



Climate
Centre



Galápagos

Quito

Ecuador



Volcanic ash



Strong rains

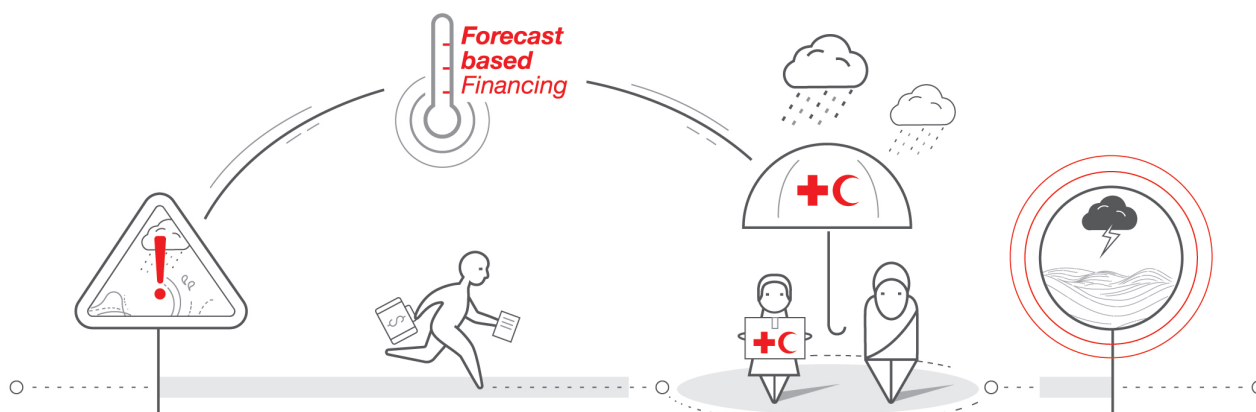
Forecast-based Financing

Ecuador

Ecuador, bordered by Peru in the south and by Colombia in the north, is characterized by its dense Amazonian rainforest, high Andean mountains and volcanoes, and its long, arid shoreline. The populations in these different climatic zones face several types of extreme weather events. In the Andes, ashfall following volcanic eruptions poses a direct threat to agriculture and housing, while extreme rainfall associated with El Niño regularly wipes out houses along the coast. The Forecast-based Financing (FbF) project in Ecuador helps the most vulnerable populations cope with these hazards, and to minimize their impact through the use of forecasts and anticipatory action.

The concept of FbF

Anticipation instead of reaction: with **Forecast-based Financing (FbF)**, the International Red Cross and Red Crescent Movement is reshaping the future of the humanitarian system. Based on forecast information and risk analysis, FbF releases humanitarian funding for pre-agreed activities, referred to as **early actions**. These predefined measures aim to minimise the **impacts of extreme weather events and save human lives**. For early actions to be performed quickly and efficiently before disaster strikes, **funds are allocated automatically when a trigger** is reached, based on weather and climate forecasts. This is defined in the **Early Action Protocol (EAP)**. A **dedicated financing mechanism** is key for taking fast and effective action before disaster strikes: **Forecast-based Action by the DREF**.



The FbF project in Ecuador

The **German Red Cross (GRC)** and **Ecuadorian Red Cross (ERC)** have established FbF in Ecuador in 2017 with the support of the **Red Cross Red Crescent Climate Centre (RCCC)**, funded by the **German Federal Foreign Office**. In this time the project has developed and tested EAPs for intense rain and ashfall; it has trained staff members and volunteers on the development and implementation of EAPs; and it has established important networks and cooperation with government, hydro-meteorological services, UN agencies and NGOs to promote early actions in the country.

Partners in Ecuador

FbF and the EAPs in Ecuador are jointly developed and implemented by the following stakeholders:

- The **ERC** is the main implementing organisation and provides the organisational and staff capacity on the ground and is technically supported by the **GRC**, the **RCCC** and also by the Netherlands Red Cross **510 Initiative**.
- Ecuador's meteorological service **INAMHI** and the Geophysical Institute **IGEPN** have been involved in trigger development and they provide operational weather forecasting support.

- **ERFEN**, the El Niño regional study committee, has contributed its expertise.
- National Risk Management and Emergency Service **SNGRE** is the leader of the Decentralized Risk Management System in Ecuador.
- **Provincial municipalities and community leaders** are in charge of managing actions and policies in their communities.
- Activations of EAPs are funded through the **International Federation of Red Cross and Red Crescent Societies' (IFRC) FbA by the DREF**. The IFRC will further provide guidance and support for procurement, Planning Monitoring Evaluation and Reporting (PMER), and finance.



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INAMHI



AN INITIATIVE OF
THE NETHERLANDS
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SERVICIO NACIONAL DE
GESTIÓN DE RIESGOS
Y EMERGENCIAS

INTERNATIONAL



FEDERATION





Volcanic ash

Early Action Protocol: Volcanic ashfall

Volcanic eruptions can impact vast areas through life-threatening ashfall, lava flows, and noxious gas emissions. Volcanic ashfall in particular can cover and destroy wide areas. Ecuador has 24 potentially active volcanic centres. The Tungurahua, Cotopaxi, Guagua Pichincha, Sangay, Cayambe and Reventador volcanoes are the most active ones, posing a high threat to the surrounding population.

How does ashfall affect the population?

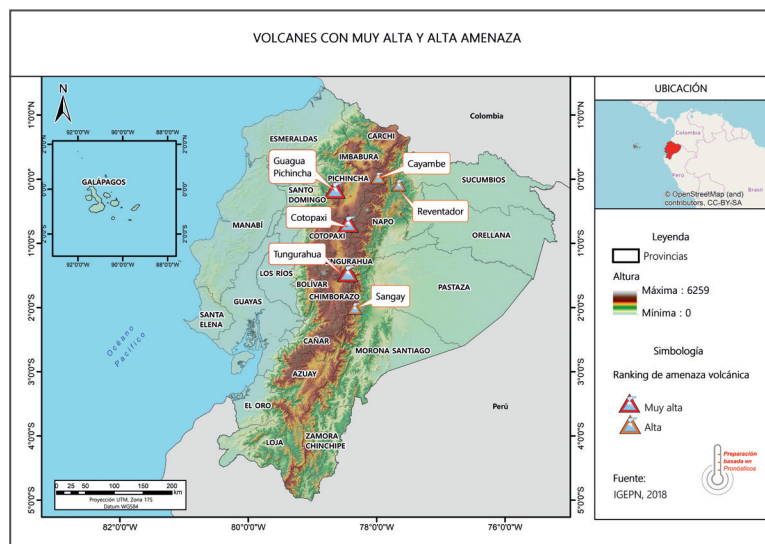
Volcanic ash has destroyed thousands of hectares of crops and killed many livestock during the past two decades. It further leads to detrimental health impacts, in particular damage to eyes and lungs. Vulnerable communities located close to volcanoes are regularly affected, partly because they lack the ability to evacuate or to protect themselves sufficiently, and partly because they depend on subsistence farming, which becomes impossible following ashfall. Until now, actions to mitigate the destruction caused by ashfall in these regions have been post-disaster following irreversible damage. FbF instead aims at acting early.



Ashfall Early Actions

The Ecuadorian Red Cross offers workshops on volcanic ashfall and possible self-protection measures. If an eruption is forecast, the ERC will warn communities and implement early actions:

- Ashfall > 2mm: **Distribution of health protection kits.** These include safety glasses, masks and physiological serum to reduce respiratory and breathing problems, and eye infections
- Ashfall > 5mm: Additional **provision of livelihood protection kits.** These include a plastic tarpaulin and tools to protect livestock and crops. The toolkits help the livestock and farming activities deal with the ash, thus protecting the households' source of food and income
- With extreme ashfall (> 1 cm), **evacuation assistance** will be provided for both people and livestock.



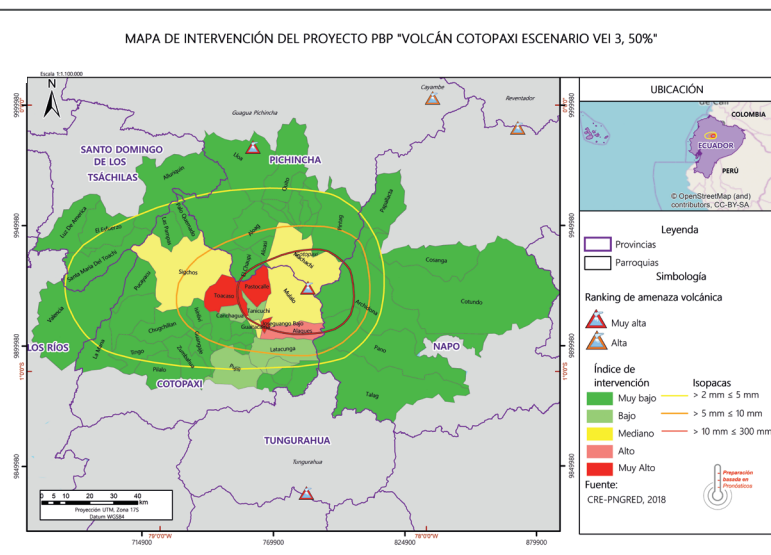
Volcanoes with high risk levels.



Cotopaxi volcano, 2018.

A **Cash Transfer Program** will provide financial means in addition to the health and livelihood kits

1,000 families will benefit from the early actions that will be implemented with a three-day lead time. The FbF team in Ecuador will combine forecasts with real-time data to generate an intervention map indicating those areas with the highest predicted impact, thus determining, which communities will receive assistance.



Intervention Map for a simulated eruption of the Cotopaxi volcano, showing the areas with the highest predicted impact.



Early Action Protocol: Extreme rainfall related to El Niño

El Niño is a phenomenon that occurs every two to seven years in the Pacific region. In Ecuador, El Niño leads to extreme rainfall and river flooding in coastal zones. The effects are most dramatic between December and April, but a strong El Niño can persist for 12–18 months. FbF aims to mitigate the detrimental effects of extreme rain on the poorest and most vulnerable population groups.

How does intense rainfall affect the population?

Extreme rainfall results in fatalities, destruction of infrastructure, damage to homes, the isolation of communities, a loss of agricultural land, and damages to livelihoods. Serious risks stem from water-borne diseases such as diarrhea and cholera, and mosquito-related diseases such as malaria. Detrimental effects from poorly tended injuries and mental health impairment have been observed. Vulnerable groups lose access to basic needs such as balanced food, shelter, transportation, education and livelihood recovery. The exceptionally strong 1997–98 El Niño, caused a loss of nearly \$3 billion (USD), about a quarter from direct damage, and three-quarters from indirect damage.



El Niño Early Actions

Early actions have been selected based on an analysis of both historical El Niño impacts and the current situation. This included field visits, literature reviews and assessments of prior governmental action. Early actions focus on safe water, sanitation, hygiene (WaSH), primary health care and a Cash Transfer Program to help the poorest and most vulnerable populations cope with the floods. They include:

- **Distribution of materials to promote hygiene and access to safe water**
- **Cash assistance** to assist people to cover their basic needs, in particular access to food

1,000 families in nine coastal cantons (3 out of 24 provinces) will benefit from the early actions when forecasts with a lead time of five to seven days reach the trigger. The specific communities to receive assistance will be selected combining forecasts and risk data to generate the intervention map of the ERC FbF Team.



ERC staff and volunteers coordinate with community leaders.

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Saving lives, changing minds.

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