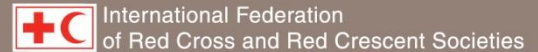


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Ecuador: Volcanic Ashfall

Early Action Protocol summary



EAP Approved April 2019	Population to be assisted 5,000	EAP timeframe 5 Years
EAP NUMBER EAP2019EC01	Budget 246,586 Swiss francs	Early action timeframe 2 Month

The IFRC's Programme and Operations Division has approved the Early Action Protocol (EAP) for Ecuadorian Red Cross (ERC) with a timeframe of five years and a budget of CHF 246,586; consisting of CHF 140,660 for readiness and pre-positioning and CHF 105,926 for early action.

The EAP shall be funded from the IFRC's Forecast based Action Fund (by the DREF) where allocations shall be drawn on annual basis to cover readiness and pre-positioning cost and as a one off upon trigger to implement early actions.

SUMMARY OF THE EARLY ACTION PROTOCOL

This Early Action Plan aims to establish appropriate early action using volcanic ash dispersal and deposition forecasts that benefit the most vulnerable families in the most potentially affected areas.

Ecuador is a country that is under the influence of several natural hazards due to its geographical location, atmospheric dynamics and geological characteristics. The country has historically faced several important events such as floods, water deficit, earthquakes, volcanic activity and landslides, among others, which leave thousands of people affected and generates millions of dollars in losses.

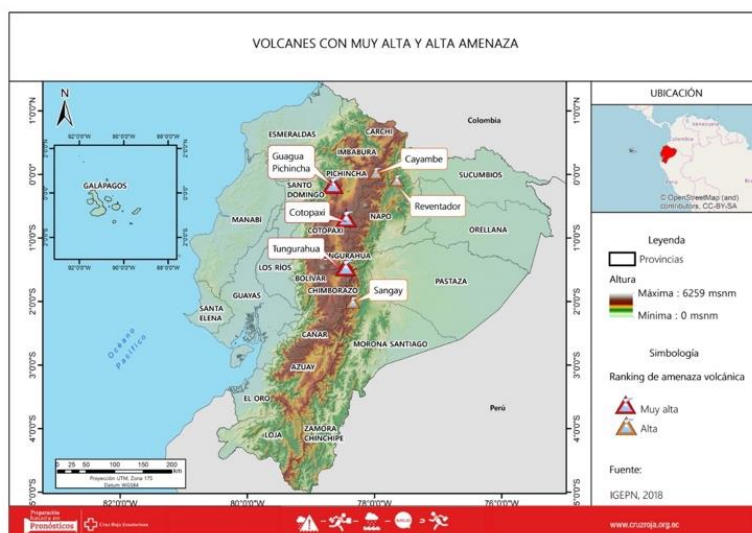
This EAP focuses on the fall of volcanic ash due to the threat it represents for Ecuador.

Ecuador is a country with a high density of volcanoes. In the last catalogue (Bernard and Andrade, 2011) there are 84 volcanic centers, of which 24 are considered as potentially active, that is to say, that they have had an eruptive activity the last 11 700 years. The methodology developed by Ewert (2007) included 12 factors to evaluate volcanic danger, 3 factors to evaluate volcanic agitation and 9 factors to evaluate exposure.



Ash cloud over Machachi due to the Cotopaxi volcano activation.
Source: *El Telegrafo*, August 2015.

The following map identifies the volcanoes that have a high and very high threat of falling volcanic ash.



Source: Ecuador FbF team

Table of people possibly affected by ash fall by province and by volcano (VEI 3).

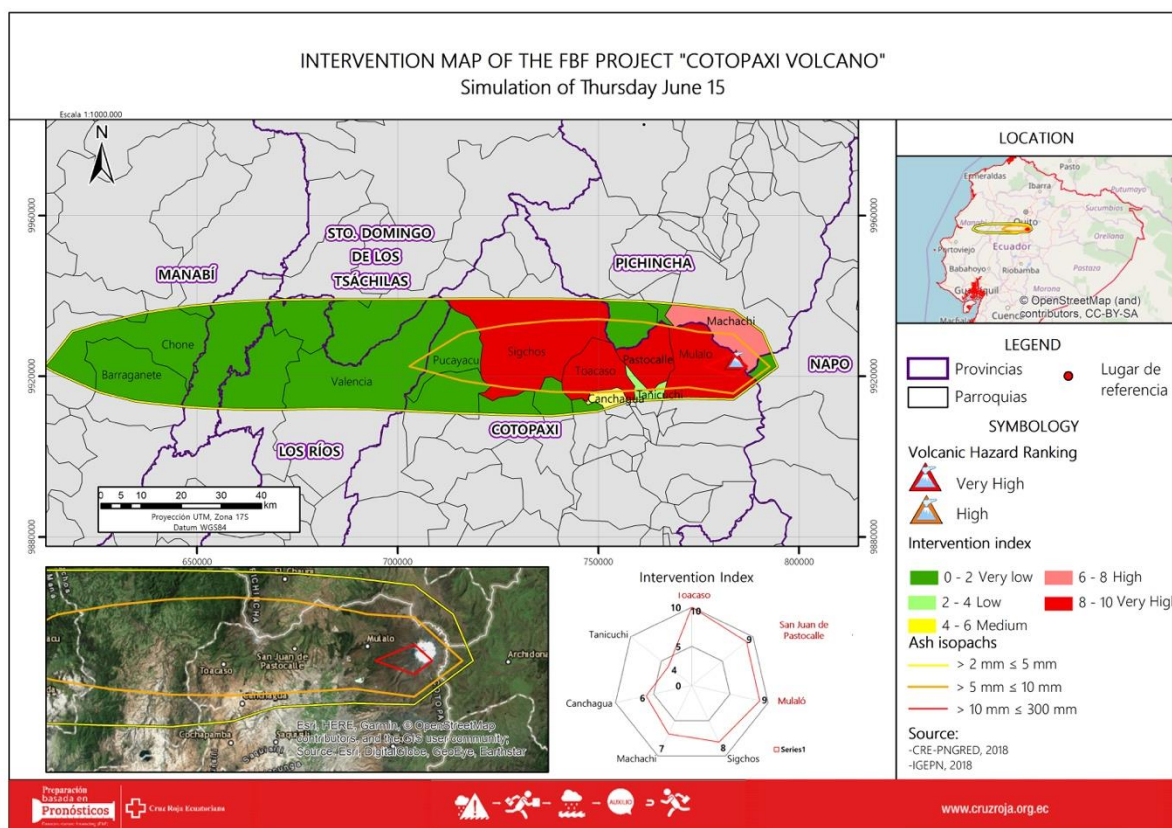
VOLCANO	PROVINCES	TOTAL NUMBER OF PEOPLE POTENTIALLY AFFECTED
Cotopaxi	Santo Domingo, Pichincha, Napo, Los Ríos, Cotopaxi, Tungurahua, Bolívar	3'566.718
Guagua Pichincha	Imbabura, Pichincha, Napo, Santo Domingo, Esmeraldas, Los Ríos, Cotopaxi, Manabí	372.740
Reventador	Sucumbíos, Pichincha, Napo	63.804
Tungurahua	Bolívar, Tungurahua, Chimborazo, Morona Santiago.	472.380
TOTAL		4.475.642

+ Calculation was made based on simulations of a VEI 3.

Source: Prepared by FBF Team. Ecuador

Of this total identified, the EAP will focus on communities near volcanoes and with estimated potential fall of volcanic ash from 2 to 300 millimetres (mm). For this analysis, the crossing of variables such as lack of response capacity, vulnerability, exposure and forecast of ash dispersion and fall that will be published by the Geophysical Institute of the National Polytechnical School (IGEPN) through its Special Reports (A, B, C). The operation expects to reach 1,000 families (5000 people).

Intervention Map for FbF



+ Map resulting from Dashboard analysis and Forecast (Fall3d)
Source: Ecuador FbF Team

The map above shows where CRE will implement the early actions and indicates the communities with greater risk of affectation by falling ash through the Intervention Index.

This EAP focuses on health issues, particularly ocular and respiratory damage caused by exposure to volcanic ash. It also contains a component to protect the population's livelihoods (livestock and crops), were this situation to occur.

The impacts that have been identified are:

1. Health.
2. Livelihoods and basic needs.
3. Food security.

The operational strategy – How the EAP will be implemented

1) Who will implement the EAP – The National Society

The Ecuadorian Red Cross (ERC) has a presence in 24 provinces of Ecuador, represented by 24 provincial branches and 83 cantonal branches. The ERC has responded to several types of emergencies, such as earthquakes, floods, forest fires and population movements. The ERC's territorial network and experience would enable it to immediately implement early actions.

The structure of CRE at the national level allows for the articulation of actions by each of the Provincial Boards given their organic and financial autonomy. The National Intervention Teams have the following organization chart that facilitates a better distribution of competencies and activities in field operations. The 4 lines of action: Relief, with 2 structured teams; Emergency Health, with 3 structured teams; Humanitarian Incidence, with 2 structured teams; Support Teams, structured by 5 teams. ENIs with general training will be able to support Operational teams. Ecuadorian Red Cross has 4 OKD kits and 25 trained volunteers.

2) How will the EAP be activated - The Trigger

The activator of the early actions will be the IGEPN's Special Reports (A, B or C), which contain information based on probabilistic simulations of ash fall, as well as expert consensus and forecasts of ash fall and dispersion.

The contents of the Special Reports are detailed below:

SPECIAL REPORT A - Significant changes in the internal activity of a volcano

This type of report is issued when a significant change is observed, in this case an increase, in the internal activity of the volcano (seismicity, gas, deformation, etc.). The IGEPN uses information from the monitoring of each of the volcanoes to issue this report. Probabilistic analysis maps in a 50% VEI3 will be used for long-term planning.

SPECIAL REPORT B.- Increase in internal activity parameters

This report details the internal activity of the volcano (increase - decrease) based on the permanent monitoring of the IGEPN. ASH3D (IGEPN) and FALL3D (IGEPN – National Institute of Meteorology and Hydrology- INAMHI) models will also be used.

Special Report B, update of eruptive activity, for EAP purposes will also be used as stop-mechanism since it is issued to report the level of activity of the volcano when no major variation is observed or when the activity decreases. (Bernard et al., 2018)².

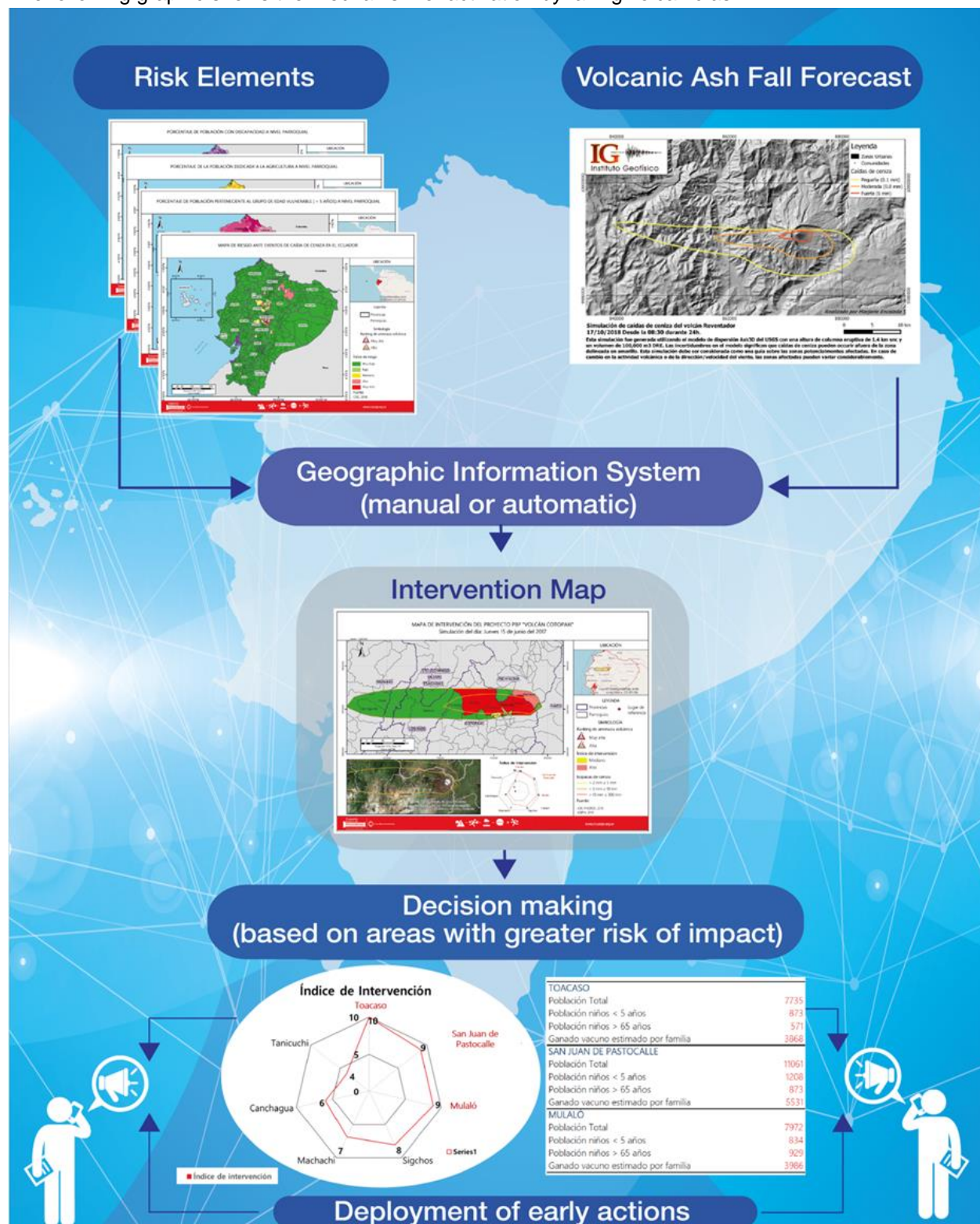
SPECIAL REPORT C- Eruptive event with possible impact on the community

This report clarifies the most likely scenario since numerical modeling (ASH3D or FALL3D) uses real-time information (ash column height, direction, etc.).

A VEI3 was selected for activations because this type of eruption is of a significant magnitude that could generate a disaster at the national level. VEI 1 and 2 are considered small and medium events according to the IGEPN.

After the emission of the Special Reports, the Ecuadorian Red Cross, through the FbF project, analyses these reports and draws up an Intervention Map that identifies the thresholds at which early actions will be applied.

The following graphic shows the mechanism of activation by falling volcanic ash:



The thresholds below will activate early actions:

Table of Thresholds and their impact

Threshold Ash deposit (MM)	Impact	Action
2 – 5 MM	Crops: Crop disruption Water and livestock: Contaminated water sources, limited fodder and crop disruption. People: Slight ocular and respiratory tract impact.	Distribution of health protection kit
5 – 10 MM	Crops: Lower productivity reduction: less than 50% in crops. Livestock: Lack of food / chronic fluorosis in livestock and water supplies affected People: Ocular and respiratory tract irritation / pain	Distribution of health protection kit Distribution of livelihood protection kit
10 – 300MM	Crops: Greater reduction in productivity: more than 50%. Remedies required. Livestock: dehydration, may cause intestinal obstruction. People: pain and ocular secretion, increased affectation of the respiratory tract.	Distribution of health protection kit Distribution of livelihood protection kit Distribution of cash-based interventions (CBI)

Source: Ecuador FbF Team.

3) How will the EAP reduce the impact on the population – The early actions

The early actions identified are based on the impact produced by the ash fall in the Tungurahua, Cotopaxi, Guagua Pichincha and Reventador volcanoes over the past 20 years. The possibility that these volcanoes will continue in activity as they have been- Cotopaxi, 2015; Reventador, 2018 - and according to the risk elements generated by the FbF operation, preparation is prioritized in two areas that have generated greater impact on the population near the volcanoes with high and very high threat.

In previous events of ash fall, people have had to transport their animals to safe areas free from ash fall or have had to sell their cattle up to 70 per cent less than their normal commercial value, generating a negative impact on household economies. In other cases, their animals died, which led to a serious impact on their economic stability. In these cases, affected households had to resort to bank loans that they continue to be unable to repay.

This EAP focuses on ocular and respiratory damage caused by exposure to volcanic ash, as well as the protection of livelihoods (livestock and crops). In previous projects developed by CRE we have worked with the communities near the volcanoes on issues of protection of water sources.

Special Report A

Community awareness

With this initial report, it is planned to deploy volunteers of the Provincial Councils (JP) who have been previously trained to execute the awareness raising plan and to speak with the communities that are exposed to the ashfall and to inform about them of the threat and self-protection measures. Educational material will be given to the community with information about the threat of the volcano and self-protection measures.

Health and livelihood protection kits will be pre-positioned in strategic warehouses to facilitate the transport of the kits to the JP that might potentially affected by the ash fall.

By activator Special Report B (increase)

At this stage, it is planned to keep the NS on alert, both administratively and operationally, with volunteers and equipment so that in the event of an ash fall, deployment is immediate.

If the internal activity of the volcano decreases, this report will serve as a stop-mechanism.

By activator Special Report C

Health

Distribution of protection kit against volcanic ash fall, which consists of: 5 N95 masks (2 for adults and 3 for children), eye protection goggles (2 for adults and 3 for children), physiological serum, bag and awareness on the use of the material delivered and on self-protection measures.

Livelihoods

1. Delivery of a plastic sheeting (tarpaulin) measuring 4 x 6 m and a tool kit for families to build a shelter for their animals and / or give protection to harvested crops or fodder for animals. In addition, awareness and delivery of a guide for the development of shelters (from 5mm ash fall).
2. Distribution of Cash Based Intervention to vulnerable beneficiaries so that they can meet their most important needs (transport of animals and purchase of food) in the face of an imminent ash fall (from 10 mm ash fall).

The following table shows the theory of change to indicate the expected short-term and long-term results of these actions:

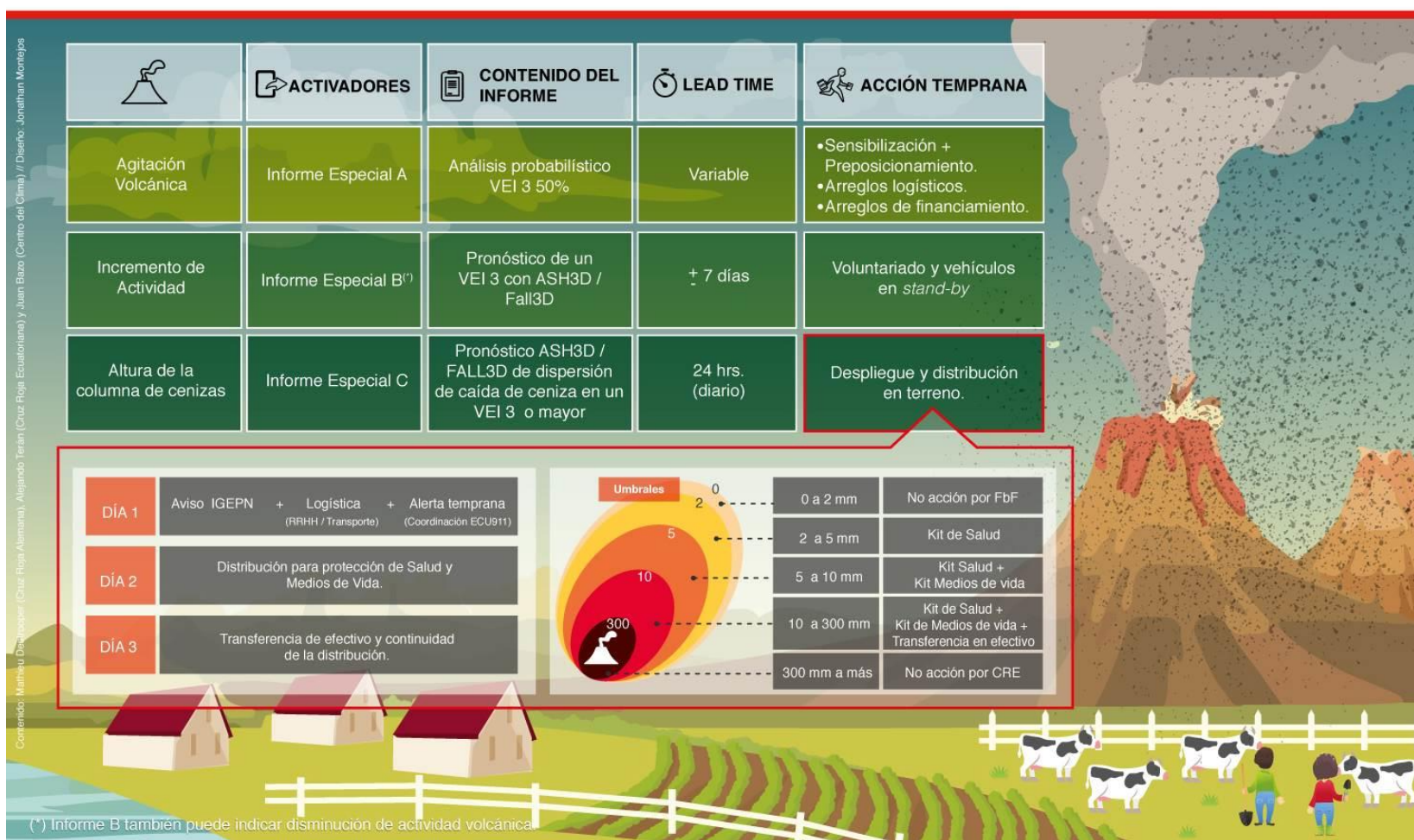
Action	Short-term results	Long-term results	Available capacities to implement the action
Awareness-raising processes on the ground with communities regarding ash fall and self-protection measures.	Disinformation in the community has decreased due to knowledge of risk and the community reacts adequately to volcanic unrest by developing self-protection capabilities in the event of ash fall, decreasing the perception of lack of safety.	The community is aware of the risk to which it is exposed, knows how to prevent, mitigate and prepare for the risk.	Volunteers trained by IGEPN to replicate information on volcanic activity (through the FbF operation in Ecuador).

Registration of communities with potential affectation.			
<p>Distribution of health protection kits (ocular and respiratory) against volcanic ash fall</p> <p>Awareness-raising on the strengthening of health self-protection measures.</p> <p>Health protection kit' for vulnerable communities in the face of volcanic ash fall. The kit consists of: 4 N95 masks, protective goggles, and physiological serum.</p>	<p>The adverse health effects of ash on human beings are reduced.</p>	<p>The affected community prepares and acquires health protection inputs as a general prevention measure.</p>	<p>Supplies pre-positioned in strategic warehouses (Strategic Warehouse Plan, available space vs. people affected in previous events.)</p> <p>ERC volunteers trained as National Intervention Team (NIT) members in humanitarian assistance</p> <p>ERC volunteers available for activation and delivery of kits in communities.</p>
<p>Distribution of livelihood protection kits for animals and feed/water protection for animals against volcanic ash fall.</p> <p>Reinforce awareness of livelihoods self-protection measures.</p> <p>Livelihood protection kit with plastic sheeting (tarpaulins) and tools (shelter kit).</p> <p>Distribution of cash (USD 200) to 378 of the most affected and vulnerable families.</p>	<p>Community livelihoods (livestock and crops) are protected from ash fall.</p> <p>With the CBI, the community will be able to purchase food and/or transport (evacuation) for cattle, rent a temporary piece of land, and additionally protect their home from ash fall and its removal.</p>	<p>The community has empirical procedures in place to minimize ash fall impacts.</p> <p>Give continuity to self-sustaining activities and livelihoods by maintaining their livestock.</p>	<p>Pre-positioned inputs in strategic warehouses. (livelihood kit)</p> <p>Volunteers trained as ENIs in Humanitarian Assistance</p> <p>Experiences and preparations for CBI (cash feasibility study)</p>

The selection of actions is based on Sphere's guidance notes, mainly on health care and livelihoods, focusing on vulnerable groups and the context.



Timeline, thresholds, reports add actions (Spanish only)



Intervention Sectors

Overall objective: Ensure the health and livelihoods of 5,000 people potentially affected by ashfall through the distribution of health protection kits, protection of livelihoods and cash-based interventions.



Livelihoods and basic needs

People targeted: 5000

Male: 2400

Female: 2600

Requirements (CHF) 132,033.00

Risk analysis: The communities in the vicinity of high and very high threat volcanoes (IGEPN), have self-sustaining agricultural and livestock activities for their livelihoods. When a volcanic eruption occurs with ash emission, it falls on the crops, causing a yield reduction and in the forage that serves as food for the animals, causing the cattle not to consume this food or, if consumed, they suffer a great risk of diminishing milk production or even death.

Population to be assisted: 5000 (2600 women, 2400 men)¹.

Programme standards/benchmarks: In order to protect livelihoods and meet the basic needs of families that have experienced negative economic impact due to ash fall, either due to the loss of their livestock or due to damage to their regular income, unconditional cash grants will be distributed, and a livelihoods protection kit will be provided. The cash grant is based on the feasibility study conducted for CBI in the parish of Mulaló (Cotopaxi province). In the case of the FbF operation, CBI would be used for food security purposes and to cover any other needs that the affected families deem as a priority, including their livelihoods. The latter will be identified via a livelihoods assessment. The analysis has considered the value of the basic food basket in Ecuador that exceeds 700 US dollars (National Institute for Statistics and Census- INEC, 2018).

Output Code	Livelihoods Outcome 3: Communities especially in areas at risk of falling ash protect their livelihoods.	<i>1000 families whose livelihoods are protected from falling volcanic ash.</i>
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¹ According to the last Census of 2010 in Ecuador, there are 52% women and 48% men.

	Livelihoods Output 3.1.2: Basic needs assistance for livelihoods security including food is provided to the most affected communities.	1000 families receive materials for the protection of agricultural activities.
	Readiness phase Error! Bookmark not defined.	Timeframe
AP008	Identification of most common livelihoods needs among potentially affected communities and families	First trimester after approval.
AP008	Pre-positioning of materials and tools to protect agricultural activities. (tool kit, tarpaulin and sacks) including logistics management.	First semester after approval.
	Early action phase Error! Bookmark not defined.	Timeframe
AP008	Selection of beneficiaries based on eligibility criteria.	First three days after trigger.
AP005	Distribution of materials and tools for the protection of agricultural activities. (tool kit, tarpaulin and sacks).	First three days after trigger.
	Livelihoods Output 3.1.5: Households are provided with multipurpose cash grants to address their basic needs.	378 families receive CBI to meet their basic needs.
	Readiness phase Error! Bookmark not defined.	Timeframe
AP005	CBI training to volunteers and community with community engagement and accountability (CEA) and protection, gender and inclusion (PGI) focus.	First semester after approval.
AP008	Feasibility analysis to CBI	First semester after approval.
AP008	Livelihood Needs Assessment	First semester after approval.
	Early action phase Error! Bookmark not defined.	Timeframe
AP081	Selection of beneficiaries based on criteria of vulnerability and impact by fall of more than 10mm of ash.	First three days after trigger.
AP081	Pre-positioning of IFRC Visa debit cards.	First three days after trigger.
AP081	Distribution of CBI to 378 affected families/households with a multi-purpose unconditional cash grant (USD 200).	First three days after trigger.



Health

People targeted: 5000

Male: 2400

Female: 2600

Requirements (CHF) 23,350.00

Risk analysis: The communities located near the volcanoes identified as high and very high threat (IGEPN) are exposed to the fall of volcanic ash, which due to its characteristics (particle size and composition) is abrasive to health, causing ocular and dermal effects, as well as damage to the respiratory system. The effects are acute ocular irritation (conjunctivitis) and corneal abrasion, skin irritation and infection, irritation of the throat and nose with symptoms of bronchitis, pulmonary alteration, among the most frequent.

Population to be assisted: 5000 (2600 women, 2400 men)².

Programme standards/benchmarks: The Ministry of Public Health of Ecuador and the National Risk Management Service have carried out analyses with respect to the population affected by ashfall events, recording a notable increase in pulmonary and ocular illnesses in the most recent activations of the Tungurahua and Cotopaxi volcanoes. In this sense, these institutions have distributed protection kits that consist mainly of masks and glasses.

Output Code	Health Outcome 4: Immediate health risks to at-risk populations are reduced		1000 families reached through health actions.
	Health Output 1.1: Personal protection inputs are provided to the population at risk to reduce the effects of injuries and diseases from falling volcanic ash.		1000 families reached with health protection inputs.
	Readiness phaseError! Bookmark not defined.	Timeframe	
AP011	Pre-positioning of personal protective equipment for health care	First semester after approval.	
AP022	Training the population in the use of personal protective equipment for health care and raising awareness of early action among the population at risk	First semester after approval.	
	Early action phaseError! Bookmark not defined.	Timeframe	

² According to the 2010 national census, Ecuador has 52% women and 48% men.

AP011	Purchase of physiological serum	First three days after trigger.
AP022	Distribution of physiological serum	First three days after trigger.

Strategies for Implementation

Requirements (CHF): 76,153.40

Output Code	S1.1: National Society capacity and organizational development objectives are facilitated to ensure that the National Society has the necessary legal, ethical, financial foundations, structures and systems, competencies and capacities for development and planning.	
	Output S1.1.1: The National Society has what it takes to maintain the corporate infrastructure in place.	
	Readiness phaseError! Bookmark not defined.	Timeframe
AP039	Monitoring room and accounting	Application for the entire implementation period
AP039	Communication preparation (includes reports)	Application for the entire implementation period
AP039	National Society monitoring field visits	Once a year
AP039	EAP review workshop and annual contingency plans	Annually from year 3 to 5
AP039	Pre-activation annual technical meetings	First semester after approval
	Early action phaseError! Bookmark not defined.	Timeframe
AP039	Evaluation of the intervention during the activation	Between day 30 and 60 after impact
AP039	Monitoring of activation activities	During activation
AP039	Lessons learned workshop	Between day 30 and 45 after impact
Output Code	Output S1.1.2: The National Society has effective and motivated volunteers who are protected.	
	Readiness phaseError! Bookmark not defined.	Timeframe
AP040	Pre-positioning of personal protection equipment for volunteers	First semester after approval
AP040	Personal protection equipment for volunteers for the preparation phase	First semester after approval

AP040	NS staff responsible for the early action intervention	Application for the entire implementation period
	Early action phase Error! Bookmark not defined.	Timeframe
AP040	Evaluation of the intervention during the activation	During activation
AP040	Monitoring of activities during the activation	During activation

Budget & Allocation schedule

To implement the Early Action Protocol (EAP), CHF 246,587.27 will be divided for readiness, pre-positioning of stock and early action as summarized by the Areas of Focus and Strategies for Implementation below:

Early Action Protocol Name							Currency (LC) &		Exchange Rate	
Ash Fall							CHF		1.00000	
Output Code	Description	Activity [select]	Budget Group	Quantity	Unit	Unit Cost	Total Cost LC	Total Cost CHF		
AOF3	LIVELIHOODS AND BASIC NEEDS						132,033.00	132,033.00		
AOF4	HEALTH						23,350.00	23,350.00		
SFI1	STRENGHTEN NS CAPACITIES						71,453.40	71,453.40		
SFI2	ENSURE EFFECTIVE INTERNATIONAL DM						4,700.00	4,700.00		
	DIRECT COSTS total						231,536.40	231,536.40		
	INDIRECT COSTS						15,049.87	15,049.87		
	TOTAL BUDGET						246,586.27	246,586.27		

Contact information

Additional documentation:

[Full Early Action Protocol](#)

For further information, specifically related to this operation please contact:

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How we work:

All IFRC assistance seeks to adhere to the **Code of Conduct** for the International Red Cross and Red Crescent Movement and Non-Governmental Organizations (NGO's) in Disaster Relief and the **Humanitarian Charter and Minimum Standards in Humanitarian Response (Sphere)** in delivering assistance to the most vulnerable. The IFRC's vision is to inspire, **encourage, facilitate and promote at all times all forms of humanitarian activities** by National Societies, with a view to **preventing and alleviating human suffering**, and thereby contributing to the maintenance and promotion of human dignity and peace in the world.

The IFRC's work is guided by Strategy 2020 which puts forward three strategic aims:



Save lives,
protect livelihoods,
and strengthen recovery
from disaster and crises.



Enable **healthy**
and **safe** living.



Promote **social inclusion**
and a culture of
non-violence and **peace**.

EARLY ACTION PROTOCOL - BUDGET SUMMARY

PROTOCOL NUMBER - ECUADOR- Volcanic Ashfall

1/10/2019

Budget by Resource

Budget Group	READINESS	PRE-POSITION STOCK	EARLY ACTION	EAP Budget CHF
Shelter - Relief		40,000		40,000
Shelter - Transitional				0
Construction - Housing				0
Construction - Facilities				0
Construction Materials				0
Clothing & Textiles				0
Food				0
Seeds & Plants				0
Water, Sanitation & Hygiene				0
Medical & First Aid		360	1,800	2,160
Teaching Materials		4,000	750	4,750
Utensils & Tools				0
Other Supplies & Services		20,550		20,550
Emergency Response Units				0
Cash Disbursement			75,600	75,600
Relief items, Construction, Supplies	0	64,910	78,150	143,060
Land & Buildings				0
Vehicles				0
Computers & Telecom				0
Office & Household Equipment				0
Medical Equipment				0
Other Machinery & Equipment				0
Land, vehicles & equipment	0	0	0	0
Storage				0
Distribution & Monitoring		6,077	1,636	7,713
Transport & Vehicles Costs		400	5,220	5,620
Logistics Services				0
Logistics, Transport & Storage	0	6,477	6,856	13,333
International Staff				0
National Staff				0
National Society Staff	43,800	2,700	1,800	48,300
Volunteers	1,950	1,820	4,585	8,355
Personnel	45,750	4,520	6,385	56,655
Consultants				0
Professional Fees				0
Consultants & Professional Fees	0	0	0	0
Workshops & Training	3,750		1,250	5,000
Workshops & Training	3,750	0	1,250	5,000
Travel	2,000			2,000
Information & Public Relations	2,500			2,500
Office Costs	968			968
Communications	700		250	950
Financial Charges	500		6,570	7,070
Other General Expenses				0

EARLY ACTION PROTOCOL - BUDGET SUMMARY

PROTOCOL NUMBER - ECUADOR- Volcanic Ashfall

1/10/2019

Shared Office and Services Costs					0
General Expenditure	6,668	0	6,820	0	13,488
Assets Depreciation					0
Depreciation	0	0	0	0	0
Cash Transfers National Societies					0
Cash Transfers to 3rd Parties					0
Contributions and Transfers	0	0	0		0
DIRECT COSTS	56,168	75,907	99,461		231,536
INDIRECT COSTS	3,651	4,934	6,465		15,050
TOTAL BUDGET	59,819	80,841	105,926		246,586

Budget by Area of Intervention

Area of Intervention	READINESS	PRE-POSITION STOCK	EARLY ACTION	EAP Budget CHF
AOF1 Disaster Risk Reduction				0
AOF2 Shelter				0
AOF3 Livelihoods and Basic Needs		50,563	90,052	140,615
AOF4 Health		22,418	2,450	24,868
AOF5 Water, Sanitation and Hygiene				0
AOF6 Inclusion, Gender and Protection				0
AOF7 Migration				0
SFI1 Strengthen NS Capacities	54,814	7,860	13,424	76,098
SFI2 Ensure effective int'l disaster mgmt	5,006			5,006
SFI3 Influence others as leading strategic partn				0
SFI4 Ensure a strong IFRC				0
TOTAL	59,819	80,841	105,926	246,586