is put into practice, and how can we navigate its trade-offs?*

Facilitators:

- **Rodrigo Mena**, Assistant Professor of Disasters and Humanitarian Governance (the Hague Humanitarian Studies Centre-ISS) & Deputy Director of the Humanitarian Studies Centre
- **Tanja Hendriks**, Assistant Professor, Institute of Security and Global Affairs, Leiden University

In this session, we focused on the ethical dimensions of anticipatory action. After a brief discussion on how anticipatory action fits in the wider framework of disaster governance only as a measure of last resort, we zoomed in on three dimensions that form part and parcel of its implementation: risks, dilemmas and trade-offs. Walking around the room armed with pens and sticky notes, workshop participants gathered their thoughts on potential negative events that can occur and who these would impact (i.e. Risks); which difficult choices may have to be made when designing or implementing anticipatory action, and what values guide that choice (i.e. Dilemmas); and how to find a balance between competing priorities, debating what we gain and what we give up by making certain decisions (i.e. Trade-offs).

We subsequently gathered in three groups and discussed everyone's sticky note contributions to the topic. The discussions were very lively, because how do we balance the speed of an

intervention while ensuring sufficient participation of beneficiaries? And how do we make sure to target those most in need? What type of data and information is needed to decide on anticipatory action and when to implement it? But also: what happens when forecasted or projected information was wrong, and who takes accountability or the blame for that? Towards the end of the session participants expressed more awareness of the intricacies of anticipatory action and the difficulties that putting it into practice entail.

Break-out session 2: Localisation: *How do you balance the technical opportunities to define trigger mechanisms with the need for local participation?*

Facilitators:

- **Sahara Sedhain**, PhD candidate with a research focus on anticipatory action (UT/ITC)
- **Kees Boersma**, Professor of Innovations in Crisis Management and Societal Resilience (VU)

The session explored how different actors contribute to trigger development and how localization involves balancing legitimacy, cost, and speed. Through a role-play game, participants experienced the competing priorities of three groups: ***community*, *government*, and *data modellers*.** Each team were given ten tokens that represented time and resources, which they could spend on up to three trigger related actions from a list of ten (e.g., upgrading hydrological models, organizing community workshops, or setting automated SMS triggers). While working within their roles and constraints, participants justified their choices through short messages to the other groups (to highlight the importance of communication). This was followed by a negotiation round where joint investments were possible. The session ended with a plenary discussion which highlighted the key insight that collaborative planning can uncover overlaps in priorities and funding but in real settings such transparency and participation is rare. The discussion concluded on recognizing the biases and limitations inherent in both data-driven or knowledge-based trigger methods how this can be reduced through meaningful integration of the two.

Break-out session 3: Silos: *How do you work across silos on anticipatory action?*

Facilitators:

- **Corina Markodimitraki,** Technical project coordinator, 510 Global of the Red Cross
- **Marc van den Homberg,** Professor Data4Disaster Resilience (UT/ITC) and Scientific Lead the Netherlands Red Cross' data and digital team, 510

During the 'How do you work across silos on anticipatory action?' breakout session, the participants started by making an inventory of the challenges and lessons learned. They noted that collaboration is often hindered by limited inter- as well as intra-organizational collaboration and data sharing, as well as gaps between sectors, such as between WASH and livelihoods. They also highlighted tensions between quantitative and qualitative data, donor requirements that can restrict how anticipatory action can be implemented, and a lack of visibility on the wider impacts of interventions.

As potential ways forward, participants suggested creating structured spaces for programmatic exchange, and strengthening national and sub-national coordination mechanisms—citing examples from South Sudan, Nepal, Somalia, Pakistan, Niger, the USA, and Canada. They also emphasised the importance of translating scientific insights into practical guidance to build trust, aligning research with real challenges on the ground, working with a clear lead

organisation, establishing working groups, and actively sharing lessons learned, for example, through the anticipation Hub.

Break-out session 4: Technical: *How can trigger mechanisms be technically optimised?*

- **Norman Kerle**, Full Professor of Geoinformatics for Disaster Risk Management (UT)

This session focused on data suitability, availability, and accessibility. In the session, participants contrasted (i) detailed/high spatial resolution image data with (ii) less detailed ones, discussing how the former are very suitable for detailed mapping, including of post event damages, but are also commercial (e.g., from MAXAR), typically only acquired for commercially interesting areas (urban rather than remote rural ones), how they at times are acquired and donated to the humanitarian community after the event, at times not, leading to a lack of plannability.

Finding data for a detailed loss prediction model is challenging, and additional data, such as element at risk data from Google's Open Building or OpenStreetMap, often need to be used, but those in turn are not dynamically updated. Vulnerability data are the scarcest; the best we can do is to identify buildings of different classes/types in images and apply standard vulnerability curves based on historic damage. Furthermore, it was also discussed how not only explicit geospatial data can be used, but also text-based information. Large language models are already being used for text mining, such as from reports and other documents, but also dynamically from social media feeds

Part 4: Closing panel

The closing panel consisted of Carla Jonkers from the Netherlands Red Cross, Hyeonggeun Ji from the Hague Humanitarian Studies Centre-ISS and Kamal Farah from CARE Somalia. They discussed what it is like working across silos/the disaster management phases (preparedness, anticipatory action and response) and have been reflecting on the reality on the ground.

Anticipatory action is achieved through local solutions by local actors, according to Carla Jonkers. This should be the base that is built upon to ensure that early actions are happening within the community. Early action needs risk monitoring to target the at-risk population precisely. However, risk monitoring is not a standalone approach. Success can only be achieved through incorporating local knowledge, capacities and assets.

Hyeonggeun Ji, PhD Researcher at the Hague Humanitarian Studies Centre-ISS, wants to highlight the state and their role in anticipatory action. Hyeonggeun's research in Bangladesh shows that the country has a strong early warning system and a good strategy for climate change adaptation. Bangladesh aims to move from being vulnerable to successfully decreasing the impact of hazards, and they are on the right track with that. However, inter-ministerial collaboration and support to the local government require improvement as the allocation of responsibilities remains unclear. Although Bangladesh has its challenges, other countries can learn from its solid early warning system and their invitation to NGOs to collaborate with each other and the government.

Kamal Farah is a Water Technical Advisor with CARE Somalia. The climate in Somalia is changing, droughts have always been familiar, but cyclones are now occurring in the country as well. This changes the context, and organisations have to deal with hazards they are not familiar with. The government contributes to vulnerability, it is in conflict and therefore less engaged with disaster risk management. This is evident in the development of crisis modifiers and triggers for

which collaboration with the government is needed. Data needed to develop these triggers is sensitive, and the government is unwilling to share this with NGOs.

The panellists work with different stakeholders, the audience asked engage with the private sector. For most of the panellists this was mostly unfamiliar. One example is Vitens, a drinking water company in the Netherlands, that the Netherlands Red Cross collaborates with for data sharing to develop risk analyses for Dutch citizens. Conversation was also had about information sharing; some NGOs have their own systems for disaster risk management and it was suggested to share those with other organisations.?

Though NGOs and the private sector play a role, most importantly is the local community, especially for the sustainability of projects. Projects are only sustainable when the local community is involved and can continue with the project. NGOs enter a project with tools, knowledge and assets, but they also create expectations. It is of significant importance to sustain and maintain the knowledge in communities.