

SIMPLIFIED EARLY ACTION PROTOCOL

Comoros | Volcanic Ash



sEAP No:
sEAP2023KM01

Total budget
CHF 210,958

Readiness:
CHF 37,699

Prepositioning:
CHF 99,207

Early Action:
CHF 74,052

Number of
People to attend:
12,000 people

EAP approved:
23/04/ 2024

EAP Timeframe:
2 years

EAP Leadtime:
4 days

Operational time: **3 months**

Priority geographical areas: Moroni

RISK ANALYSIS

Priority hazards and their historical impact.

The Union of the Comoros is a country composed of 4 islands (Mayotte, the big island Ngazidja, Anjouan and Mohéli), of which Mayotte and Ngazidja are permanently exposed to hydrometeorological (cyclones, floods, tsunamis), geophysical (volcanic eruptions, earthquakes, landslides), biological (cholera, dengue, chikungunya epidemics, etc.) and technological (toxic gas leaks, plane crashes, etc.).

The analysis of the risk matrix carried out by the Comorian Red Crescent (CRCS) presents the degree of impact of hazards and the probability of their occurrence:

Table 1: Hazard Classification Matrix

Impact of hazard	PROBABILITY OF OCCURRENCE				
	Unlikely	Very unlikely	Somewhat likely	Probable	Very likely
Criticism		-Tsunami		1. Epidemic	1. Flooding
Severe			1. Cyclone	2.Volcanic eruption 3. Earthquake	2.Landslide
Moderate			2. Drought		
Minor					
Negligible					

According to this analysis, one of the most imminent risks with a probable and severe impact is the eruption of the Karthala volcano in Ngazidja and which presents the most danger for three quarters of the population. Over the last 200 years the Comoros has experienced 6 significant eruptions (fig.1), which have caused significant damage to the population at risk (<https://volcano.si.edu/>).

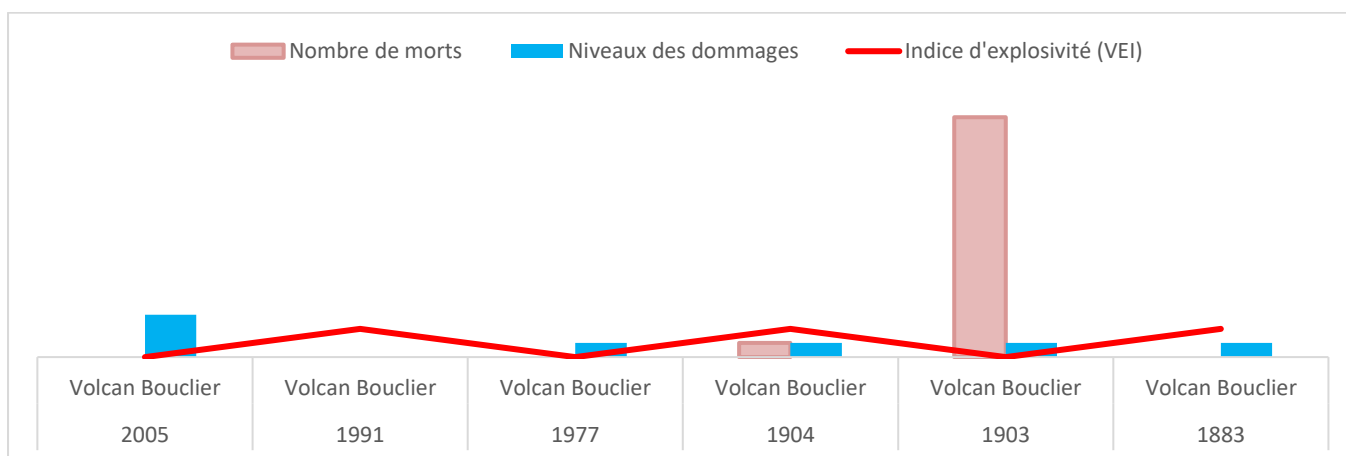
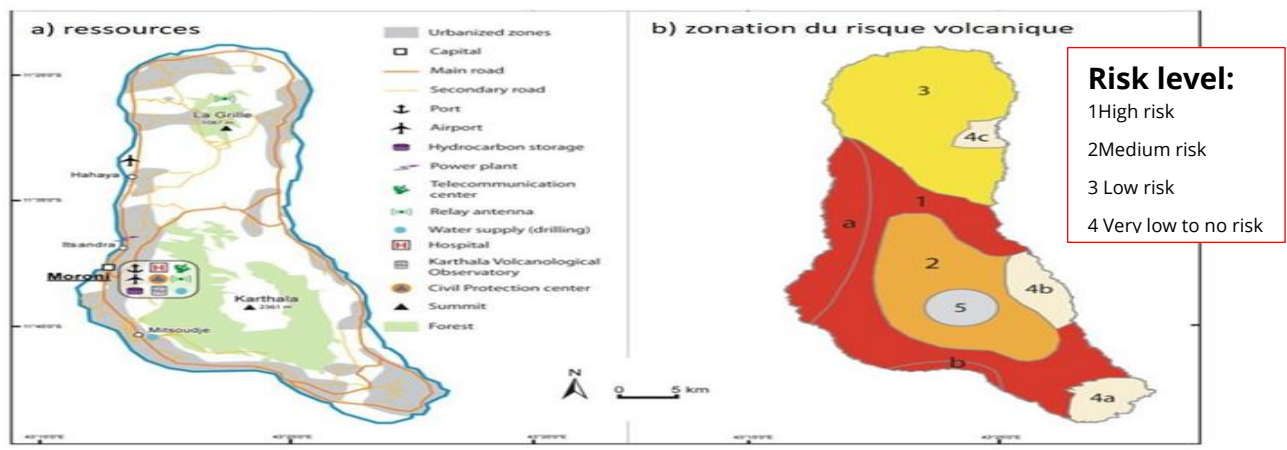


Figure 1: Significant volcanic eruptions in the Comoros in the last 200 years

According to Global Volcanism Program Report on Karthala (Comoros) — January 2006. The ash fall was so intense that the authorities asked residents to stay in their homes. The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) reported that, according to local authorities, around 2,000 people fled their villages in the Bambao region, in the central part of the island, and sought refuge in less exposed areas such as Mitsamiouli, Mboudé and Oichili which are found in the zone 4 (Map 1 below). Part of the population fled to the north of the island. Ash deposits covered three-quarters of the island. The landscape at the summit illustrates the style and intensity of the eruption. It is difficult to measure the thickness of the ash deposits. Along the coast, the ash deposits were between a few millimetres and up to centimetres thick. On the west side of the

caldera¹, around 1.5 km from the crater, 70 cm of ash deposits were measured in the same place where 40 cm of ash had fallen in April 2005, an increase of 30 cm in thickness.

In Figure 1, the bars represent the deaths recorded. According to the newspaper Al Watwan, published on Thursday, November 20, 2008 (number 1,199), despite the material damage caused by volcanic eruption, it also causes high mortality in certain circumstances when the population is not prepared and is trapped in ash and toxic gases. The deadliest eruption of Karthala in 1903 caused the death of about 17 people, linked to the emanation of gases ([Volcans actifs et éruptions aux Comores \(donneesmondiales.com\)](http://Volcans actifs et éruptions aux Comores (donneesmondiales.com))).



Map 1: Resource Map and Volcanic Risk Zonation

The methodology used to produce this map consisted in locating the eruptive events of the island (cones, lava flows, ash deposition zones and faults) and linking them to areas of human presence. This made it possible to see high-risk areas and low-risk areas.

The 2005 eruption was more explosive and longer lasting than the previous two, despite lower seismicity, and a large quantity of ash fell into water tanks. According to OCHA, around 118,000 people living in 75 villages were affected by the contamination of water tanks. The wind continued to pick up large quantities of ash, which again fell on homes and into water tanks. Unlike the eruption in April 2005, no coastal residents reported smelling sulphurous odours. After the end of the eruption, few long-lasting earthquakes were recorded.

According to the Directorate of Disease Control, about 293,610 vulnerable people are at risk of volcanic eruption. The degree of vulnerability was calculated based on historical data, the capacity of the exposed population to cope with a possible eruption and the nature of their infrastructure.

Recently, in 2022, anomalous activity of the Karthala volcano in Comoros was recorded by the Karthala Volcano Observatory (OVK) on the western flank of the island of Ngazidja. The country then entered the yellow alert. The Comorian Red Crescent therefore wants to position itself alongside the government of the Union of the Comoros by setting up this simplified early action protocol to assist approximately 12,000 people at risk of volcanic ash.

Priority risks addressed by early actions and their link to hazard

In collaboration with stakeholders, the following risks were prioritized:

➤ **Loss of life**

As shown in the figure above, loss of life is one of the main impacts of volcanic eruptions due to their rapid nature, as they undermine response efforts, especially when adequate preparedness and early action capacities have not been put in place in advance. According to the same information, 1/3 of the eruptions, caused human deaths in the Comoros, the worst occurred in 1903.

¹ a large depression formed when a volcano erupts and collapses

This sEAP will enable the National Society to be better prepared to save the lives and livelihoods of people at risk of volcanic ash by supporting evacuation in safer areas.

➤ **Health impact on the population**

According to the Public Health Emergency Preparedness and Response Plan 2022-2026, about 4,000 households are at risk in case of a volcanic eruption in the Comoros. The most likely diseases are ophthalmological, respiratory, dermatological, digestive, psychological, malnutrition etc. This probability is ranked at level 5 out of 5. Indeed, whether it is dust, ash or gas, when it is deposited in water tanks, there is water pollution which, after consumption, causes diarrhoea in children. In the event of evacuation of the sites, there is a risk of contamination by contagious diseases. Hence, the first step to be taken will therefore be to cover water sources as soon as the alert level is raised.

To this end, 160 CRCS volunteers will be trained on early warning especially for the orange and red alert and the distribution of health kits. Good preparedness and prepositioning will help to fill the humanitarian aid gap in the country.

➤ **Damage to drinking water systems and contamination of water sources.**

During volcano eruption, water sources are contaminated by dissolved toxic gases; agricultural land, fauna and flora are destroyed, the release of unwanted gases, such as sulphur dioxide, can also lead to acid rain and the destruction of the ozone layer. According to the Karthala 2022 specific contingency plan, about 118,000 people living in 75 villages are at risk of contamination of domestic water tanks; 175,000 people faced water shortages. This situation is even more alarming because the only water sources are in at-risk areas. Volcanic ash can cause respiratory infections, sore throat, eye infections, and skin irritations. In addition, asthmatics and young children, including infants, are sensitive to ash emitted by volcanic eruptions. Finally, the animals' consumption of ashes deposited on vegetation could have an impact on their health. In the case of WASH, ash can clog water pipe circuits. The ash also has an impact on the roofs of houses. They can collapse due to the thickness of the ash deposits. Thus, the CRCS plans to anticipate this major impact through water sources protection activities, and awareness raising.

➤ **Impact on hygiene and sanitation**

According to the latest experience of the volcanic eruption in Comoros, several villages and even the city centre of Moroni, were impacted by ash discharge, households and infrastructure were impassable, it took days for the Directorate of Civil Protection, to clean and make houses healthy with less risk of water-related disease. The CRCS through its volunteers and its technical staff could help to effectively anticipate these effects if it pre-positioned WASH kits for this purpose. In addition, CRCS also plans to assist the government in the management of IDP sites through the provision of community latrines and dignitary kits for women of reproductive age.

EARLY ACTION INTERVENTION

Overall objective of the intervention	The operation aims to mitigate the impact of volcanic eruptions on 12,000 people in the risk area, by providing early warning messages, improved health, access to clean water and hygiene promotion to save lives.
Potential high-risk geographic areas that the sEAP will target	All areas of the big island Ngazidja are concerned with a focus on the most at-risk areas (map.1). The area 4 (very low to no risk area), will be used to set up accommodation in case of evacuation. According to the analysis of the vulnerability related to exposure and the degree of danger presented by the volcanic ash, six regions have been identified as highly at risk, based on the historical impact of volcanic activity in the Comoros: Mbadjini, Hambou, Bambao, Itsandra, Washilli and Dimani.

<p>Who will be helped by this operation and what criteria will be used for their selection?</p>	<p>The target group will include all people living in disaster-prone communities (primarily located in at risk areas 1,2 and 3), the most vulnerable groups will be prioritized.</p> <p>This sEAP will prioritize households which meet at least three of the following selection criteria:</p> <ul style="list-style-type: none"> • Living in the area declared at risk by the State, and previously selected. • Large households (9 people with more than 5 children in a household) • Households with children under 5 years of age • Households with pregnant women and nursing mothers • Female-headed households. • Households with persons with disabilities. <p>The targeting will be carried out in collaboration with the authorities, communities and the 133 volunteer's committees that will be revitalized in at risk areas. The final list will be validated at the community meetings in coordination with the government and other stakeholders.</p>
<p>Indication of the trigger</p>	<ul style="list-style-type: none"> • The trigger model of Karthala volcano is presently based on seismic and ground deformations surveys (Observatoire Volcanologique du Karthala Centre National de Documentation et de la Recherche Scientifique des Comores (javceivolcano.org)). • The seismic network consists now in 7 seismic stations. Each station is composed of a seismometer and various electronic devices for radio transmissions (modulator, transceiver). • Telemetered radio analogical signals of seismic stations are received at the observatory where they are digitalized. A real time analogical control is supplied for 3 stations at the observatory using a lennartz drum recorder with thermic paper. • Deformations monitoring is performed with: <ul style="list-style-type: none"> - A permanent inclinometric station composed by 4 blum-type silica inclinometers. Measurements are repeated each minute and transmitted to the observatory by radio. The orange alert is triggered when an imminent danger is detected - an anomaly higher than normal (second-level seismic crisis, second level micro-deformation of the ground, and change in the composition of gases through the accumulation of carbon dioxide) that persists for several hours a day. • It includes three types of alerts that are activated after receipt of the special bulletins of level 1 for the yellow alert, level 2 for the orange alert and level 3 for the red alert, which are monitored through the periodic forecasts shared by OVK two weeks, four days and two days before the impact respectively for the yellow, the orange and the red alert. • The early action trigger threshold is reached, when the CRCS receives the special orange alert bulletin (OVK-SB2) four days before the impact (fig.2). This will allow the steering committee, despite the preparedness and pre-positioning activities carried out, to proceed with the distribution of sanitation, WASH and dignity kits. If there is a need to relocate exposed populations, the CRCS will provide technical support during site identification and evacuation and will provide psychosocial support to affected populations. • The red alert is reached, when the CRCS receives the special level 3 bulletin (OVK-BS3), in which case the CRCS will proceed directly to the distribution of dust masks and protective glasses to the most at-risk population before their evacuation. • Sensitization activities will start from the yellow phase, while the distribution of protection kits will only start in the orange phase to protect the population and their livelihood from the dangers related to volcanic ash.

	<ul style="list-style-type: none"> The relocation of the population will be carried out with the government, when needed.
Next steps - for National Societies intending to develop a full EAP (optional)	The Red Crescent wishes to integrate this protocol as an anticipatory pillar in the national Karthala contingency plan, it will continue the search for partnership to develop a mixed model (composed of local data and satellite monitoring). A mapping will be made to take into account the threat of volcanic eruption in Mayotte.

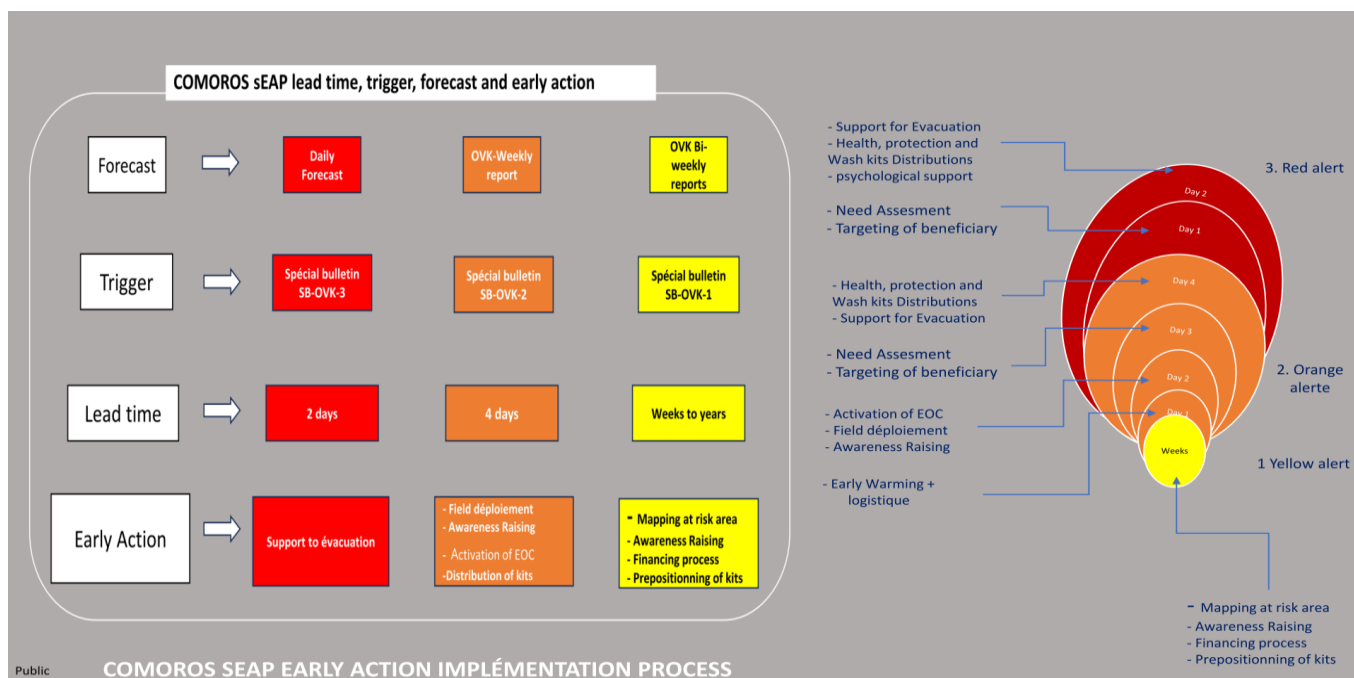




Figure 2 : Comoros's sEAP monitoring and early action activation process


PLANNED OPERATION

	Health and care	Budget	CHF 73,679
		People targeted	5,000 people
Indicator:	# of people reached by health and nutrition services	Target:	Men : 2,900 Women : 2,100
Readiness activities:	1. Training/retraining of 30 volunteers on (community-based epidemiological surveillance, first aid, psychosocial care)		
Prepositioning activities:	1. Purchase and prepositioning of 4,200 dust/gas masks. 2. Purchase and prepositioning of 2,100 protectives glasses.		
Priority early actions:	1. Distribution of 4,200 dust masks to the population 2. Distribution of 2,100 protective glasses 3. Provide community-based epidemiological surveillance, first aid, psychosocial support (at least 2,000 people)		


	Water, Sanitation and Hygiene	Budget	CHF 38,322	
		People targeted	10,000 peoples	
Indicator:	# of people reached by integrated WASH services	Target:	Men: 6000	Women: 4000
Readiness activities:		<ol style="list-style-type: none"> 1. Train 160 Red Crescent volunteers in integrated Wash 2. Conduct an initial assessment of the water, sanitation, and hygiene situation in target communities. 3. Develop a hygiene communication plan. 4. Identify key messages and methods of communication with beneficiaries (media and interpersonal communication). 		
Prepositioning activities:		<ol style="list-style-type: none"> 1. Purchase and prepositioning of 1,000 WASH Kits (jerry can, bucket, soap, bleach, garbage bags) 2. Purchase and prepositioning of 200 toilet and tank cover kits (sheets, rafters, nails.) 		
Priority early actions:		<ol style="list-style-type: none"> 1. Mobilization of 160 volunteers for WASH interventions 2. Distribution of 1,000 kits (WASH, protection, sanitation and tarpaulins) 3. Sensitize at least 10,000 people at risk to the prevention of water- and hygiene-related diseases. 4. Covering of 200 toilets and cisterns 		


	Protection, Gender and Inclusion	Budget	CHF 23,660	
		People targeted	2,000	
Indicator:	Number of people reached by protection, gender and inclusion activities	Target:	Women of childbearing age : 2,000	
Readiness activities:		<ol style="list-style-type: none"> 1. Training/refresher training of 160 volunteers on the consideration of PGI during targeting and distribution 2. Sensitization of women of childbearing age on the use of dignity kits 3. Identification of vulnerable persons (disabled people, pregnant women, people over 70 years old.) 		
Prepositioning activities:		<ol style="list-style-type: none"> 1. Procurement of 2,000 dignity kits 		
Priority early actions:		<ol style="list-style-type: none"> 1. Mobilization of 160 volunteers to raise awareness on the use of dignity kits, 2. Identification and assistance to vulnerable persons in at risk areas 3. Distribution of dignity kits 		


	Risk reduction, climate change adaptation and recovery	Budget	CHF 32,585	
		People targeted	2,000 households	
Indicator:	# of people affected reached by DRR activities	Target :	Men: 5000 people Women: 4000 Persons Women of childbearing age : 2964	
Readiness activities:		<ol style="list-style-type: none"> 1. Integrate early action activities into the Karthala National Emergency Plan. 2. Simulation of early action and evacuation procedures with two potentially affected communities (high-risk communities). 3. Assist in the mapping of safe places and site planning in coordination with civil security. 4. Design of communication support (09 large posters, 2,000 leaflets, 02 kakemonos, 10 banners.) 5. Design of 180 visibility kits (T-shirt, cap, key ring.) 6. Signing of framework contract with the media (written and audio.) 		
Prepositioning activities:		<ol style="list-style-type: none"> 1. Pre-position protection kits for 160 volunteers to mobilize (helmets, boots, gloves, masks, glasses, raincoats) 		
Priority early actions:		<ol style="list-style-type: none"> 1. Coordination and activation of the FBF team and networking with stakeholders 2. Activation of the EOC 3. Update of the list of beneficiaries. 4. Dissemination of Early warning 5. Distribute protection kits for 160 volunteers to mobilize (helmets, boots, gloves, masks, glasses, raincoats) 		

	Community Engagement and Accountability	Budget	CHF 2,906	
		People targeted	12,000	
Indicator:	# volunteers trained at the CEA	Target :	160 volunteers	
Readiness activities:		<ol style="list-style-type: none"> 1. Establishment of a community consultation and feedback mechanism. 2. Training of volunteers on community involvement 		
Prepositioning activities:		<ol style="list-style-type: none"> 1. No 		
Priority early actions:		<ol style="list-style-type: none"> 1. Information collection, data analysis and feedback, 2. Management of beneficiary complaints at the resettlement site 		

ENABLING APPROACHES

	Secretarial services	Budget	CHF 20,962	
		People targeted		
Indicator:	# of technical missions by the International Federation of Red Cross and Red Crescent Societies	Target:		
Readiness activities:	<ol style="list-style-type: none"> 1. IFRC technical support mission. 2. Monitoring the implementation of preparedness activities 3. Training of National Society staff and volunteers on AA 			
Prepositioning activities:	<ol style="list-style-type: none"> 1. None 			
Priority early actions:	<ol style="list-style-type: none"> 1. Support coordination with stakeholders and authorities 2. Support operations management and reporting 			

	Strengthening the national society	Budget	CHF 17,185	
		People targeted	160	
Indicator:	# of trained volunteers involved in the operation	Target:	H: 110 volunteers F: 50 volunteers	
Readiness activities:	<ol style="list-style-type: none"> 1. Training of NS volunteers and staff on the FBF mechanism 2. Design of the contingency plan, tools (report, monitoring, evaluation, roadmap.) 3. Logistics capacities (maintenance and vehicle rental, local stock rental, etc.) 4. Logistics capacities (maintenance and vehicle rental, local stock rental, etc.) 5. Focal point for anticipatory action to carry out readiness and early action activities. 6. Annual stakeholder coordination meeting. 			
Prepositioning activities:	<ol style="list-style-type: none"> 1. Prepositioned area backup power sources 			
Priority early actions:	<ol style="list-style-type: none"> 1. Mobilize the FBF team to support early action and prepare for rapid intervention. 2. Post-distribution monitoring and lessons learned. 			

	Partnership and coordination	Budget	CHF 1,660	
		People targeted		
Indicator:	No. of meetings conducted	Target:		
Readiness activities:	<ol style="list-style-type: none"> 1. Establish a focal point for each stakeholder to better communicate 			

	2. Organize an annual workshop (of the national FBF team) to inform and exchange on the protocol
Prepositioning activities:	1. None
Priority early actions:	1. Activated the FBF team (all stakeholders) and coordinated the implementation of early actions

CONDITIONS FOR THE IMPLEMENTATION OF EARLY ACTION

<p>Experience and/or ability to implement early actions. Minimum assumptions or conditions necessary to achieve early action (including problems to be solved)</p>	<ul style="list-style-type: none"> • CRCS focused on the WASH, health, shelter, and protection gender and inclusion (PGI) area considering the capacity of the National Society and the request from the Government. • CRCS has made a significant investment in developing its capacity in disaster response according to their experiences with past volcano disaster (2005 and 2006). 145 volunteers have been mobilized and trained on awareness among population on the prevention of water-related diseases in the event of water pollution by volcanic ash. 80% of the population living in Comoros will be affected by water pollution one of the main consequences of the latest volcanic eruptions. CRCS has trained volunteers in aiding evacuees, assessing, and distributing supplies to affected areas, providing first aid support, coordinating with stakeholders. • Regarding PGI capacities, the CRCS has a PGI focal person, and 48 community volunteers trained on PGI approach. The NS is currently in the process of developing its PGI strategy. • Thus, the AA training that will be held in the country, will reinforce the National Society capacity to anticipate the volcanic with this sEAP.
<p>Red Cross and Red Crescent Movement partners, government agencies/other agencies consulted for this simplified FMP</p>	<ul style="list-style-type: none"> • IFRC Programme support delegate is based in the country to support CRCS, further technical support is also provided by IFRC through its CCD based in Madagascar. • French Red Cross/PIROI also provide technical and financial support and will be allocated the provision of tarpaulin to protect the tanks that are not closed against pollution with volcanic ash. The CRCS held regular meetings with those partners to brief and to follow up the implementation of the AA activities. The Government throughout the Ministry of the Interior has set up a multisectoral response plan and holding coordination meetings of risk management actors in the country every 15 days at the headquarters of the civil security. • The overall coordination of the operations is carried out by the Government, through the Ministry of the Interior. United Nations agencies provide technical and financial support. The community is organized into a Solidarity Association. • A technical commission with the participation of the CRCS and the French Red Cross was appointed and worked on the development of the national response plan and the various messages to be passed on to the population at risk.



Early Action Protocol Summary

EAPcode - COMOROS RED CRESCENT
Volcanic Ash

<u>Operating Budget</u>	Readiness	Pre-Pos Stock	Early Action	TOTAL
Planned Operations	16,529	99,207	55,415	171,151
Shelter and Basic Household Items	0	0	0	0
Livelihoods	0	0	0	0
Multi-purpose Cash	0	0	0	0
Health	3,736	43,585	26,358	73,679
Water, Sanitation & Hygiene	10,926	24,075	3,321	38,322
Protection, Gender and Inclusion	623	16,604	6,434	23,660
Education	0	0	0	0
Migration	0	0	0	0
Risk Red., Climate Adapt. and Recovery	208	14,943	17,434	32,585
Community Engagement and Accountability	1,038	0	1,868	2,906
Environmental Sustainability	0	0	0	0
Enabling Approaches	21,170	0	18,638	39,807
Coordination and Partnerships	1,660	0	0	1,660
Secretariat Services	14,528	0	6,434	20,962
National Society Strengthening	4,981	0	12,204	17,185
TOTAL BUDGET	37,699	99,207	74,052	210,958

all amounts in Swiss Francs (CHF)

Contact information

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

In the Comorian Red Crescent Society

- **Secretary General:** Daniel Ali Soumaïli, Phone +269 360 70 60/ Email: soumaildani@gmail.com
- **Disaster Risk Management Coordinator:** Saïd Abdou Tel +269 322 41 04/mail: grc.crco@cr-comores.org

In the IFRC

- **Head of Delegation:** Maria Martinez, maria.martinez@ifrc.org;
- **Operations Coordinator:** Denis BARIYANGA email: denis.bariyanga@ifrc.org
- **IFRC Anticipatory Action Focal Point:** Maharazou Mahamane Lamine, Senior Forecast Based Financing, Officer, for West and Central Africa phone: +227 80823810, +227 96190060, mail: maharazou.lamine@ifrc.org
- **IFRC Geneva focal point:** Malika Noisette, IFRC-DREF Senior Officer, malika.noisette@ifrc.org