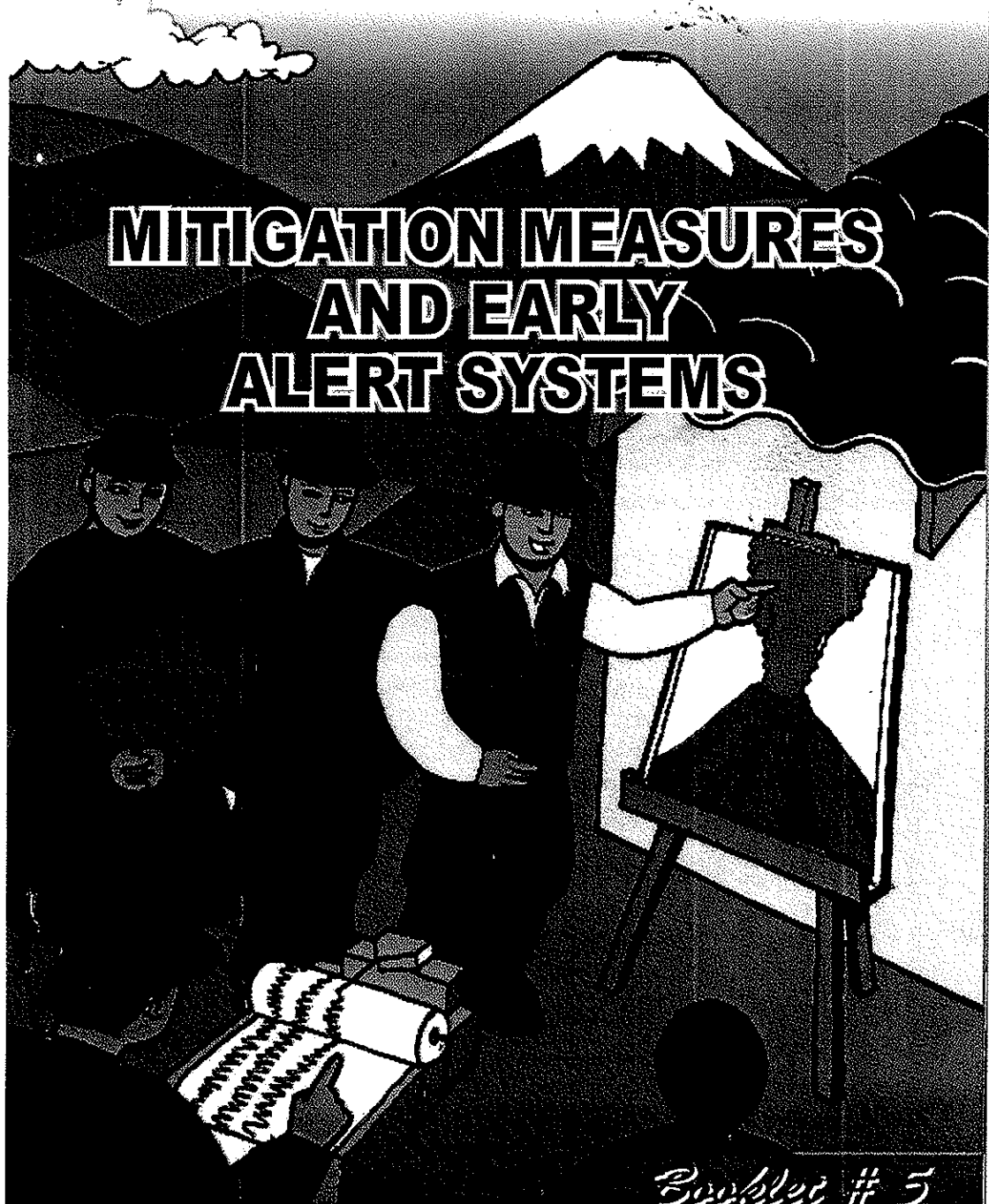




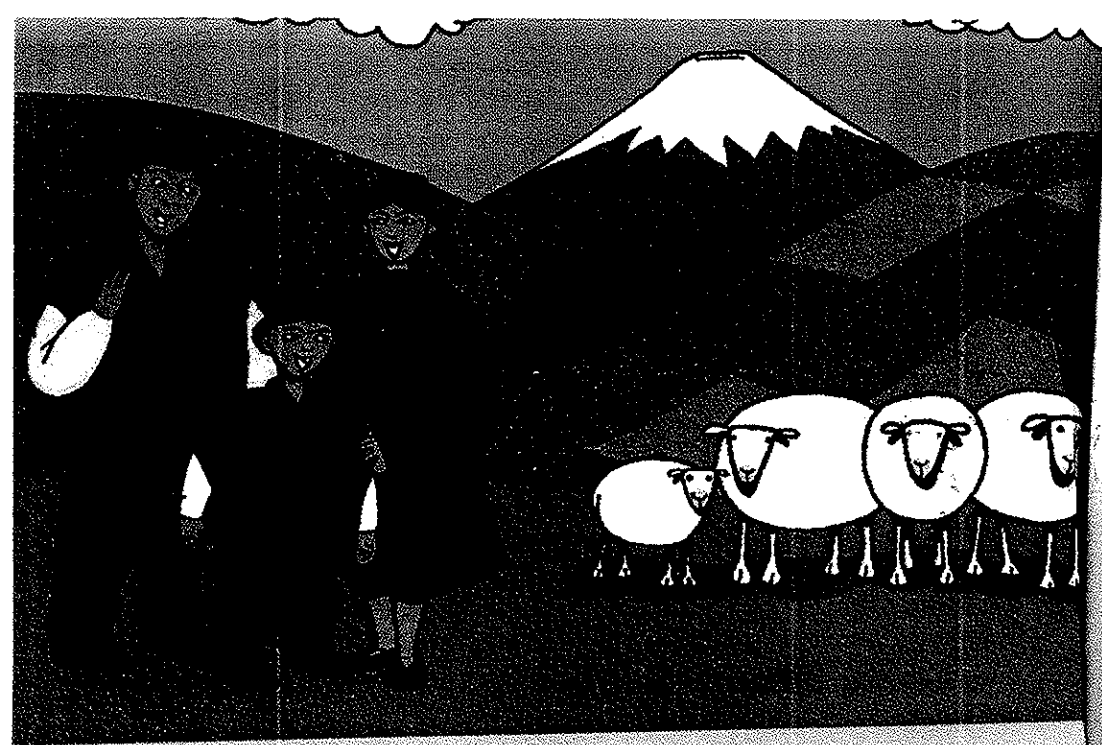
Aus-AID

Visión Mundial

MITIGATION MEASURES AND EARLY ALERT SYSTEMS



Booklet # 5



Pepe (Son):

Daddy, I am happy because we are learning how to get ready to deal with emergencies and disasters that might affect our community or our family. My friends and I know how to protect ourselves in case of a disaster and have also appointed a Local Emergency Committee.

Luis (Father):

Yes son, we ought to be prepared to deal with emergencies and adverse events at any moment that they occur.

Rosa (Mother):

And what are we going to talk about now?

Luis (Father):

Now we are going to talk about the Mitigation Measures and the Early Alert Systems.

What are Mitigation Measures?

They are a series of actions taken to allow the community to reduce the consequences, effects or damages caused by a disaster or emergency.

In other words, Mitigation involves the precaution, that means we implement the mitigation measures in order that so the effects of a disaster will not be so intense.

This means that we cannot avoid natural disasters and their consequences, but we can reduce the risks as long as we develop a series of actions or Mitigation Measures. This entails adequate training and knowledge on the adverse events. In the Bible we can read the story of the Flood. We can use it to describe what a Mitigation Measure is.

In order to reduce the consequences of the Flood, Noah built the ark and boarded it with his family, enough food supplies and two animals of each species. By doing so, he saved his life and his family and secured the provision of food for all of them during the time that they had to be in the ark.

Let's see an example:

Pepe:

If our house was located in a risk zone in case of a volcanic eruption due to the mud flow, what would be the Mitigation Measures to be taken?

Rosa:

OK. Son. We are going to explain you what the Mitigation Measures would be. First, we are going to remember what would be the threat, vulnerability and risks that we would be facing if the Cotopaxi volcano erupted.

- The threat : the volcano with its eruption process.
- The vulnerability: the location and the type of construction of our house, our animals and crops.
- The risk: To become homeless and lose all our belongings.

In high areas where no mud flows affect us, the main risk is the fall of volcanic ash that might affect our health, spoils our crops and pollute the environment.

Luis:

Son, in this case the Mitigation measures to take in order to reduce the risk of losing our house would be:

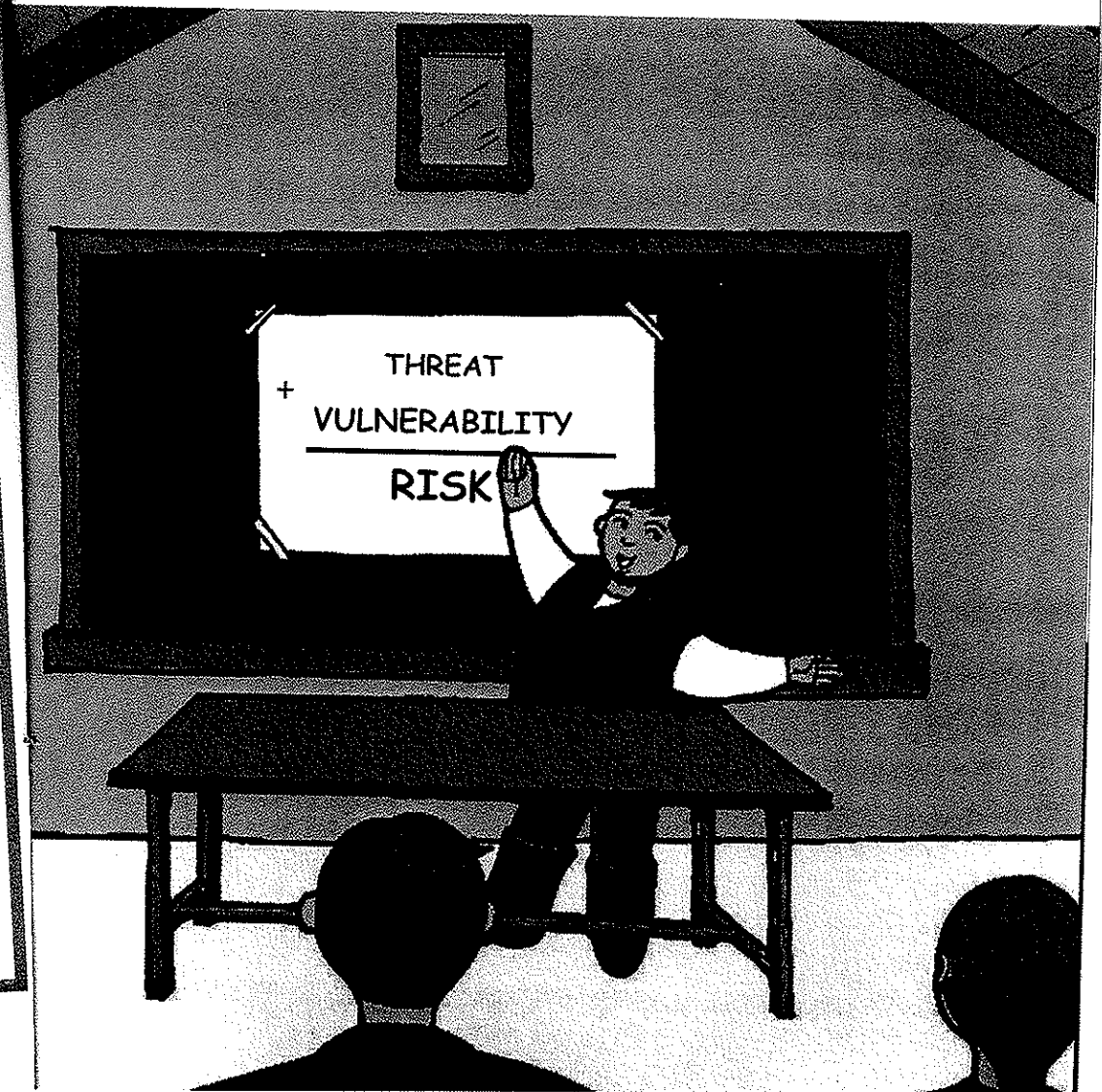
- To build our house in a safe place where the mud flow will not affect us.
- To know what the security zone is, as well as the evacuation routes.
- To receive training and information on what to do before, during and after the eruption although the only thing that affects us is the fall of volcanic ash.

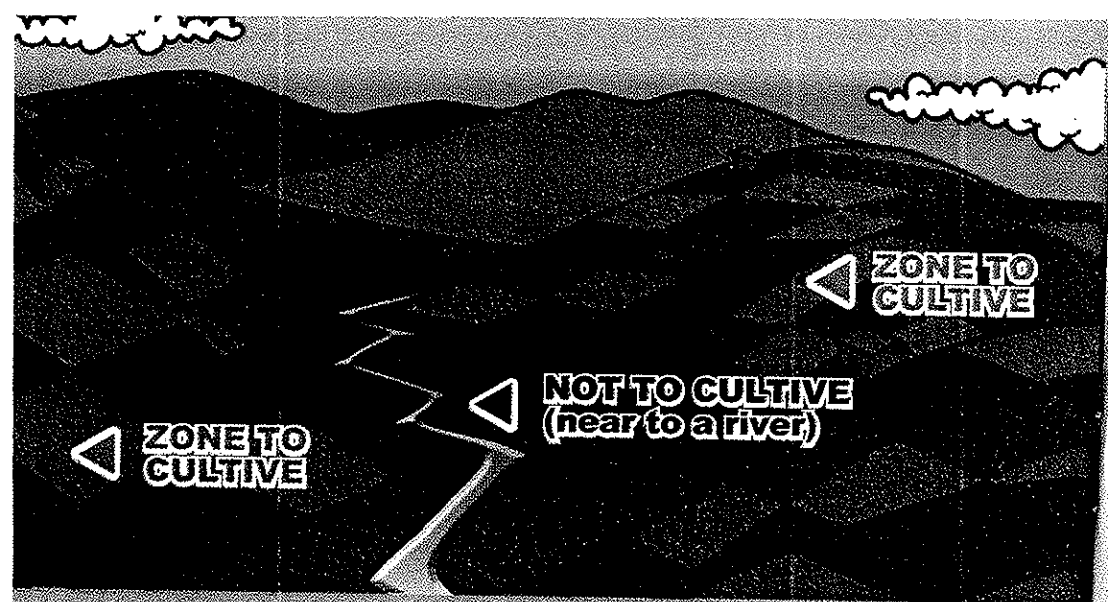
Rosa:

Son, as you can see, we cannot avoid the eruption of a volcano, but we can avoid the risks by implementing Mitigation Measures.

Pepe:

Thank you mom and dad. Now I have a clear idea of what Mitigation is, or in other words, how to reduce the risks that a disaster brings.





What kind of Mitigation Measures are there?

There are two:

- Structural Mitigation Measures
- Non-structural Mitigation Measures

What are the Structural Mitigation Measures?

- To include safety measures in buildings, homes and schools (escape stairs, emergency exits)
- To include designs and materials that resist the most frequent threats. For example: earthquakes.
- To reinforce the houses and buildings.
- To install protection systems such as barriers, fences, etc.

¿ What aspects should be considered to design Mitigation alternatives?

- To apply Mitigation measures adequately.**
 - There are geographical zones that should not be used to build homes, infrastructure or to install productive projects.
 - Non building homes next to dangerous places.
 - Then, we should apply the regulations for the construction of homes, roads and utilization of land in risk zones.
 - Regulate the use and management of moors and other natural resources of our community. This is a measure to reduce the risk of drought or lack of water for irrigation and human consumption.
 - In the community development plans, the community can divide the zones to plant trees, annual cultivations, grass, etc.
 - To establish the community regulations, it's important to know which are the main threats and the vulnerability of a community or a group of communities.
 - With this we can obtain the Mitigation measures that will help us reduce the risks.



What kinds of Mitigation measures are there?

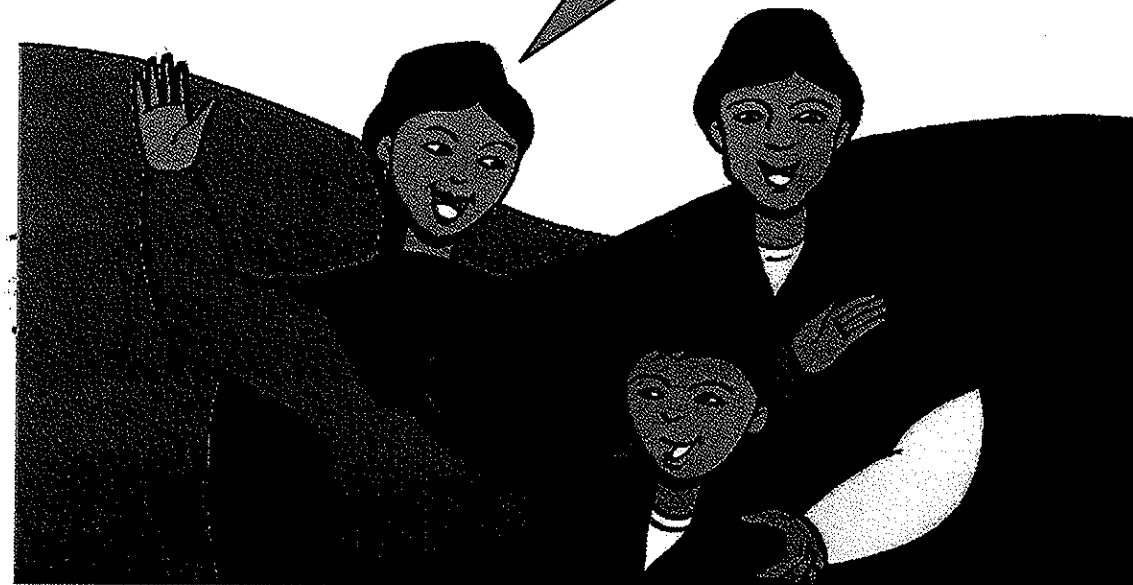
- To limit the use of plots, considering the geographical areas that should not be utilized for the production or construction of homes due to the existing threat.
- To rule and enforce these regulations on the use and exploitation of natural resources, which contribute to reduce soil erosion and the shortage or total lack of water. These measures are also aimed at reducing the possibility of floods, landslides and earthquakes.

How can we implement these kinds of Mitigation Measures to reduce the risk?

- By introducing these measures in the Community, parish and municipal development Plans.
- By identifying the possible disasters that might cause damage.
- By identifying the threats, vulnerabilities and risks with their corresponding geographical location.
- By elaborating the map of community risks.
- By providing training to the community leaders, technicians and staff members from the institutions that collaborate in the zone. They will also provide training to other people.
- By informing and training people about the risks, in order to reduce the vulnerability of people in risk.
- By planning the urban and territorial organization with the intention of limiting the areas of risk.
- By issuing regulations on the exploitation of natural resources and verifying their enforcement.
- By ruling the utilization of moors and soils.

- By issuing regulations for the construction of homes, buildings and basic services, in order to reduce vulnerability.
- By ruling and controlling the transportation modalities of dangerous chemical products and the routes used.
- By enacting and verifying the enforcement of public health, industrial safety and handling of industrial waste regulations.
- By controlling floods through the construction of dams, channels and dikes.
- By installing energy distribution infrastructure for the control of avalanches, landslides and floods in steep river sides.

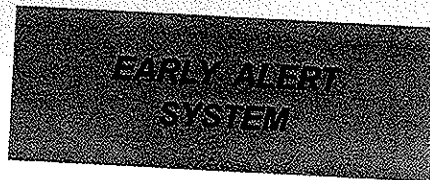
Excellent Luis, you have taught us what the Mitigation Measures are, as well as the tools that help us mitigate the effects of a disaster. Is all this called Early Alert Systems?



What are the Early Alert Systems?

They are operational structures formed by people, institutions and tools aimed at giving immediate reaction in case of a natural event or an event caused by men, which might cause a disaster.

The following chart shows how an Early Alert System is formed.



What is the purpose of the Early Alert systems?

- They are created to alert people with enough anticipation so that the community will be able to take all the precautions necessary to face a disaster.
- To coordinate the support actions with the Local Emergency Committees and the community leaders in case that an emergency takes place.

Since when and until when should the early alert systems exist?

- These alert systems are not organizations that start and end up.
- On the contrary, they are organizations that are permanently working and being periodically improved.
- Thus, in the Early Alert systems, the participation of people through the local Emergency Committees is very important. These committees represent the community, the parish, corner and provincial Civil Defense.
- The Local Emergency Committee is part of the system.
- The Committee supports the management of emergencies and, supported by all of them, should control and monitor, make decisions and carry-out the necessary activities so the Early Alert System will work adequately.

Can these systems warn us about a coming disaster?

Yes, they alert people in advance for them to take all the precautions necessary to face a disaster.

For example:

To register the activity in the Cotopaxi volcano, the team of specialists from the Geophysical Institute of the National Polytechnic School has installed a series of instruments called seismographs in the sides of the volcano, which measure the seismic activity inside the volcano. The data obtained is analyzed and then communicated to the inhabitants from the zone. That is how an Early Alert system works.



Pepe:

Daddy: Can the Early Alert system warn us about an earthquake?

Luis:

No. It is necessary that our leaders know where the geological fractures are located in our zone because they determine the risk levels in such area.

Luis:

How about if we revise the following chart that depicts the visual and instrumental signs of a disaster or adverse event?

Disaster or adverse event	Visual sign of that phenomenon	Instrumental sign
Eruptions	<ul style="list-style-type: none"> • Smokes • Ice melts 	<ul style="list-style-type: none"> • Increased seismic activity • Swelling in the volcano's crater
Earthquakes	<ul style="list-style-type: none"> • Soil sinking in case of geologic fractures. • Cracks in the land surface that get wider and wider. 	<ul style="list-style-type: none"> • Measuring of seismic activity in the epicenter.
Landslides	<ul style="list-style-type: none"> • Sudden presence of cracks in the earth surface. • Filtration of water and mud. • Sudden reduction of the river water flow. 	<ul style="list-style-type: none"> • Increase of water flows • Evolution of the land cracks.
Floods	<ul style="list-style-type: none"> • Increased water flows and volume. • Sudden reduction of upper stream flow. 	<ul style="list-style-type: none"> • Increased rainfall levels. • Increased hydrometric levels.

Pepe:

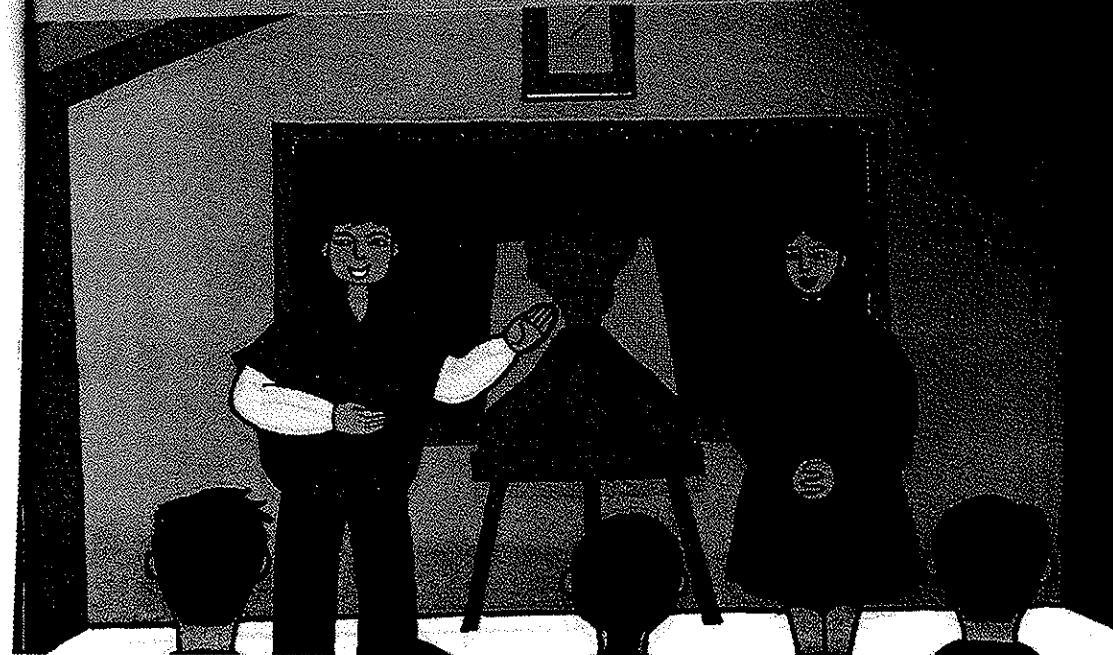
What does this mean dad?

Luis:

We said that each community has to analyze its own risks. It means that it ought to pay special attention to the most serious threat it faces so that in case of evacuation, things will be made according to the preparation that a plan of emergency demands, of which we should not forget even a single detail.

Rosa:

We agree. However, we should also verify that the Local Emergency Committee works and supports the adequate performance of the Early Alert System.





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