Madagascar

Impact of Early Warning Early Action

Protecting farming livelihoods from drought and food insecurity
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Early Action

Protecting farming livelihoods from drought and food insecurity

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There is evidence that the intensity and frequency of natural hazards and conflicts is increasing. Natural hazards, for example, now occur nearly five times as often compared to 40 years ago.

The impact on local economies, on people’s lives and their livelihoods, has similarly increased. In some of the worst-hit places, it can seem unrelenting. One crisis will follow another, every time stripping away at the hard-earned but limited assets of the poorest and most vulnerable, depriving people of their self-reliance and their dignity.

Globally, expanding needs, competing priorities and limited resources mean that new tools are essential to make humanitarian interventions as wise and effective as possible, to ensure that the impacts of crises are limited before they can grow into even more costly disasters.

Support at the right time protects and empowers people the most, giving them the confidence to keep going or to resume their livelihoods. Investing in early action means FAO can help shelter longer-term development gains and increase resilience.

Working with national governments and humanitarian, development and scientific partners, FAO’s Early Warning Early Action (EWEA) approach monitors risk information systems and translates warnings into anticipatory actions. Every quarter, FAO’s Early Warning Early Action report on food security and agriculture ranks risks by their likelihood and potential impact and identifies options for intervention. Funding channeled through the Special Fund for Emergency and Rehabilitation Activities (SFERA) Early Action Window enables FAO to act early and reduce the impact of crises, drawing on FAO’s greatest asset – its technical knowledge and expertise in supporting rural livelihoods.

Early actions are varied and flexible, ranging from cash transfers for fishing communities to safely store their nets ahead of an impending cyclone, to livestock treatments for herders as a drought approaches, to flood defences before a severe rainy season to protect crops.

This study analyses the outcomes of monitoring early warnings on drought and taking targeted early actions in the south of Madagascar between 2017 and 2018. It evaluates their effectiveness and quantifies the benefits of acting early.
Preparedness efforts implemented to brace for impact and for quick response. Funds are allocated for response and recovery efforts.

**Humanitarian response**

Risk of disaster increasing

**Preparedness efforts** implemented to brace for impact and for quick response

**Humanitarian impact**

**Funds** released during disaster strikes

Implement early actions

**Protect livelihoods**

Value added

1. Protects livelihood assets and long-term development gains
2. Reduces the cost of humanitarian response
3. Allows households to keep their livelihoods and dignity intact

**Early Warning Early Action approach**

**Risk monitoring**

Early warning system

**Risk of disaster increasing**

Warning trigger

- Conflicts
- Severe winters
- Pest and diseases
- Cyclones
- Floods
- Droughts

**Funds released**

- Crop diversification, water resource management, food preservation, supply of tools and inputs
- Cash transfer
- Cash, vouchers, combined modalities (cash +), working within existing social protection mechanisms

**Disaster strikes**

Implement early actions

Protect livelihoods

- Fisheries: Storage containers for fishing gear, distribute fisheries kits, early warning information dissemination to safeguard fishers at sea
- Forestry: Prune trees, collect harvest, reinforce structures, install fire breaks
- Animal health and livestock management: Vaccinations, value chain support, distribute fodder and nutritional supplements, water management
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**Impact of Early Warning Early Action**

Madagascar  |  Impact of Early Warning Early Action
It’s particularly important in Madagascar to understand the vulnerability of farmers to agricultural risks and natural hazards, as they make up approximately 70 percent of the population. Madagascar has one of the highest poverty rates in Africa, with 75 percent of people living on less than the international poverty threshold of USD 1.25 a day.

The island is subject to periodic extreme weather conditions, such as cyclones, floods and droughts, which are expected to intensify under climate change. Life is especially tough in southern Madagascar, where the challenges of farming in the dry, semi-arid climate are exacerbated by recurrent drought, strong winds and silting. Poverty is a vicious cycle, with strategies to mitigate the impact on vulnerable people limited by the impact of the weather.

Malagasy farmers in the south are particularly vulnerable to any fall in crop productivity as a result of climate hazards. They cultivate very small parcels of land of less than a hectare, primarily to produce food for their families. Any loss in production makes meeting household needs even more difficult. These vulnerable farmers often lack technical assistance and cannot get the agricultural inputs they need, such as drought-tolerant and improved seed varieties, or they have to pay high prices for them. Farming communities are often remote and a lack of road infrastructure severely affects their access to markets to sell their products. Accessing basic services such as water and electricity adds to their difficulties.

Since 2014, three successive agricultural seasons have failed in southern Madagascar because of repeated droughts. The El Niño phenomenon of 2015 and 2016 worsened the situation, as it wiped out agricultural recovery efforts, further aggravating the existing vulnerability of local people and their food insecurity.

By 2017 people had become increasingly vulnerable because on top of agricultural failure, other ways of generating income had become almost impossible to find. Their resilience eroded, many households had been forced into the most precarious of survival strategies. Those with livestock sold their animals at low prices, while others migrated in search of temporary employment, leaving the most vulnerable groups behind in very fragile situations. Living off wild foods, such as red cactus, had become common. Peoples’ ability to cope with lean periods and access seeds for the next planting season was severely challenged.
Seeing the threat facing southern Madagascar, in March 2017 FAO put in place an early warning system and an early action plan to monitor the risk of drought and to mitigate it.

The focus was on the most vulnerable districts of Ambovombe, Bekily, Beloha, Tsihombe and Amboasary-Atsimo. These were especially closely monitored by SISAV, a food security and vulnerability information system run by FAO which includes information from the Malagasy government and other partners. Information from SISAV was combined with climate forecasts and agricultural indicators to anticipate the potential occurrence of drought and to facilitate the timely identification of the most-at-risk areas and households.

Between July and October 2017, different analyses – including the EWEA/SISAV, Crop and Food Security Assessment Mission (CFSAM) and the Integrated Phase Classification (IPC) – pointed to the lean period starting early, beginning in October rather than January, with the November 2017 to May 2018 agricultural season likely to be dry.

The first signs were already there in a bulletin from EWEA/SISAV in April 2017, which forecast a rapid depletion of food stocks due to a combination of years of poor consecutive harvests and an expected increase in the vulnerability of subsistence farmers. The bulletin recommended action to support the most at risk households with sustainable activities to protect their livelihoods and to prepare them for the next agricultural season.

A joint WFP/FAO Crop and Food Security Assessment mission in July and August 2017 pointed to below-average harvests. It estimated that 407,655 people were severely food insecure in the south and southeast and an additional 1.7 million were moderately food insecure. Of the moderately food insecure, 35 percent had adopted negative coping strategies and were at high risk of falling into severe food insecurity without humanitarian assistance.

In September 2017, the EWEA/SISAV bulletin forecast a high risk of drought and deterioration of food security in southern Madagascar. The early warning system flagged that the potential impact of drought on food security was alarming in about one third of the monitored areas.

In October 2017, the IPC projection confirmed the reported trends and highlighted the expected deterioration of food security in the south, with an early lean season and likely dry conditions disrupting the main agricultural season. This was leaving nearly 1.5 million people food insecure, including 330,000 people classed as being in the IPC Phase 4 of food insecurity, an emergency phase.

When a severe drought was confirmed in southern Madagascar for the agricultural season of November 2017 to April 2018, the early warning signs were proved to be correct. Many areas suffered failed or nearly failed harvests.
FAO Madagascar acted rapidly upon the early warning signs of an impending drought. Between November 2017 and May 2018, supported by FAO’s Early Action Fund (SFERA), it intervened in southern Madagascar with well-targeted early actions to support crop production of the most vulnerable farmers and to mitigate the impact on food security.

The areas of interventions were identified based on the IPC projections released in October 2017, focusing on the districts where food insecurity was expected to deteriorate from Crisis (IPC Phase 3) to Emergency (IPC Phase 4) levels between October 2017 and March 2018.

The most vulnerable families were identified using social and economic indicators. The 8,400 households included those run by single parents who had young and malnourished children, female-headed households with at least two young children, larger households of seven people with disabled, elderly or pregnant members and households with no productive assets.

FAO Madagascar distributed micro-irrigation systems, water pumps and water storage tanks together with vegetable seeds with a short growing cycle, to ensure multiple production cycles and the chance to generate income and improve diets. Farmers who were so poor that they had no access to seeds ahead of the main planting season received good quality seeds for staple rain-fed crops to allow them to take advantage of any rainfall they received. Households were also given training on better agricultural techniques, including crop diversification, using organic fertilizers, fighting plant diseases and improving crop storage.
The project focused on the most affected districts where food security outcomes were expected to deteriorate from Crisis (IPC Phase 3) to Emergency (IPC Phase 4) and targeted areas: Ambobassy, Ambovombe, Bekily, Beloha, Tulombi.

The project

- **8,400** vulnerable households targeted for early actions
- 4,200 female-headed households

- **USD 400,000** was released through the SFERA Early Action Window

**USD 1 ➡ USD 2.5**

For every USD 1 spent on livelihood interventions, households had a return of USD 2.5*.

**Benefits to households**

- Avoided production losses and increased production correspond to a monetary value of USD 78 per household.
- USD 47 in avoided main staple crop losses.
- USD 31 increased vegetable production.
- Households benefited from 3 cropping cycles of vegetables in one season.
- Households doubled the consumption of vegetables.
- Households doubled the consumption of expensive goods like oil due to increased income.

**What did farmers have to say?**

Farmers reported how early action interventions had direct and indirect impacts on their lives:

- Improved water availability
- Diet diversification
- Reduced debt
- Strengthened community collaboration
- Reduced distress migration

**What was the return on investment?**

**USD 1 ➡ USD 2.5**

**March 2017**

- FAO Madagascar along with the Malagasy government and partners established an EW EA system based on a range of indicators, focusing on southern Madagascar.

**April 2017**

- EWEA bulletin forecast a rapid depletion of food stocks and increased vulnerability of subsistence farmers.

**September 2017**

- EWEA bulletin forecast a high risk of drought and potential impacts on food security.

**October 2017**

- Integrated Phase Classification (IPC) analysis projected a deterioration of food security.

**November 2017**

- FAO acted quickly to protect the livelihoods of vulnerable farmers.

*The analysis only accounted for project and support costs directly related to input purchase and distribution.*
The return on investment

Analyzing the benefits shows what early actions work best.

To establish exactly how effective its early actions in southern Madagascar had been, FAO carried out an impact analysis in June 2018, asking both beneficiary and non-beneficiary households about the impact of its interventions.

Households in Amboasary-Atsimo, Ambovombe and Bekily were interviewed and asked in particular about two interventions. These were the distribution of quality seeds to support rain-fed staple crops and the combined installation of water pumps and drip irrigation systems with the distribution of vegetable seeds to grow irrigated crops.

The aim was to assess how effective it had been for good quality seeds to be planted at an earlier time to increase the output of major crops such as groundnuts, pea and cow peas, maize, rice and millet. It was also important to know if irrigation equipment and seeds supplied together had enabled vegetable production to flourish.

The difference in agricultural output between beneficiary and non-beneficiary households was then assessed, taking into account differences in input costs and the cost of maintaining water equipment.

A Return on Investment analysis showed that a beneficiary household gained USD 78 on average in increased vegetable production and avoided the loss of staple crops. The cost of running the intervention and buying seeds and equipment was USD 31.8* for each household. This produced a benefit-cost ratio of 2.5, meaning that for every USD 1 invested by FAO, households gained USD 2.5.

If the annual income of vulnerable households is also considered, it is clear how strong the impact of the early actions was – USD 78 is almost half their annual income.

The benefits of irrigation and vegetable seeds together were by far the most significant to vulnerable farmers. Using irrigation equipment allowed them to grow up to three times the usual crop. The major rain-fed crops did not do so well, despite the better seeds given to farmers, as the drought was so severe. The majority of farmers reported losses of more than three-quarters of their expected production. Yet, yields were generally higher in households that received FAO support, possibly due to the better quality of the seeds which were distributed.

*The analysis only accounted for project and support costs directly related to input purchase and distribution.
When the IPC projections indicated a likely deterioration of many Phase 3 households into Phase 4 in early 2018, it was key for FAO to target them to curb their food insecurity and maintain their access to diversified diets.

**Food consumption and dietary diversification**

During the assessment, households were asked how many times they ate a given food over a recall period of the past seven days.

It was found that the distribution of seeds with a short growing cycle combined with irrigation equipment played a key role in ensuring that vulnerable households could access an acceptable diet.

Only 16 percent of beneficiary households were classed as having a poor diet, as opposed to 40 percent of households who did not benefit from FAO’s support. A poor diet meant that people were not eating staples or vegetables on a daily basis during the seven-day assessment period. However, almost 47 percent of beneficiaries had an acceptable diet, where
they ate staples and vegetables every day plus pulses and oils two or three times a week. FAO beneficiaries increased the frequency of their vegetable consumption to an average of 4.8 days, compared to 2.8 days per week for non-beneficiaries.

**Coping strategies**

FAO also assessed the coping capacity of beneficiary households to face difficulties in accessing food. Households were asked a series of questions to understand how they coped with shortfalls in harvested food or in the money available to buy food.

The assessment focused on the five most common behavioural changes in response to food shortages. These included relying on less preferred and cheaper foods, borrowing food from a friend or relative, reducing the number and portion size of meals and restricting food to adults to focus on feeding small children.

FAO’s analysis showed that beneficiary and non-beneficiary households engaged in the same types of coping strategies when faced with difficulties. However, beneficiary households were found to use them less. This confirmed the importance of acting before food security conditions start deteriorating, reducing suffering and preventing behaviour which eroded the assets, livelihoods and dignity of the very poorest people.
Establishing strong information and early warning systems and designing the rapid actions needed to address warnings of impending crises are clearly emerging as a way forward. FAO is very mindful of the great value of listening to the experiences, opinions and perspectives of the people it serves.

So, in addition to the door-to-door interviews carried out in southern Madagascar, focus group discussions were held to ask beneficiary households how well early actions had achieved their primary goal – protecting them and their livelihoods from drought. Eleven focus group discussions allowed people to describe how FAO’s interventions had helped them and to flag any shortcomings so as to provide pointers for the future.

The most positive response was to the installation of water extraction and irrigation equipment as it substantially reduced the time and energy spent on collecting water. The farmers also greatly welcomed the extra vegetables grown as a result, which also allowed them to diversify their households’ diets and to sell their surplus in local markets. Farmers were pleased that this income reduced the burden of debt many of them held from previous agricultural seasons and allowed them to buy a wider range of staples, such as rice and maize, rather than just cassava.

Farmers also described the positive social impact on their communities. The arrival of water pumps and irrigation kits helped create new systems, rules and responsibilities around use and maintenance and the setting up of cooperatives to sell produce in local markets.

This gave the farming communities valuable insight into what could be improved. They suggested that investments in irrigation systems could be complemented with the promotion of small livestock farming, providing an alternative livelihood source. This is important, given that recurrent drought has a heavy impact on the production of staple crops.

Farmers also asked for more training on improved agricultural techniques in the face of the more frequent drought, while some raised the question of financial support for the very poorest who struggled to pay monthly maintenance fees for the irrigation equipment.
“The irrigation equipment from FAO meant I was able to produce a variety of vegetables, some of which I took to the local market to sell.”

Zarafonomeny

Collecting firewood and growing small amounts of a local green leafy vegetable known as braid is Zarafonomeny’s fallback in times of severe drought. But it’s not enough for the 23-year-old mother of four to sustain her family and build towards a more stable future.

As a participant in FAO’s early action project, Zarafonomeny was given good groundnut and vegetable seeds, allowing her to start the agricultural season on time. Usually, she wouldn’t have the financial resources to do this.

Zarafonomeny also benefited from an irrigation system provided to her community along with seeds to try to grow multiple harvests of a variety of vegetables. This worked especially well for her. “Some of the vegetables we ate, the rest I was able to sell in the market,” she says. “The money I earned meant I could cover some daily needs, such as buying rice, oil and soap.”
“This drought was very hard. We adults ate only once a day. The children also ate nuts they collected in the bush.”

Soalay

At 56-years-old, Soalay has seen more droughts than he can count in southern Madagascar. Like many people he has been forced to migrate to find work when the crops have failed, trading chickens to Mahajanga, a northern port city where many southerners go in hard times. He still tries to find other sources of income to back up the challenge of subsistence farming. “Sometimes, I leave home to search for precious stones, walking very long distances and being far from home for weeks” Soalay says.

The latest droughts have proved especially difficult and the father of 12, with 6 grandchildren, has struggled to keep his land and his oxen. But as some rain fell between January and March, Soalay’s family was able to plant and harvest rain-fed crops with seeds from FAO’s early action programme.

The irrigation system and vegetable seeds provided to Soalay and his neighbours proved extremely popular. “The community of 46 beneficiary households celebrated the arrival of the equipment,” Soalay says, adding that he would now like to try growing other crops.
Didisaoa

“I’ve been able to make my family’s diet better with the range of vegetables I grew and made some money selling the extras.”

Didisaoa has been working since she left school aged 12 after just 2 years. She was briefly married and helped her household by selling soap and other goods. Now 19, Didisaoa has been remarried for a year and cares for her baby while managing the family vegetable plot. Her husband works their cassava field, but drought forced them to sell their chickens and some of their small herd of cows in order to make ends meet.

This year, Didisaoa was better able to cope, after receiving her millet, peanut and vegetable seeds. The family ate most of their harvest, but were able to keep some back as seed stock for the next agricultural season. Didisaoa is very pleased that she could make some money from selling produce. She’s also happy with what she sees as the additional benefit of training in climate-smart agriculture, irrigation techniques and seed management.
Impact of Early Warning Early Action
The importance of building long-term resilience

Early actions can provide insights into the most appropriate investment to tackle the root causes of vulnerability.

The lack of effective water management systems has made the impact of recurrent droughts much worse in southern Madagascar over recent years, affecting the livelihoods of around 1.5 million people.

Climate challenges have become increasingly complex and sustainable ways forward are needed urgently to help local farmers cope with the lack of rain. FAO’s early actions of distributing water pumps and small irrigation systems have proved successful beyond their initial goal of mitigating a current drought, moving towards broader disaster risk reduction.

Households which received irrigation equipment and capacity building support worked closely together, pooling their financial and human resources. They made sure that equipment was maintained and was fairly used, so contributing to the sustainability of the interventions beyond the specific drought.

Communities showed strong solidarity and awareness of their needs in the face of the growing frequency of natural hazards. Helping them prevent and prepare for predictable shocks is one of the foundations of building resilient livelihoods.

Early actions are most relevant when they are embedded within a broader agenda for disaster risk reduction which aims to address the root causes of vulnerability in hazard-prone areas. The value of short-term livelihood interventions before specific shocks is limited without strategies, policies and programmes which aim to reduce the impact of climate challenges on food security. But, the effect of shocks may also undermine medium to long-term resilience building efforts and investments, unless anticipatory actions are taken to preserve the livelihoods of the most vulnerable.

The impact analysis of early actions can provide insights on interventions that should be prioritized for building resilience. Early actions should, as a priority, build on existing investments in disaster risk reduction. Scaling up and accelerating the implementation in areas potentially affected by a specific, forecast hazard, is crucial.
Acting early is not only possible, it is a responsibility, as solid evidence is increasingly available as a trigger. FAO gets a deeper picture of emerging threats by combining risk information and monitoring systems. If it then acts at the optimum time, it can mitigate the impact, saving assets and livelihoods and protecting investments and developmental gains.

FAO learned a number of lessons when it monitored early warnings and followed up with early actions in southern Madagascar. FAO also listened closely to the experiences and opinions of people who took part in its intervention programmes, learning from them what worked best.

Pre-positioning seeds

This is crucial for seed distribution at the best possible time ahead of the planting season. When a crisis has started, it can be difficult – and expensive – to access stocks, so having them already in place is hugely beneficial. Proper storage practices also proved very important. By pre-positioning seeds in areas potentially most affected by drought, FAO was able to reach farmers in time for sowing, with maximum impact and minimum cost.
Listening and understanding how to do things better are important skills.

Links between monitoring systems

It was hugely beneficial that the early warning system established by FAO and its partners in southern Madagascar put a strong emphasis on making links between climate forecasts, agricultural production and food security. In particular, IPC projections were layered with rainfall forecasts and agricultural and vulnerability indicators so as to guide the design of interventions. There was also sharp targeting of the most-at-risk households. Early warning bulletins were regular, so keeping attention focused on the combined effects of an early lean season with another drought. Early warning early action is now being integrated into national strategies.

Accessing and using water

Introducing water pumps and irrigation equipment in communities living close to water sources had a significant impact on their vegetable production, income and diversification of diets. However, drought caused severe losses in non-irrigated areas where key staple crops are grown and for this to change, investment in irrigation infrastructure is needed. Farmers’ dependence on rain-fed crops also needs to be reduced by diversifying livelihoods.

Training and learning

It proved crucial that training and timely advice to farmers before, during and after the cropping season was provided. This should be expanded to help farmers better plan the time they buy seeds and fertilizers, to take advantage of the best sowing window and to store their harvest well. As rainfall patterns are becoming more and more unpredictable in southern Madagascar – so shifting the agricultural calendar – vulnerable farmers need the best support possible.
Acting early safeguards lives and livelihoods, builds resilience to future shocks, and eases pressure on strained humanitarian resources.
FAO’s Early Warning Early Action uses risk analysis and forecasts to trigger interventions before a crisis escalates into a humanitarian emergency.

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