

www.ifrc.org
Saving lives,
changing minds.

Emergency Plan of Action

Costa Rica: Volcanic Eruption response preparedness

 International Federation
of Red Cross and Red Crescent Societies

DREF Operation	Operation n° MDRCR012; Glide n° VO-2015-000025-CRI
Date of issue: 23 March 2015	Date of emergency: 12 March 2015
Operation manager: Felipe Del Cid, Regional Disaster Management Coordinator – Central America	Point of Contact: Guillermo Arroyo – National Relief and Operations Director Costa Rican Red Cross
Operation start date: 23 March 2015	Expected timeframe: 2 months
Overall operation budget: 23,651 Swiss francs	
Number of people affected: Approximately 18,450 people	Number of people to be assisted: 18,450 (3,690 families)
Costa Rican Red Cross	
Other partner organizations actively involved in the operation: IFRC	
National Integrated Risk Management System	

<Click [here to view the DREF budget](#) and [here to view a map](#) of the affected areas>

A. Situation Analysis

Description of the Disaster

On 12 March 2015, the Turrialba Volcano –located in the Canton of Turrialba in the Province of Cartago, with an approximate elevation of 3,340 meters above sea level and a volcanic edifice 1,900 meters high - commenced eruptive activity characterized by ash expulsions. Three events of this same type were registered on the same day at 10:52, 13:38 and 14:50 local time, the latter being the most intense.

As a result of these eruptions and due to wind conditions prevailing in the Central Valley area, a dispersion cloud formed covering most of the northern Central Valley sector. The cloud caused the interruption of operations for over 24 hours at the Juan Santamaría International Airport.

This situation caused alarm among the population in the affected areas given that the Turrialba Volcano has been active since 2001 with increased activity since 2010. This is the first time that ash has rained down with this intensity.

The National Risk Prevention and Emergency Care Commission (C.N.E. for its Spanish acronym) alerted the Technical Advisory Committee on Volcanology to conduct the relevant scientific studies around the situation so that first responder institutions and other government agencies could have the necessary data for appropriate decision-making.



Ash cloud above the Turrialba volcano, after eruption. Source: Costa Rican Red Cross.

The Cantons of Alvarado and Turrialba are currently under a Yellow Alert due to their proximity to the volcano. The Costa Rican government is focusing work on four key actions:

1. Organizing the population
2. Rehabilitating evacuation routes

3. Responding to the impact on agriculture and livestock.
4. Monitoring and tracking volcanic activity

Summary of current response

Overview of Host National Society

The Costa Rican Red Cross is made up of 120 committees grouped into nine regions:

Region 1: San José

Region 2: Alajuela

Region 3: Cartago

Region 4: Heredia

Region 5: Guanacaste

Region 6: Puntarenas

Region 7: Limón

Region 8: Zona Sur (Southern zone)

Region 9: Zona Norte (Northern zone)

The Costa Rican Red Cross, as an auxiliary to public authorities, works in partnership with and under the guidance of said authorities, developing actions in community and individual preparedness and seeking their self-protection, committed to raising awareness of the risks and developing practical actions to reduce them. It also advocates for and provides technical advice to develop laws, regulations and standards that facilitate action in cases of large-scale emergencies.

Current response

From the outset of the emergency the Costa Rican Red Cross (CRRC) - member of the National Risk Management System's Emergency Operations Centre and as the institution in charge of the Pre-hospital Service in the country - alerted local resources, requested presence to be maintained at the Operations Coordination Centre established by Turrialba's Municipal Emergency Committee. In addition, the National Society implemented the following actions:

#

1. Cartago's Regional Head of Relief was sent to support actions conducted by the Turrialba Auxiliary Committee in order to coordinate actions within the CME's CCO.
2. The National Head of Relief was deployed from National Operational Headquarters to support the efforts of our staff in the areas in the vicinity of the volcano.
3. The CRRC is collaborating with the Municipal Emergency Committee in developing a population census of the communities close to the volcano and in assessing the impact to the population.
4. The San Jose branch has sent two vehicles to carry out assessments in the eastern part of the capital given the population's proximity to the volcano and to the path of the ash dispersion plume.

#

At the same time, the following activities have been conducted from the CRRC headquarters:

- ✓ Meetings at the Emergency Operations Centre
- ✓ Implementation of institutional Yellow Alerts for the regions of Cartago, San José, Heredia and Alajuela, as these are at greater risk of being affected by falling ash.
- ✓ Implementation of the Incident Command System (SCI) software in order to have a detailed record of the activities conducted by the CRRC.
- ✓ Resource deployment: vehicles, ambulances and staff from the Cartago region itself in order to support the Turrialba Commission.

Overview of non-RCRC actors in country

In Costa Rica, risk management activities are coordinated by the National Risk Management System, which involves all public institutions in the country. The Costa Rican Red Cross is the only organization with a presence at two levels. At the political level, it has representation on its Board of Directors, and at the operational level it maintains a presence not only at the Emergency Operations Centre, but also on some Technical Advisory Committees known as CATs (sectoral panels) as advisory entities.

The main national coordination actors in emergencies are: Public Security Forces (State Police Corps), Fire Brigade, Ministry of Health, Costa Rican Social Security (national hospital system), Ministry of Agriculture and Livestock, National Animal Health Service (SENASA), National Child Welfare, Joint Social Assistance Institute, Aqueducts and Sewers, Costa Rican Petroleum Refinery, Costa Rican Electricity Institute, Ministry of Public Works and Transportation, and the 9-1-1 Emergency System. The main technical-scientific institutions in this case include: Costa

Rica Volcanological and Seismological Observatory based at the National University, the National Seismological Network based at the University of Costa Rica, and the National Meteorological Institute.

Movement Coordination

Direct communication has been maintained from the onset with the IFRC country coordinator, through meetings within the National Relief and Operations Directorate (DINASO), sustaining permanent contact with the National Society and providing support to the efforts being conducted.

The PADRU's Disaster Management Coordinator in Central America has been in constant communication with the National Society since 12 March at the start of the emergency.

Needs analysis, beneficiary selection and risk assessment and scenario planning

The last volcanic eruption occurred on 12 March 2015 with minimal consequences to the population. The response activities have been carry out by the government and the National Society. Coordination meetings will need to be continued between the National Society and the government and to maintain the alert due the increase of the volcanic activity. Consequently, the Risk Management System has requested the National Society and all other agencies to carry out preparedness activities in order to be ready for a new eruption.

The volcano currently shows an active energy pattern that contributes to periodic emissions of vapour, gas and ash. Emission rates of sulphate (SO_4) and complementary gases are around 200 tons per day, and are responsible for the acidity of atmospheric air, therefore, the prevalence of acid rain in the vicinity of the Turrialba volcano; however, its distribution, concentration, dispersion and impact will depend on wind patterns in the area, which until now have been predominantly northeast-southwest. The National Risk Management System believes that under these conditions, and if they persist or increase, greater volcanic events could occur. The following scenarios have been determined based on the scientific information collected:

Scenario 1: Behaviour with eruptions similar to those on 12 March, which could reach a range of 1km above the crater since patterns of seismicity, ground deformation and tremors are maintained, among other internal volcano dynamics.

Scenario 2: Behaviour with eruptions of a lesser magnitude but with a tendency to decrease over time since the energy source (intrusive) would tend to cool down. However, it is likely that internal outgassing conditions would prevail.

Scenario 3: Sustained constant eruptions equal or greater than those on 12 March, since the existence of a greater source of energy has been determined which promotes the start of a sustained eruptive process. This scenario, however, requires further studies.

The following situations might take place:

- Health problems in the population (ophthalmological, respiratory, dermatological and digestive)
- Agriculture and livestock: loss of livelihoods due to flows, ash emission or road closures
- Damage to drinking water systems and water source contamination
- Damage to roads and infrastructure in general due to seismic movements
- Relocation of people to shelters

The areas affected by falling ash will depend on the altitude and pressure at the time of the event. These shall be determined according to daily bulletins containing forecasts and monitoring of the weather conditions in the volcano's area of influence.

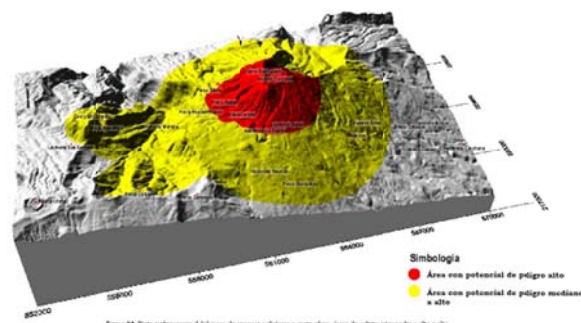
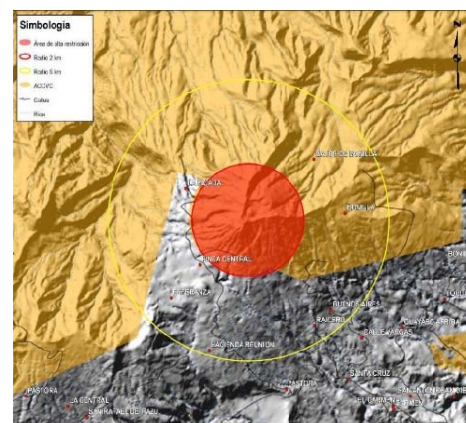


Figura 16. Mapa topográfico del cono de la montaña volcánica y zonas adyacentes. Áreas de peligro potencial de alto a alto.

Beneficiary selection

The National Risk Management System has already properly identified and mapped the areas at risk in the vicinity of the Turrialba Volcano. Approximately 18,450 people (3,690 families) are at risk in the communities of La Suiza de Turrialba, Pacayas and Santa Rosa. The Costa Rican Red Cross has the following committees¹ to address any situation that may arise:

1. First response for the region of Cartago:
 - a. La Suiza de Turrialba Auxiliary Committee (population it covers: 7,590 inhab.)
 - b. Turrialba Auxiliary Committee (population it covers: 26,680 inhab.)
 - c. Pacayas Auxiliary Committee (population it covers: 5,628 inhab.)
 - d. Santa Rosa Auxiliary Committee (population it covers: 5,232 inhab.)
2. Second response for the region of Cartago:
 - a. Juan Viñas Auxiliary Committee (population it covers: 6,552 inhab.)
 - b. Tierra Blanca Auxiliary Committee (population it covers: 5,103 inhab.)
 - c. Tucurrique Auxiliary Committee (population it covers: 4,872 inhab.)

There are three regions for the volcano's western sector:

1. Region of San José.
 - a. Moravia Auxiliary Committee (population it covers: 56,919 inhab.)
 - b. Ipis Auxiliary Committee (population it covers: 56,035 inhab.)
 - c. Vasquez de Coronado Auxiliary Committee (population it covers: 60,486 inhab.)
 - d. Guadalupe Auxiliary Committee (population it covers: 59,049 inhab.)
 - e. León XIII Auxiliary Committee (population it covers: 96,570 inhab.)
 - f. Montes de Oca Auxiliary Committee (population it covers: 49,132 inhab.)
2. Region of Heredia.
 - a. San Isidro de Heredia Auxiliary Committee (population it covers: 20,633 inhab.)
 - b. San Pablo de Heredia Auxiliary Committee (population it covers: 27,671 inhab.)
 - c. Heredia Auxiliary Committee (population it covers: 123,616 inhab.)
 - d. Santo Domingo de Heredia Auxiliary Committee (population it covers: 40,072 inhab.)
3. Region of Alajuela.
 - a. Alajuela Auxiliary Committee (population it covers: 254,886 inhab.)

Risk Assessment

Volcanology experts currently argue that the greatest dangers from the volcano is falling pyroclastic material near the crater, including El Mirador and Las Torres, and acid rainfall. Depending on the characteristics of the volcanic processes, there could also be stronger eruptions accompanied by falling ash, mainly towards the Central Valley and to a lesser extent toward the Caribbean.

Tectonic faults cut across the structure; therefore, earthquakes of intermediate magnitude are also a possibility. Possible hazards include volcanic landslides, directed blasts, lahars, lava flows and the formation of new cones or craters.

All of the above shows that the magma intrusion process continues, although its effect is still not seen on the surface. However, under the current conditions a sudden change that triggers an eruption cannot out be ruled out, so communities have been advised to be cautious and to keep abreast of updates from official sources of information.

B. Operational strategy and plan

Overall objective

Increasing the response capacity and preparedness of the Costa Rican Red Cross branches in the vicinity of the volcano, as well as training and safety equipment for volunteers to respond to the eruption of the Turrialba Volcano.

Proposed strategy

The Costa Rican Red Cross, with own funds, has been responding to the emergency by deploying ambulances, staff and supporting evacuation activities. However, due to the increase in volcanic activity and the imminent eruption with pyroclastic material, the National Society decided to work in preparedness activities in order to increase the readiness of the committees.

The National Society's proposal for preparedness activities are focused on the following lines of action:

¹ Committees and auxiliary committees = branches of the CRRC.

1. **Preparedness for response:** To develop a contingency plan at both regional and local levels by committees in the region of Cartago; conduct refresher training in psychosocial support (PSP), a refresher training in Damage and Needs Assessments (DANA), ODK and Mega V technologies, operational security training for branch volunteers in the region and livestock protection in coordination with the Livestock Emergency Building and Standards (LEGS) provided by the International Animal protection Organization due the high number of people depending on this livelihood.
2. **Community preparedness:** To raise awareness in communities regarding risks and hazards, defining evacuation routes in case of eruptions.

The National Society proposes using the DREF funds to conduct the following activities within its response preparedness strategy:

- a) Prepositioning protection equipment for volunteers.
- b) Refresher workshops on psychosocial support (PSP), DANA, ODK and Mega V, operational security and self-protection measures for working during volcanic eruptions
- c) A LEGS course in communities in the vicinity of the volcano

The objective is for the National Society to be able to be the point of reference for the coordinated actions of the institutions present in the targeted areas, making an effort not to take on all responsibilities or those of the community. Furthermore, it intends to socialize the functioning of the National Risk Management System at the local level.

Operational support services

Human Resources

To implement this Plan of Action, the Costa Rican Red Cross has a multidisciplinary technical team that will ensure the implementation of the activities (not budgeted in the DREF plan of action except for the volunteers cost):

- One field coordinator
- Administrative - accounting staff at Administrative Headquarters.
- Staff from the Relief and Operations Directorate and their respective departments.
- Staff from the Provisions Department (purchases, storage, fleet.).
- Press Department staff.
- IT Department staff
- Volunteer staff from the regions of Cartago and San José.

Process monitoring passes through the Relief and Operations Directorate (which has the support of the General Manager) and the institutional administrative structure in all its departments; Headquarters also has a monitoring team to control financial reports, and is responsible for quality in the submission of intermediate outputs and final reports.

The chain of responsibility in the monitoring process includes local, national and international levels.

Logistics and supply chain

The operation does not foresee purchasing materials at the international level. All purchases will be made in-country, as domestic markets carry the items required in the operation. The IFRC's Global Logistics Service will monitor the procurement process depending the amount of the purchases and support the National Society on any guidance required.

The National Society has a procurement department and a central warehouse through which all supplies and equipment needed by committees across the country are procured, with procurement procedures endorsed by the Government since many processes are made with public funds granted by the State, prompting the Administration to adopt these procedures for all purchases.

Communications

The strategy of the National Society's communication team is made up of three main components:

1. **Internal communications:** a steady stream of internal communications must be maintained, from the analysis of reports prepared by volunteers in the field to the information gathered by Emergency Operations Centre components.

2. External communications to the media: the information collected by the internal communications component will complement the actions that will be carried out in order to issue press releases over the television, radio, social networks, etc., to provide the national and international community an overview of the humanitarian action carried out by the Costa Rican Red Cross, and in this way promote raising resources.
3. Intra-Movement Communications: reports will be submitted to the Movement (DMIS, situation reports) in order to publicize the details of the actions conducted and of their impact within the community. This information is relevant, as this will motivate PNSs to donate to the actions contained in the Plan of Action. The information generated will be shared over Movement media (the CRRC and IFRC websites, and others)

Communications initiatives will help build the National Society's information and public relations capacity for future emergency situations. Key aspects of relief and recovery operations, including achievements, challenges, donors, support needs and beneficiaries, will be promoted constantly on all relevant channels mentioned above.

As regards communications with external entities, as well as within the National Society and within the Movement, the Press Department will provide wide coverage to the actions that are currently being carried out and to those which will be carried out by us in the future, generating press releases, background notes and others as required.

IT & Telecom

The IT area will work to maintain communications with all units and team leaders supporting the National Society actions using a VHF / UHF radio network at the national level, and to constantly monitor its functionality.

The National Society has a very robust and strong radio communications network covering close to 98 per cent of the national territory, which is essential in supporting the actions to be developed.

The constant flow of timely and accurate information between people working in the field and other stakeholders will support program objectives within this Plan of Action and will raise the profile, financing and other support for the Costa Rican Red Cross. At the same time it will provide a platform to defend the interests of vulnerable populations.

As for the application of new beneficiary assessment and registration tools, for this emergency the National Society has planned to implement the ODK platform and MEGA V using the basic kit in stock (1 scanner and 8 Android phones), which will be mobilized to the area to train volunteers.

Planning, monitoring, evaluation and reporting (PMER)

The National Society will have a monitoring team composed of Relief Directorate staff. Likewise, the IFRC Country Coordinator and the Disaster Management Coordinator will conduct at least two monitoring visits to the operational area.

Since the activities are short term, this project will only issue one final report at the end of the operation.

Administration and Finance

The Financial Accounting Directorate has trained staff available who can provide the necessary support to the areas of work included in the Plan of Action.

The Financial Accounting Directorate's strategy focuses on the following points:

- a. Making Directorate staff available to work on specific aspects of the operation.
- b. Complying with the issuance of reports and constant monitoring of compliance with and proper use of budget allocations.
- c. Informing the various coordinators of work areas regarding the full utilization and proper use of the resources allocated to the Plan of Action.

C. DETAILED OPERATIONAL PLAN

Quality programming / Areas common to all sectors

OBJECTIVES	INDICATORS
<p>Outcome 1: The operation management has a proper implementation, monitoring and communication system.</p>	<p>At the end of the first week of the operation the National Society has an implementation plan with a clear monitoring process.</p>

	At least 90 per cent of the activities implemented by the end of the operation.							
Output 1.1: The operation has been monitored and implemented according to the timeframe established in this plan of action	No. of progress reports. No. of monitoring visits by the IFRC. No. of volunteers involved in the implementation. No. of press releases and external communication developed by the National Society.							
Planned Activities (weeks)	April				May			
	1	2	3	4	1	2	3	4
Monitoring visits from CRE Headquarters								
Monitoring visits from the IFRC								
Preparation of internal progress reports								
Two press release reporting the activities carried out by CRC								
Final report								

Response Preparedness

Needs Analysis:

The information currently being provided by scientists indicates that the possibility of a new eruption is quite high. This is based on the various analyses and studies conducted and the fact that the volcano's activity has been on the rise since 2001, entering a more active phase as of 2010 with magma significantly approaching the volcano's crater; all this points to a new eruption, maybe even greater than the one in March. Depending on wind conditions, falling ash could fall beyond the five-kilometre limit around the volcano.

Faced with this scenario, the Costa Rican Red Cross believes it is necessary to strengthen the branches near the volcano with personal protection equipment and training that allows us to work under safer conditions, considering that part of the actions we will be developing during the emergency phase will include:

- a. Pre-hospital care
- b. Search and rescue
- c. Evacuation.
- d. Medical assistance in shelters
- e. Psychosocial care to victims, with a major focus on sheltered children through the Return to Happiness methodology, which consists of recreational activities to counteract post-disaster stress.
- f. Assessment of areas involved
- g. Humanitarian aid distribution

The National Society maintains high standards in terms of search and rescue and first aid. Therefore, it is needed to prepare staff regarding safety in the field, specifically in situations involving volcanic eruptions.

Staff will be trained in ODK and MEGA V tools to enable them to conduct assessments and humanitarian aid distributions in a more expeditious and controlled manner, cooperating with the National Emergency Commission.

The National Society has a strategic partnership with World Animal Protection in order to work on the issue of livelihoods with a focus on communities engaging in livestock related activities so as to be able to carry out actions from a prevention phase. The LEGS course is essential for building community capacity in this regard.

Population to be assisted: The branches in La Suiza de Turrialba, Turrialba, Pacayas and Santa Rosa, in order to be prepared to assist an estimated population of 18,450 people (approximately 3,690 families)

OBJECTIVE	INDICATORS							
Outcome 2 The branches near to the Volcano have strengthened their knowledge to response to volcanic emergency.	No. of branches which have received support in response preparedness. At least 70 per cent of the volunteers report increased knowledge on volcanic emergencies.							
Output 2.1 Auxiliary Committees in the vicinity of the Turrialba Volcano have protection equipment and the knowledge to respond to volcanic eruptions	No. of volunteers trained in PSP, DANA, ODK and Mega V, operational security and self-protection measures for working during volcanic eruptions No. of pre-positioned protection kits for volunteers in branches near the volcano							
Planned Activities (weeks)	April				May			
	1	2	3	4	1	2	3	4
Two refresher workshops in PSP								
One refresher workshop in DANA, Mega V and ODK use								
One LEGS workshop								
One operational security workshop								
One workshop on working in situations involving volcanic eruptions								
Purchase of 50 protection kits for volunteers								
Conduct a survey to volunteers about the volcanic eruption (pre and post the operation)								

Protection kit for volunteers contains the following items:

1. Face mask with multi-vapour filter and N95 particulate filter.
2. Protection goggles
3. Canvas gloves

Contact information

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

- **In the Costa Rican Red Cross:**
 - Guillermo Arroyo, National Relief and Operations Director, Costa Rican Red Cross ; email: guillermo.arroyo@cruzroja.or.cr; phone: +(506) 2542-5012.
- **In the IFRC Americas zone office, Panama (+507 317-3050)**
 - Carlos Inigo Barrena, disaster response and crisis and early recovery coordinator; email: ci.barrena@ifrc.org.
 - Stephany Murrillo, zone senior logistics & mobilization officer; email: Stephany.murillo@ifrc.org
 - Priscila Gonzalez, planning and monitoring senior officer; email: priscila.gonzalez@ifrc.org
 - Ursula Araya, relationship management coordinator; email: ursula.araya@ifrc.org
- **IFRC Geneva:** Cristina Estrada, quality assurance senior officer, phone: +41.22.730.4529, email: cristina.estrada@ifrc.org

↘ **Click here**

1. DREF budget **[below](#)**
2. Map **[below](#)**
3. Click **[here](#)** to return to the title page

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 (NGOs) 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**.

www.ifrc.org

Saving lives, changing minds.



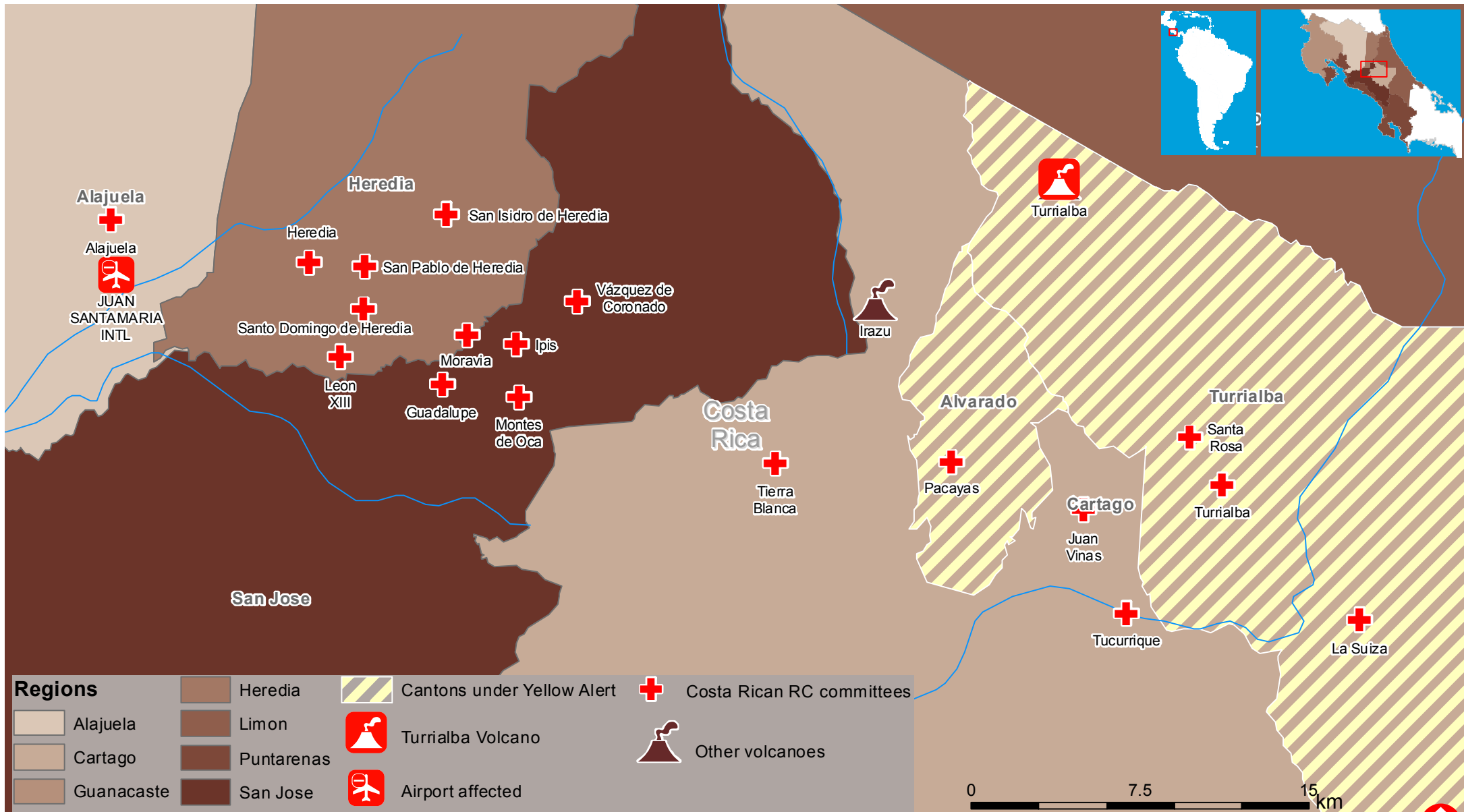
The IFRC's vision is to inspire, encourage, facilitate and promote at all times all forms of humanitarian activities by National Societies, with a view to preventing and alleviating human suffering, and thereby contributing to the maintenance and promotion of human dignity and peace in the world.

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

1. Save lives, protect livelihoods, and strengthen recovery from disaster and crises.
 2. Enable healthy and safe living.
 3. Promote social inclusion and a culture of non-violence and peace.
-



Costa Rica: Volcano



DREF OPERATION

MDRCR012 - Costa Rica Volcanic Eruption

23/03/2015

Budget Group	DREF Budget CHF
Shelter - Relief	0
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	0
Teaching Materials	0
Ustensils & Tools	0
Other Supplies & Services	0
Cash Disbursements	0
Total RELIEF ITEMS, CONSTRUCTION AND SUPPLIES	0
Land & Buildings	0
Vehicles	0
Computer & Telecom Equipment	0
Office/Household Furniture & Equipment	0
Medical Equipment	0
Other Machinery & Equipment	0
Total LAND, VEHICLES AND EQUIPMENT	0
Storage, Warehousing	0
Distribution & Monitoring	0
Transport & Vehicle Costs	2,461
Logistics Services	0
Total LOGISTICS, TRANSPORT AND STORAGE	2,461
International Staff	0
National Staff	0
National Society Staff	295
Volunteers	1,536
Other Staff Benefits	9,844
Total PERSONNEL	11,675
Consultants	0
Professional Fees	0
Total CONSULTANTS & PROFESSIONAL FEES	0
Workshops & Training	3,839
Total WORKSHOP & TRAINING	3,839
Travel	1,969
Information & Public Relations	689
Office Costs	492
Communications	788
Financial Charges	295
Other General Expenses	0
Shared Office and Services Costs	0
Total GENERAL EXPENDITURES	4,233
Partner National Societies	0
Other Partners (NGOs, UN, other)	0
Total TRANSFER TO PARTNERS	0
Programme and Supplementary Services Recovery	1,443
Total INDIRECT COSTS	1,443
TOTAL BUDGET	23,651