

There are two sectors in the Peruvian health care system, public and private. *Seguro Integral de Salud (SIS)* which is controlled by *Ministerio de Salud (MINSA)*, is their equivalent of our Medicaid. It is aimed at the people who can't afford health care, mostly those in poverty or extreme poverty. *EsSalud* provides coverage for the working families. Around 9% of workers wages are used to pay for this insurance. Together they cover around 90% of Peru's healthcare. (*WHO*) (*Peruzo*)

There are many crops grown in the rural area of the Andes Mountains in Peru. Among them, potatoes, maize, cotton, pineapple, and cocoa. Agriculture only makes up about 7% of the countries income. It is unable to keep up with the population causing malnutrition. Around 70% of small farms are less than five hectares big. They are mostly found in the Andean Regions. (*Peru.*)

The average salary in Peru is about \$513 a month. (*Average Monthly Salary up by 6.6% in Lima.*) However, this statistic lowers when looking at service jobs such as waitressing, shopkeeping, etc. Then wages may be closer to \$200-\$300 a month, while if you're a miner you'll have higher wages of around \$1,000 a month. Apartment housing is generally \$100-\$200 a month in the city of Lima, the capital of Peru, while more expensive housing like penthouses can be \$2,000 a month. (*A Year Living and Working in Peru.*)

Anaemia is a very common deficiency in Peru. It affects 46% of children under three, while malnutrition as a whole affects 14% of children under five. One of the biggest reasons 5.2 million Peruvians face food insecurity is because they are very prone to natural disasters (*World Food Programme*). There are many types of natural disasters in Peru that could affect the nutrients of food, access to food, and the amount of money you have for food. These natural disasters include volcanic activity, earthquakes, tsunamis, floods, high tides, and landslides (*Natural Disasters - Peru Travel Advice*).

Starting at the beginning of January and ending in April there was major rainfall in Peru. The flooding is linked to the ocean becoming warmer than usual from a natural phenomenon called El Nino. This has caused mass flooding in many regions and landslides in the Andean regions. Around half a million people have been majorly affected, many homes destroyed or damaged, with more than 70 deaths. (*Local Weather.*)

Due to the flooding and landslides it has been very difficult for Peruvians to retrieve food. In Lima, the capital of Peru and a desert town, to cross the streets many people have had to form human chains to keep from being swept away. The water that they are surrounded by is not suitable for drinking so the Peruvians have to get into long lines to get water from tanker trucks. (*News.*) Many crops including rice, bananas, and fruit trees have been destroyed by the raging waters and landslides. (*Death Toll Rises.*)

As of late March, the Peruvian government has declared Peru to be in a nationwide state of emergency. (*U.S. Embassy in Peru.*) Weather forecasts believed that the harsh rains would continue through the rest of March and April. The situation will most likely get worse before it gets better.. (*Local Weather.*)

In all this bad, there are some positive effects after everything calmed down. All the landslides have brought down nutrient rich soils from the mountains. (*Sciencing*) This can be used to help reestablish the

environment it destroyed. The environment will be fine if it repairs naturally, but human interference could help prevent more disasters of this magnitude in the future.

The rebuilding of towns and cities to help the people is the top priority, but landslide and flood prevention should be next. Landslide prevention should be done at the same time as rebuild, because it can bring in money that will help with the rebuild and prevention costs, it will also give poverty stricken residents jobs.

A temporary cover crop, cereal rye, would be the first step to landslide prevention in the mountainous areas. Cereal rye is the cover crop of choice because it is incredibly winter hardy. It grows best in loamy soils but will grow in most soils, from sandy to hard clays. It can also be used as a cash crop and be sold for profit. (*SARE: Sustainable Agriculture Research and Education.*) Cereal rye has deep and extensive roots which make for great erosion control from wind and water (*University of Vermont*).

Peruvians who do not have jobs during the rebuild, including women and teenagers who do not attend school or have a school because of the recent events, can be the ones in charge of the farming. After the rebuild is done the impoverished women and teenagers keep working the crops for extra money for their families.

After a few harvests, when the soils are better from having crops in them, the next step would be a more permanent solution, such as trees. Some good trees for erosion control include Snowberry, Red Alder, Scouler Willow, and many more. All trees named here can grow in dry or moist conditions, and grow in any soil, the Snowberry can tolerate shallow flooding. (*Slope Stabilization and Erosion Control using vegetation.*) It would be better to have trees that naturally grow in Peru so that the country's natural balance doesn't get disorganized.

Trees do not have to be introduced in every place, or at all necessarily. That can be the people of Peru's choice, they may want to keep the cereal rye for the profit. The trees may not be able to be used for profit so cereal rye could be the preferred choice. Even though trees might not be profitable they would be more stable than Rye.

During the rebuild of homes they could raise the houses off the ground by a meter, either by brick or water- treated wood. Raising homes could help prevent the water from getting into houses. However, this strategy may not work in larger cities that mostly have apartments rather than houses. In apartment buildings, keeping living areas off the ground level and below would help. These spaces instead could be used as offices and storage areas. Things in the storage areas may be harmed or destroyed during the floods but the living areas will be safe therefore, so will the people.

After the landslide prevention and rebuild next will be flood prevention. A few things that could help are flood drains, small trenches, rivers, streams, vegetation, and raised houses. Floods will happen no matter how prepared people are, these are just a few suggestions that can limit the severity, and decrease the amount of damage. (*Storm and Surface Water.*)

Rivers and streams are helpful, but they can also be harmful. A way to make them more helpful is to build

up the banks, the extra soil from the landslides can be used for this. Every river and stream does not need its banks built up. The focus needs to be on the ones near the towns and cities. Make sure to make ways for the water to drain if the area is surrounded by high banks, this could cause pooling of water and create flooding.

Most cities or towns have some sort of flood drains throughout the area, especially the areas that are more susceptible to flooding. Areas that are more susceptible to flooding may be in lower parts of the country and are areas with rivers or streams in them. The municipalities should make sure to keep these areas clear of debris and have a safe place to drain them. Susceptible areas should be cleaned out once a week if it has been raining a lot or if it becomes dangerous to be in or near them. However, to clean these areas, one must wait until it is safe, not risking a life. If the blocked area is easy to reach, unblock it.

It will be impossible to get all of this done without some sort of funding and support. There are many places that can help, [Global Giving](#) is one that's already started working on giving relief to Peru. There are several different areas on the website to donate. What this will do is help rebuild structures needed such as homes and schools, it will also bring emergency and long term supplies to many people all over the country. (*GlobalGiving*).

Another organization that has been very helpful is [All Hands](#). They are currently in the towns of Huarmey and Piura. At the moment the volunteers are demolishing unsafe structures, helping clear out mud from houses, and building temporary learning centers for schools. (*All Hands*) [All Hands](#) and [Global Giving](#) are just a couple of organizations out there helping. With their help and others Peru will be able to become a safe place to live again.

These are not the only issues Peru has, but flooding and landslides are one of the most prevalent issues at the moment. These natural disasters are happening right now in Peru, so they are the main focus on what affects this country. The end goal is to find ways to handle Peru's response to natural disasters and implement them. The country has a long way to go before it's better again.

Peru's current weather patterns are the worse they have been in the last 50 years. Through solutions, such as strategic planting of trees & crops, building banks, and maintaining the sanitation of flood-prone areas, it will make these inevitable disasters less harmful to the health and overall well-being of its people.

The effects of these disastrous weather patterns puts life on hold in Peru. Although healthcare institutions remain helpful to people, they were also affected by natural disasters, other institutions such as schools are on hold as the basic needs must be met first, unfortunately placing Peru farther behind as its people's education lag. Once the flooding and landslides are prevented, the population of Peru should be able to get back to farming, especially their staple foods, which will help with malnutrition and overall food scarcity. It is clear that from the many problems that affect Peru, a root cause is linked to its climate volatility. People must first address its response to climate-related disasters before attempting to move past other obstacles.

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