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Claremont McKenna College

**A Comparative Study on How Governments and Outside Entities Responded to Natural  
Disasters: Haiti 2010, Ecuador 2016, and Japan 2011 Earthquakes**



Submitted to  
Professor William Lincoln

By  
Cindy Yarina Burga-Romero

For  
Senior Thesis  
Fall 2022  
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## **Abstract**

With the world becoming more susceptible to natural disasters on account of climate change, it is important to better see and understand the relationship between a country's economic and political stability to its ability to provide resources and take care of their people and their institutions. This paper looks at 3 earthquake events in the 21st century that have had large disastrous impacts on the country's infrastructure, economy, and livelihood of people. The events that occurred in Haiti in 2010, in Ecuador in 2016, and in Japan in 2011 have all had major negative impacts on the vastly different countries. Literature review has shown that countries in most need receive the most funding but consequently this reliance on aid leads to a country being unable to fully develop and self govern. With this project I first look at the context of each country in different areas including its economy and government. Then I look at what were the consequences of the earthquakes on the countries. After understanding who the major outside entities that come into play when providing aid are, I look at what sort of relief was provided and by who, either the country's government or outside entities. Observing some major aid efforts in each scenario for four categories, I later analyze what the responses indicate. The findings reflect the literature review in real case scenarios but also I acknowledge that there are other factors that are not examined in this paper including the efficacy of the aid, other issues the country may be enduring, and the inability to be perfectly ready for the next disaster.

Keywords: Earthquake, Aid, Government, Japan, Ecuador, Haiti

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## **I. Introduction**

The impacts of natural disasters on countries' infrastructures, economic health, and even morale to the individual and society as a whole is nothing new to the world. With climate change becoming a larger concern with detrimental impacts that may be irreversible some day if not already, natural disasters are becoming more prevalent and more severe. Storms, droughts, rising sea levels, and extreme climate can cause natural disasters such as fires, avalanches, and floods. Though there is no direct link between climate change and earthquakes, nor any scientifically proven way to predict earthquakes, there may be potential linkage between the two according to NASA geophysicist, Paul Lundgren. Earthquakes are tremors on the surface of Earth with a wide range of strength, the strongest of which have a tremendous direct impact on the lives of individuals. From having their homes crumble, to roads on which they travel to work destroyed, to losing energy, heat, and water, and even losing loved ones, earthquakes are one of the several natural disasters that can impact a society and its people at the most unexpected time.

When these events occur, people in shock and fear of what they have just experienced are left in a state of vulnerability. As a child looks up to a parent or teacher for assistance, earthquake victims look up to their governments and possibly even outside entities for support to not only survive but recover. The experience of not knowing where one will sleep when their home crumbles or being left in the cold with no electricity or frantically receiving medical attention in a chaotic setting is not particularly unique as throughout history and even in the 21st century millions of people have experienced. Those in regions prone to earthquakes therefore require having an adequate government that may successfully plan for the scenario and execute any protocols necessary to recover and rebuild from the potentially detrimental effects. But if a

government is not in shape to be responsible for the well being of their citizens, then outside entities come into play and supplement the action and delegation that the unfit government lacks.

This thesis looks to examine three case studies in which major modern earthquakes have occurred and how the different governments responded to providing and financing support and recovery on their own and with the help of larger outside organizations for the people. The three cases here are the 2010 earthquake in Haiti, the 2016 earthquake in Ecuador, and the 2011 earthquake and tsunami in Japan. I will look at how the difference in political stability and economic health of a country determines its ability to endure the effects of a natural disaster event, particularly in four categories. The first being emergency relief in the form of setting up shelter for those displaced, providing food and clean water, and restoring or providing electricity to those in the affected areas for light and warmth. The second being the ability to provide medical treatment for those injured. Third being how individual victims are taken care of from an income standpoint with job security or opportunities for adults and education for children. Lastly, I look at how a country's finances stand as a result of the earthquake, and what their ability to finance aid and recovery is. For each of these four sections, I will also look at what outside organizations helped and how so if the country's government was unable to on its own.

The purpose of this analysis is to better understand the relationship between a country's social, economic, and governmental well being to their reliance on outside entities for the safety of their people and recovery of their country. Through a qualitative lens I inspect what entities are of great importance to countries that cannot fend for themselves against natural disasters and potential key trends in these relationships. With the world becoming more susceptible to natural disasters and everyday people being potential victims, it is important to understand the strengths

and weaknesses of political and global institutions for a quick and effective recovery of a region's economy, infrastructure, and future preparedness.



## II. Literature Review

In my literature review I will cover 2 papers, one discussing the UN's decision on where to allocate their Emergency Response Fund and the second being the impact and importance of having sound institutional environments for aid to be effective in positively helping developing countries.

In "Aid Dependence and Governance", political scientist and professor, Deborah Bräutigam covers the importance of the relationship between a good institutional environment and the aid received by that institution. Bräutigam states that a government can faster and more effectively attain their development goals when they receive aid but only if the government is already in a stable position. As many developing countries are not in a strong position governmentally, even high levels of aid yield less impactful results. She looks at reasons as to why some countries are politically weak. Bräutigam looks at the difficulty governments have to retain talented people due to low, insufficient, or inadequate pay. She also looks at the history that may contribute to unstable governments, that being recent emergence from civil wars. More importantly, she looks at how reliance on foreign aid by a country prevents it from becoming self-reliant, contributing to the cycle of poor governance. Her study looks at aid dependence by a country and what that means from a political economy standpoint. Bräutigam finds that large amounts of aid to poor institutions are the reason as to why there is institutional ineffectiveness. She says both the formal and informal rules to how aid is received and what it is utilized for is what prevents governance from occurring and that when contingencies from outside donors rule how aid is used, governments cannot learn to self develop. Looking at Haiti, the literature supports the reality of how despite receiving so much aid, Haiti still stands at the bottom of the

pole in the Western Hemisphere. But then countries that are more developed and sound with their institutions, like Ecuador, can receive and make more impactful results from the aid received.

The second piece is “Factors affecting the United Nations' response to natural disasters: what determines the allocation of the Central Emergency Response Fund?” by Tyler D. Robinson MD, MPH, Thiago M. Oliveira MD, MPH, and Stephanie Kayden MD, MPH published in 2017. This piece looks at what factors affect the United Nations’ response to how it determines the allocation of the Central Emergency Response Fund. They come to find, via study, that the poorer countries which encounter more severe natural disasters are the ones who receive the CERF most often. In distributing funding, the authors state that the distribution of it should be equitable and evidence-based, meaning that a country should truly require it in order to counterattack any immediate needs catalyzed by the earthquake. They find that countries in the Middle East and North Africa, and others who are susceptible to earthquakes, receive the funding the most. With this paper, I will see how it is presented in real world situations by comparing not specifically the CERF aid but aid in general towards the three countries.

### **III. The countries**

In this section context is provided about each country with broad and basic information to have a grasp on each country's well being. Simple geographical information such as location, size, landscape, and seismic information is first provided. Then infrastructure such as buildings, building material and structure, energy, water and waste management, and telecommunications are broadly covered. Moving on to the people of the country, some demographics are provided about the population of each country. At a larger scale, the government of each country is introduced with information about its structure and stability which allows them to provide welfare programs for their citizens or may hinder them from doing so. Lastly, I cover the country's financial health from a GDP perspective and also touch on their reliance and relationships with outside entities. Though there is much more breadth and depth to each country in a number of different aspects to fully understand a country's state of being, the broad contextualization in this section suffices in understanding the countries in relation to each other for the purpose of this thesis.

#### *A. Haiti*

The small country of Haiti with what may be considered a devastating history thus far sits on the West side of an island called Hispanola in the Caribbean with about 27,750 sq km of territory. The island is along the Enriquillo-Plantain Garden fault system making it susceptible to earthquakes. The climate can be considered semiarid and with many mountains throughout the country the landscape is rough. The infrastructure of Haiti is recognized as poor with the quality of buildings being a major factor into why the 2010 earthquake was so devastating. Poorly constructed buildings with few to no regulations or codes and improper foundation and

reinforcement is not uncommon in Haiti with the material being usually concrete. Haiti receives about 80% of its electricity from imported fossil fuels, however, only about 39% of the total population have access to electricity. There is a lack of a modern sewer system and wastewater treatment in the country with less than half of the population having no access to drinking water in 2010. The country's telecommunication system also is unreliable with outdated frameworks, lack of supervision for installing and running telecommunications infrastructures, and limited access to foreign networks. Currently the country has a population of approximately 11.54 million people with a life expectancy of 64 and infant mortality rate of 47 per 1,000 live births according to the World Bank. The organization also estimates that approximately 15% of the workforce is unemployed and 30.32% of people in 2021 lived under the poverty threshold of \$2.15 a day. Haiti's government is classified as a semi-presidential republic and gained independence from France in 1804. The country has had a fragile and unstable government rendering it difficult to create a safe place for its citizens. According to the UN, "Haiti is on the verge of an abyss" as gang violence expands, violent protests arise, food insecurity continues, and many other issues which require Haiti to call on international assistance solely for the protection of their being. Financially, the country holds the title of being the poorest in the Western Hemisphere. While there is much history as to why Haiti struggles to advance economically, for simplicity we will only look at a few key figures. The country has a GDP of 20.94 billion USD and GDP per capita of 1,813.67 USD. Due to the country's fragile economy and government, the country receives aid from outside entities such as the World Bank, the IMF, and the UN to name a few in a variety of ways. Nutritional assistance programs, affordable and accessible education, and general security are some of the things that Haiti receives. As the

country heavily relies on outside organizations for the development and well being of its citizens, it is essentially vulnerable from all angles.

### *B. Ecuador*

The biologically diverse and culturally colorful country of Ecuador with 283,561 sq km is on the Western side of South America with the Andes mountain range cutting through it. Ecuador is known for its immense biodiversity as it has four main regions including, the Galapagos, the *Sierra*, the *Oriente*, and the Amazon while also sitting on the equator. The country sits on the Chingual Cosanga Pallatanga Puna Fault System but the earthquake of discussion today was caused by the Nazca Plate which borders the western coast of South America. Though the infrastructure in Ecuador is stronger overall compared to Haiti, the country only began to adopt building codes in the 1970s yet they are not comprehensive, followed, or enforced which contributed to buildings being damaged. According to the US Energy Information Administration, Ecuador received 62% of its energy from petroleum and other liquids and 34% from hydroelectricity. Of the total population, 98.85% had access to electricity in 2020 according to Our World in Data. The overall water, waste, and sanitation services in the country are more developed than those of Haiti yet still have issues of their own and require further improvement. Similarly, the telecommunications system in Ecuador is strong with the ability to telephone, radio, televise, and access the internet for both domestic and international connections. Moving on to the demographics of the country, the country has a population of 17.89 million people with a life expectancy of 77 years and an infant mortality rate of 11 per 1,000 live births in 2020 according to the World Bank. Of the total workforce, 4.5% were unemployed in 2021 and 6.5% lived under the poverty line in 2020. The country's government is

classified as a presidential republic and gained independence in 1822 from Spain. The government is more sophisticated and less reliant on others compared to Haiti but still faces its own challenges of mitigating protests, violence in certain areas, and several human rights issues. Looking at some key figures in finance, Ecuador has a GDP of \$106.2 billion USD and GDP per capita of \$5,934.88 USD placing it near the “Middle income” category according to the World Bank. The country has a form of unemployment insurance, affordable public and private health insurance, some nutritional assistance programs, and affordable and accessible education. However, the country still partners with outside entities such as WFP, IMF, and the World Bank for some programs and financial aid.

### *C. Japan*

Considered to be an economic miracle for its incredibly fast economic growth from the mid to late 1900s, Japan is a string of islands in East Asia taking up 377,917 sq km. Japan is seismically active because it sits on 4 tectonic plates; the Pacific, North America, Eurasian, and Filipino. This causes the country to be “one of the most seismically active areas in the world” according to a US Geological Survey geophysicist. Yet Japan has buildings that are engineered to withstand minor earthquakes with no repairs required and with large earthquakes they are considered successful if there are no human casualties. Since the early 1900s, Japan has established and enacted laws and codes for building safety while also updating them throughout the years. According to the National Bureau of Asian Research, about 77% of Japan’s electricity is imported fossil fuels. The country also relies on nuclear energy and several power plants in the country to provide electricity to diversify its reliance on energy imports. The water and wastewater management systems, telecommunications, and sanitation services in the country are

well developed with practically all residents receiving access to these services. The country has a population of 125.7 million people with an average life expectancy of 85 years and an infant mortality rate of 2 per 1,000 live births. The unemployment rate in Japan was 2.8% in 2021 with approximately and only 0.7% of the population lived under the poverty threshold of \$2.15 a day according to the World Bank. Moving on to the government, considered a parliamentary constitutional monarchy, is strong enough to sustain itself with little need from outside entities. Japanese citizens can receive several benefits such as access to welfare programs, free compulsory education, and universal education to name a few. The government is considered to be in the 90th percentile of government effectiveness when compared to all other countries' governments according to the World Bank Governance Indicators. Financially the country has had tremendous growth over a short amount of time and today has a GDP of \$4.937 trillion USD and GDP per capita of \$39,285.16 USD, placing the country very close to the "High Income" bracket according to the World Bank. Given Japan is an economically strong and governmentally sound country, it offers a wide range of services and programs for its citizens as well as helps other entities like the IMF with financial contributions for their mission to help low income countries.

#### **IV. The events**

In this section, I will cover the natural disasters that occurred in each country, respectively. These disasters were chosen to be examined due to their large magnitude of impact on the countries' economies, infrastructures, citizens of the countries, and the world as an audience. All disasters recently, occurring in the 21st century which allows for access to more information about each event. It is important to note that there have been other natural disasters in the countries between then and present day but due to lesser severity in terms of impacts to the country, they will not be looked at in depth. But before I go into the details of each event, I will cover what an earthquake is and what the potential impacts on the environment and health of individuals may be to better grasp the magnitude of these disasters.

##### *A. Earthquake & Tsunami Impacts*

Earthquakes are events in which tectonic plates move along fault lines causing the Earth's surface to shake and can cause damages depending on the strength of the movement. They are measured in a number of ways with different scales, the most commonly known are the Richter Scale and Moment Magnitude scale, the latter being more developed, with a range of 1 to 10. Though at the moment of the event, earthquakes may leave physical damages to a country's infrastructure and people's bodies, there are also a number of environmental, social, and mental impacts not often thought of because the visualization of physical damages are so overpowering. When buildings collapse, depending on the buildings' materials and contents, there may be air pollutants released into the atmosphere harming not only the environment but also the respiratory system of nearby people and potentially causing long term impairments to their health. Vehicles may also contribute to pollution via tank leaks and carbon emissions from fires if impacted hard



enough from building collapses. Water distribution, irrigation systems, and waste management systems are vulnerable to damages caused by both the earthquake and fires which would mean people in affected areas are unable to obtain clean water and potentially allow diseases to spread more easily. Electrical and gas systems may suffer from short circuits, leaving people in blackouts with the inability to refrigerate food, access heat, and receive cell service. All these physical damages to electrical and gas systems may cause chemical and even radioactive contamination in the area which would affect people not only physically but also mentally.

The medical impacts of earthquake victims can vary greatly in both visible and non-visible manners, posing huge risks to affected people if they do not have access to medical treatment in the chaos of the event. Injuries sustained from surviving an earthquake may be acute and require minimal care, making it easy for an individual to recover. However, depending on the location of a person during an earthquake and their surroundings, a person may suffer from severe and potentially life-threatening injuries. Those can include, but not limited to; head trauma, spinal cord injury, wound infection, crush injury, musculoskeletal injuries, bone fractures and breaks, and respiratory failure. Treatment for these physical ailments may be difficult due to limited medical equipment, supplies, and medics. Additionally, experiencing an earthquake itself can also lead to mental distress in a variety of forms. At the moment people may be in shock or disbelief, unable to process what is happening to react appropriately. There may be anxiety and fear of aftershocks days after the event which can contribute to somatic signs and then depressive symptoms. From there some who do not have social and emotional support may resort to alcohol consumption, social isolation, and even suicide. Some may also be distraught at seeing their loved ones injured or dead even if they themselves sustain no injuries.

Tsunamis are another natural disaster that occurs from earthquakes in the ocean which cause enormous waves that are tens and sometimes even hundreds of feet tall at their peak. When the ocean meets land, the waves crash into the coast and can travel inland damaging whatever may be in its path. Destruction of infrastructure and housing can occur as well as contamination of food and water supplies according to the Centers for Diseases Control. People may also sustain injuries from being hit by the waves and collisions against buildings, cars, other people, and any sort of debris. However, the majority of deaths in a tsunami are caused by drowning. The act of enduring a tsunami can cause similar impacts on the infrastructure, people's health, and even environmental health to those of earthquakes.

The range of potential impacts and damage on people's physical, emotional, and mental health coupled with the damage done to the environment and infrastructure demonstrates just how harmful and deadly a powerful yet short act of nature can be. Though more can be said about how these impacts affect individuals in the long term with their health and even ability to work, I only look at these in a brief manner. This section is to serve as a backbone to understanding the potential magnitude of these earthquakes and the variety of injuries victims may have endured.

#### *B. January 12th of 2010*

Much of the world was left in shock when they received news of the earthquake that shattered the tiny country of Haiti on January 12th of 2010 via televised media coverage. The 7.0 magnitude, 35 second long earthquake near the country's capital, Port-De-Paix, had a mortality rate of about 220,000 people, 300,000 people were injured, and 1.5 million people were left homeless according to the United Nations. A report presented by the UN Development

Programme 1 year after the event estimated the total value of damage and losses of the event being \$7.8 billion, of which approximately 73% was suffered by the private sector and 27% by the public sector. Destruction of infrastructure included 105,000 homes destroyed completely and over 208,000 damaged. Other collapsed and unstable buildings include 1,300 educational institutions and over 50 hospitals and medical centers. Given the earthquake struck the country's capital, important government buildings including the President's Palace, Parliament, the Law Courts, and a majority of the Ministry and public administration buildings were destroyed. The country's main port and airport were unusable after being damaged and covered in rubble. Haiti's earthquake is considered to have been one of the deadliest in history and brought to light the detrimental state the country was in prior to the earthquake and how much progress Haiti has to make to catch up with the rest of the world.

### *C. April 16th of 2016*

On April 16 of 2016, screens were filled with news regarding the 7.8 earthquake that hit Ecuador's coast, severely impacting "mainly in areas of high physician and socio economic vulnerability". The main provinces that were affected were Manabí, Esmeraldas, Santa Elena, Guayas, Santo Domingo, and Los Rios. Most of the areas impacted have, prior to the earthquake, had poverty levels higher than the national average at the time according to the Ecuadorian government's report on the event. The earthquake resulted in over 650 lost lives, over 6,000 injured, and left 80,000 homeless according to the World Bank. According to the Ecuadorian government, the event resulted in a \$3.3 billion cost to reconstruct, a \$515 million USD loss from lost economic flows, and over 21,800 lost jobs lost. An estimated 35,000 homes were destroyed or damaged by the event according to the 1 year report conducted by the International

Federation of Red Cross and Red Crescent Societies. The World Bank also states that 51 healthcare facilities were destroyed in addition to 886 education centers. This resulted in about 120,000 children having their education halted for several months and about 593,000 people having very limited access to healthcare and resorting to other means.

#### *D. March 11th of 2011*

Unlike the prior two events discussed, the earthquake on March 11, 2011 occurred off the shores of Japan and caused a tsunami with waves of up to 132 feet tall to be the main cause of destruction and displacement. The event has then been deemed as the Great East Japan Earthquake. There were 6 prefectures impacted by the tsunami with the 3 main being Iwate, Miyagi, and Fukushima. This event resulted in much environmental and infrastructural damage in addition to the high risks of contamination from radioactive releases from damaged nuclear power plants. The country is in a highly seismic area and according to the USGS, Japan has the “densest seismic network in the world” which allows for more information to be recorded due to the frequency at which they occur. The 9.1 earthquake had a mortality rate of 19,729 people, 2,559 people missing, 6,233 injured, and 470,000 were left homeless according to the official government website of Japan. The government estimates the damage to cost \$154 billion USD and the World Bank estimates it may be up to \$235 billion which would place this event as being the costliest due to natural disaster in history. According to the Japanese government, there were 121,996 completely destroyed buildings, 282,941 half destroyed buildings and 748,461 partially destroyed buildings. About 80% of hospitals in the 3 prefectures were destroyed at least partially if not completely according to the Ministry of Health, Labour and Welfare. There were a total of

6,284 public schools damaged to varying degrees according to the Ministry of Education, Culture, Sports, Science and Technology.

Unlike Ecuador and Haiti, Japan has 33 nuclear power reactors that are deemed as operable according to the World Nuclear Association. There were 4 nuclear power stations with 14 units total near the epicenter of the earthquake which were all automatically shut down at the time of the earthquake. Within the first hour of the main shock they were all hit by the tsunami according to the World Bank. This meant that the sites lost some safety equipment and power which meant they were unable to continue the cooling process that nuclear energy production requires to prevent nuclear meltdowns. In return there was release of radioactive materials causing evacuations and detrimental pollution. The UN states that about 160,000 residents in Fukushima were evacuated and of those about 60,000 were removed from the prefecture due to the hazardous radioactivity levels. Agricultural products were contaminated and deemed unsafe to consume and even gravel used to make concrete for housing was contaminated, exposing people whose homes were made from that material to radioactivity. It is unknown what the long-term effects from this disaster will be environmentally and health wise on the area and its residents which is why the government is monitoring people and the environment for 30 years.

## V. The Safety Nets

It is to be understood that these three countries vary vastly in a number of factors, from their geography to their government stability, to their financial health. It would be difficult to try to equate them but it can be acknowledged that they were all impacted by major natural disasters that destroyed infrastructure, caused death and injury to people in the area, and negatively impacted their respective economies. However, at the moment of the event and shortly after, within days, weeks, and even months, these countries needed to take care of their people by their own means and with the help of others. I will look at four different categories regarding how the government of each country took care of it. But if the government was unable to do so themselves, I will look at help received from outside entities. The four sections will be shelter, food & water, and electricity, then healthcare, followed by jobs, and lastly financials. But before doing so, I will introduce some of the major organizations that played a big part in the relief and recovery in one way or another.

### *A. Outside organizations*

There were several entities that aided the countries' immediate response to the disaster as well as helped with the short and long term recovery. But the extent to which they helped and the manners in which they did so varied by country and their own capacity to take care of themselves. We will quickly look at who were some of the major organizations as well as a few smaller organizations. The organizations I will look at in this section include the United Nations (UN), the International Monetary Fund (IMF), the World Bank (WB), the World Food Programme (WFP), and the United States Agency of International Development (USAID) to name a few, however, there were several others who contributed to a country's recovery. I will

touch on basic information regarding the organizations' beginning and purpose or purposes to get an idea of how they could be of aid to a country.

### 1. United Nations System

The United Nations (UN) System comprises several funds, programmes, and specialized agencies. According to the official UN website, programmes and funds are financed through voluntary contributions while the Specialized Agencies are funded by a mix of voluntary and assessed contributions which are dues required of a country in order to maintain its membership, it is calculated with information about a country's wealth and population. The UN Specialized Agencies are independent organizations that work in collaboration with the UN via negotiated terms as some of them existed prior to World War I, some were associated with the League of Nations, some were created simultaneously with the UN, and others were created by the UN in order to meet evolving needs. This system varies vastly in terms of services provided and may be deemed intricate, with all functions aiming to improve and work to solve specific issues wherever possible and whenever needed.

### 2. United Nations

Near the end of World War II in 1945 there were 50 countries that sent representatives to the United Nations Conference on International Organization in San Francisco, California for 2 months to draft and sign the United Nations (UN) charter and create the UN in hopes to prevent another world war. After being ratified it became official on October 24, 1945. Today, the organization comprises 193 member states and aims to address and solve global issues that cannot be solved by a single country. The 5 main goals that the UN aims to target, as stated on

their official website, are to “Maintain International Peace and Security”, “Protect Human Rights”, “Deliver Humanitarian Aid”, “Support Sustainable Development and Climate Action”, and “Uphold International Law”. The variety of targets they have exemplifies how sophisticated the organization is by simply having the capacity to work on these goals. The level of assistance they provide varies, again, by the country’s own ability to take care of themselves or if the country specifically requests for assistance.

### 3. International Monetary Fund

The International Monetary Fund (IMF) was founded in 1944 and currently has 190 members. The fund aims to achieve growth and success of its member countries via supporting economic policies to increase productivity, job opportunities, and overall economic well-being. Since the organization is a Specialized Agency, member countries have to pay a quota to remain in the organization and receive aid if ever needed when in financial difficulties. The quotas vary by country depending on their size and level of financial health, hence the three countries I will be examining have different quotas. Currently the fund holds \$1 trillion USD which is available for countries to borrow from. But the IMF’s currency is Special Drawing Rights (SDR), whose value is calculated daily by “summing the values in U.S. dollars, based on market exchange rates, of a basket of major currencies (the U.S. dollar, Euro, Japanese yen, pound sterling and the Chinese renminbi)” and is not truly a currency. Loans from the fund are typically conditional, they are distributed in installments for security, and are given with the intention of helping a country recover in a healthy and sustainable manner while also ensuring the loan can be paid back without harming the borrower. The IMF also has more tailored support for low income countries (LICs) which can be both financial and nonfinancial.



#### 4. World Bank Group

The World Bank Group (WBG) was originally founded as the International Bank for Reconstruction and Development (IBRD) in 1944 and now consists of 5 development institutions with aims to reduce poverty, support economic growth, and overall improve the quality of living standards for people in developing countries by providing financial products and advice. The Bank's 5 groups are the Int. Bank for Reconstruction and Development (IBRD), the Int. Centre for Settlement of Investment Disputes (ICSID), Int. Development Association (IDA), Int. Finance Corporation (IFC), and the Multilateral Investment Guarantee Agency (MIGA) and are considered to be Specialized Agencies except for the ICSID and MIGA according to the UN definitions. In order to join the World Bank, a country must first join the IMF and then membership to IDA, IFC, and MIGA are conditional on membership in the IBRD. There are between 158 members and 189 members in the different groups.

#### 5. World Food Programme

The World Food Programme (WFP) has a mission to eradicate hunger and malnutrition as the largest humanitarian agency in the world. It uses food assistance to save lives, build peace, create stability, and allow for prosperity in a number of regions. According to the organization's official page, the WFP has helped 128.2 million people in over 120 countries and territories. Their work is usually done on the ground and helps by making food more accessible and affordable, making nutrition healthier, and even supporting small farmers by purchasing their crops for the organization's programs. WFP's work is crucial to working on preventing food related issues and ameliorating food conditions for those who need it by continuously improving

food security via programs, helping with emergency relief, and assisting with climate related issues to name a few.

#### 6. United States Agency of International Development

The United States Agency of International Development (USAID) was created in 1961 with the purpose of tying together several organizations that provide foreign assistance under one organization. The agency uses its funding from Congress and partnerships to “save lives, reduce poverty, strengthen democratic governance, and help people emerge from humanitarian crises and progress beyond assistance”. For the fiscal year 2023, USAID received a national budget request of \$60.4 billion USD out of the total \$1.6 trillion in discretionary spending, meaning about 3.7% of the national federal discretionary spending is available for foreign aid. The organization targets 12 different sectors in order to promote self reliance to other countries by leading over 20 US government agencies.

#### 7. Other organizations

In addition to many of these major, more well-known organizations, there were several other entities that played a part in the recovery of these countries from their natural disaster events. Charities, religious groups, and local organizations in some instances were crucial to help by providing aid in the form of supplies services as we will later cover.

## *B. The Relief*

### 1. Shelter, Food & Water

In Haiti, the UN-Habitat group led the task to set up camps for those who were displaced. Due to the government having its own buildings destroyed, the planning on how to approach the situation was heavily reliant on other organizations like the UN and the Red Cross along with some other organizations. Those who were able to move back to their places of origin were encouraged to do so and those who could not remained. The access to having a clean and controlled environment is something that has helped the population and it is why it has been so difficult to return people to their places of origins. Outside entities like the UN Health Cluster were also responsible for establishing clean water systems for those who were impacted by the earthquake with the assistance of the government. Though the government relied on the UN for help with establishing shelters, water, and food for its citizens it also attempted to be part of the process.

The earthquake in Ecuador did have several buildings fall and homes damaged and unsecure so the government relied on some assistance with establishing shelters for those who could not return home. The process of assessing the damage and reconstruction was led by the government in partnership with the American Concrete Institute who sent in some experts. Food and water was also provided to victims in a combination of both local assistance and international assistance. Local food vendors would be contributing to the meals that victims were distributed with and smaller religious organizations would also send in food supplies.

When buildings were damaged and people were left homeless, Japan housed those displaced in areas such as local schools and hospitals temporarily while the government created 10,000 evacuation shelters in the 3 affected prefectures. Unlike Ecuador and Haiti, Japan was

self reliant in providing shelter to its impacted population while also being able to provide people with food and water.

## 2. Healthcare

In Haiti, the World Health Organization led the Health Cluster, the main coordinator of all international health organizations that arrived to assist Haiti, in various forms at the end of January of which there were 396 according to the UN. There were 17 rural hospitals that provided medical care to thousands of patients within the affected areas and 11 of those were controlled by the UN military. Medical supplies and equipment were sent in and organized by the Health Cluster. There were also programs to address the pre existing efforts to mitigate and control endemics, like cholera and HIV spread, by organizations like WHO, UNICEF, and other NGOs with the collaboration of the Ministry of Public Health and Population.

Services and supplies in Ecuador were composed of a blend of both national resources and outside entities' support. The Ecuadorian Red Cross led the response to the disaster and was able to provide pre-hospital and primary healthcare to victims in addition to psychosocial support. Additionally, local medical professionals and volunteers assisted with assessing the needs of those impacted by the organization and also providing care, delivering medical supplies to health facilities. But the country also received 32 tons of emergency shipment containing medicine, medical supplies, and emergency kits to be distributed in more remote areas from Americares, a charity organization.

The medical response to Japan's earthquake came from the country itself. Japan dispatched 380 Disaster Medical Assistant Teams (DMATs) in the first 11 days from the earthquake date. These teams not only provided emergency medical assistance, but they also served as rescue teams by transporting inpatients in hospitals that were isolated by the tsunami to

adequate hospitals. Much of the medical treatment was for chronic diseases as the tsunami did not have significant amounts of wound injuries because most victims of the tsunami would have drowned. Additionally, the Japanese Red Cross sent in teams to provide emergency medical services and it also received \$10 million from the American Red Cross to support their response activity. Unlike Haiti, Japan did not need to rely on outsiders for assistance with supplies or teams as it had resources in place to dispatch whatever was needed to help those in the affected areas, most of which require more help with accessing their medication that may have been lost or finding the lists of what medication they were taking in the instances where someone forgot.

### 3. Jobs & Education

With already poor working conditions and opportunities, many victims of the earthquake in Haiti were left with virtually no work or any form of income insurance set in place by the government. So most of the programs that were set in place to provide work or education for victims were set up by outside entities, such as by the UN and those programs were “Cash or Food for Work” and Labour-Intensive Programmes (HIMO). For children, the Education Cluster allowed for over 1 million children to receive education in the camp shelters. Over 1,400 temporary learning spaces were set up and 3,000 teachers and education personnel were given psychosocial training by UNICEF. Schools have been rebuilt to give access to 160,000 children a more proper learning environment. There were also 117 semi-permanent schools rebuilt in 2010 and by 2011 a total of 200 schools were to be completed.

In Ecuador several people who lost their jobs were left stranded and there was no formal employment offered as there was in Haiti nor was there sufficient income coverage from any form of insurance. The country began an unemployment insurance benefit in March 2016 but with a study conducted by Xavier Jara in 2018, it was found that the protection of workers is

very limited and would not cover more than a quarter of the labor force. With inadequate protection or opportunities, people had to resort to taking out loans or resorting to receiving informal help from family and friends. As for children, with up to 120,000 children with disrupted education, UNICEF came in to provide aid. The organization installed 50 temporary learning spaces for a capacity of about 20,000 children and 700 School in a Box kits for 60,000 kids to benefit from. In this regard, the country lacks resources for its citizens, particularly for the working class, but for children's academic necessities it was able to receive help.

Japan has a thorough and extensive system that protects their working class in a number of ways that is incomparable to the benefits and resources both Haiti and Ecuador could provide. In addition to having insurance to protect those who have lost their jobs, they also fund additional training or education for a person to further develop themselves. With the earthquake being devastating to so many, regardless of status or income, the government decided to ease the requirements one must meet in order to be eligible for unemployment benefits. They also lengthened the time for which a person can remain on unemployment insurance and subsidized the salaries of workers for employers to maintain their employment. For those in Japan, it was relatively easier to support oneself financially on account of the government providing several resources.

#### 4. Financials

As an economically weak country, Haiti required lots of financial aid to not only fund the relief, assess the damage, and finance the recovery process, but also to keep the country from plunging into more severe debt. A day following the event, the World Bank announced it would provide a \$100 million grant to be distributed between 14 existing projects and newly created

ones as a response to the earthquake. The World Bank also sent in a team of experts to work with the government in order to determine the needs and losses while also building recovery and reconstruction plans. This was made possible by the \$250,000 allocated by the Global Facility for Disaster Reduction and Recovery (GFDRR). Two months later on March 31st, the World Bank announced \$479 million would be available to support the country's recovery and further development. Of this, \$151 million would be in the form of grants, \$39 million would be debt cancellation to the IDA thanks to contributions from several other countries, and \$60 million would be "in investments" from the IFC. Then in May, the World Bank announced the remainder of Haiti's debt, \$36 million, to the IDA would be cancelled to support longer-term development and recovery. Then in August, the organization disbursed \$55 million of which \$30 million was in grant form to meet the reconstruction urgency as the country had revenue shortfalls due to the event. The IMF also provided lots of financial assistance to Haiti with the decision to approve \$114 million for the country to have funds in January to "restore basic financial services and begin to rebuild the country", and it being interest free and having a 5 ½ year grace period before payments are required. Later in July, the IMF approved total debt cancellation of approximately \$268 million along a 3 year arrangement under the Extended Credit Facility (EFC) to contribute to the support of reconstruction and growth of the country. The EFC arrangement of about \$60 million is intended to assist the country's international reserves and the central bank's ability to sustain the local currency from swings in its values. This aid also has a 5 ½ year grace period with 0.5% interest rate beginning at the end of 2011.

With a relatively stronger economy, Ecuador did not require as much assistance as Haiti did and even turned to its citizens for assistance. Days after the event, the World Bank agreed to provide a \$150 million loan as part of a multilateral loan package to support emergency recovery

to the country. Around the same time, in mid April, the Inter-American Development Bank activated a \$300 million loan alongside a \$200,000 donation to help with good water, medicine, and shelter. That same month the UN Refugee Agency launched a Flash Appeal of \$73 million dollars of which only 37.8% was met by donors. Then in July, the IMF disbursed a \$364 million emergency loan to help the country finance relief and its reconstruction efforts under its Rapid Financing Instrument. The loan was a single disbursement with no conditionality and a grace period of under 4 years and a 5 year maturity. According to the former minister of finance, the IMF loan went to the Central Bank of Ecuador to strengthen its reserves and help with the immediate payments from the earthquake. The country also received a total of \$5.45 million in funding for humanitarian assistance by 2016 according to the US Embassy and Consulate in Ecuador for programs run by several organizations including Save the Children, Adventist Development and Relief Agency (ADRA), Catholic Relief Services (CRS), and World Vision. In order to fund the relief efforts, the Ecuadorian government imposed an increase of 2 percentage point increase in value-added-tax rate for the period of a year. They also created a one-time solidarity surcharge tax on wages, corporate profits, and personal assets. According to the Organisation for Economic Co-Operation and Development (OECD), a total of \$402 million USD was collected as part of tax revenue for Ecuador from the 2% contribution on VAT in 2016 and though a intended to be on a one year timeline, \$412 million was collected in 2017 and \$4 million in 2018 by the government. The total amount of solidarity contributions on remuneration, profits, equity, and foreign assets in 2016 ended up being \$758 million USD and these taxes were also collected in the following years though at smaller amounts.

Japan, as the economically strongest of the three countries, did not receive nor require assistance from the World Bank or the IMF, two entities that played a major part in both Ecuador



and Haiti's relief efforts. Instead the country passes a supplementary budget of around 0.8 percent of the GDP to address any immediate needs. Then they passed a larger supplementary budget with the goal to "address downside risks and catalyze private spending" according to the IMF. Though the country did not receive financial assistance from the outside entities, it was provided with recommendations on how to approach their finances, spending, and revenue plans to tackle this issue. The IMF recommended that there be new tax measures, diminishment of public debt, ways to cut expenditure, and lengthening maturity of public debt to name a few. Despite the cost of this event, Japan was still able to contribute to the World Bank and IMF quotas, demonstrating its economic strength and ability to finance the recovery of the GEJE on their own.

## **VI. Discussion**

It is evident the level of reliance on outside organizations varies greatly between these 3 countries and much if not all of that is attributed to their government and economic stability. In the case of Haiti, several organizations rushed to help the country and the provision of emergency relief was practically entirely dependent on outside organizations irrespective of their size. For Ecuador, there is a blend of aid received from outside and government assistance to the victims. As for Japan, the country essentially acted independent and utilized its own resources to address the earthquake's impacts. The manner in which these countries responded to these events then brings to light the issue of just how essential a sound and stable country must be to care for itself to further avoid any potentially deeper debt.

One of the major findings from this project is the phenomena of "double debt disaster" and how it makes for already economically vulnerable entities, in this case countries and/or its citizens, place themselves in an even more precarious position. The double debt disaster can be defined in short as the act of having to pay off pre-existing loans but also requiring to take out new loans to cover new issues, not necessarily doubling the amount of debt but having two lines which then need to be paid off. Though the country of Haiti received billions in aid to support their recovery efforts, it still finds itself as being the poorest country in the Western Hemisphere. When unable to finance its own issues, the country is left with the only option of taking out loans, but if they are unable to pay back those loans then it becomes extremely difficult for them to take out more loans. The country is then left with the option to print out more money causing higher inflation and creating a vicious cycle from which it is difficult to escape. This can also be seen at a smaller scale with everyday people. Those who in the event of the earthquake had their businesses, homes, and other assets destroyed, would need to potentially resort to loans as well.

In order to sustain and rebuild their businesses some would require financial assistance but those who also had pre-event debt would simply be piling on more. When having liabilities, it is more difficult for individuals to be approved for loans and if they are, those loans are typically small and not helpful in the long run. In the instance of Haiti, their debt cancellation by both the World Bank and the IMF may have mitigated the effects of the double debt disaster.

As for the everyday individual, unless the government is sound and has the resources to finance the recovery and reconstruction without putting too much strain on the individual, they suffer from the lack of stability their government has. Haiti in essence has had several social issues ranging from health to gang violence coupled with the poor economy making it difficult for anyone to progress in virtually any way. As for Ecuador, the country's decision to have higher taxes for their citizens on the VAT, it causes much more harm to lower income people. As VAT is regressive, those with less income bear the burden of the government's attempt to fund relief for victims. While turning to citizens is a feasible way of obtaining funds, governments should be weary of who is being impacted the most and in a middle income country, taxing the poorest the most is potentially placing them in a cycle of poverty which could be difficult to escape on one's own.

These countries all face their own issues which may disrupt their ability to further progress and take care of their citizens. Haiti with poor governance finds it difficult to instill safety in communities against gangs, to treat and prevent endemic diseases, and to place itself in a comfortable position economically. Ecuador has several societal issues with a somewhat fractured population in terms of difference in political and ideological beliefs due to a large and prevalent indigenous community around the country. The country also has in recent years faced immigration issues with refugees from its neighboring country of Venezuela. Japan, despite its

overall strong economy and politically sound government, relative to much of the world's other governments, faces a large issue of an aging population. The country is coming to a point where affording to properly care for its older citizens is going to have a strain on the economy and they are faced with seeking out solutions.

On the other hand, these and other countries may also face similar, and sometimes the same, problems. The most evident example being the Covid-19 pandemic. But also going back to the beginning of this paper, the threat of climate change and what it may bring environmentally may be experiences a lot of countries will face together. For instance, floodings around coastlines are almost inevitable given rising levels and would affect coastal cities irregardless of their government or economic health, assuming they had not prepared beforehand. Cities like Miami, Shanghai, and Venice to name a few would face rising sea levels first. If there are no preventative measures to this scenario, many coastal cities of a country would rely on other cities in their respective countries to sustain them at least in the short term before plans are developed and executed.

Looking at these cases it can also be noted that aid is provided to the countries in one way or another, it may be financial or intellectual. Regardless of the type of aid that is provided, another issue regarding the process of recovery is the effectiveness of the aid. Before that is the ability to coordinate and implement the aid or determine ways in which the aid would be of greatest utility. Though efficacy of the aid is not something looked at in this paper, it is just as important if not more important to the recovery of a society. Poor mismanagement, coordination, and even record keeping would hinder a country from moving forward as swiftly as possible.

## **VII. Conclusion**

Examining the events that occurred in Haiti, Ecuador, and Japan, their impacts, and the response from governments and outside entities has brought to light the relationship between a country's well being and reliance on outside entities. Ideally there would be a universal guide on how to address an earthquake's impacts and who to rely on for what needs but with countries being different in a number of ways from each other there can be no one guide to help everyone equally. Within each country it can also be difficult to have a set guide on how to respond due to changing economies, governments, and even social movements which is why risk management plans evolve with time, experience, and introduction of technologies and resources. While there remains to be, and likely never will be, a universal guidebook on how to approach a country in such a weak state following a natural disaster, the aid in any way, shape, form, or quantity is rendered practically useless unless effectively distributed and received by the people who need it most.

As there will continue to be natural disasters throughout the course of our history, the manner in which we act with providing, utilizing, and receiving aid must improve. All forms of aid may be valuable to a country but those countries who are in weaker states will have heavier burdens to themselves and potentially those from whom they borrow. The cycle of poverty that countries like Haiti exist in are difficult to escape from and with unavoidable future disasters on the way, it is important to note just much farther back the country will fall. But thanks to larger international organizations and governments of more prosperous countries, the damage poorer countries endure are slightly mitigated. We must learn from our past experiences, accept what may become a reality, and only then can we get better at helping our vulnerable populations.

## References

- Abassi, Logan. 2022. "UN marks anniversary of devastating 2010 Haiti earthquake." UN News. <https://news.un.org/en/story/2022/01/1109632>.
- Almeida, Tatiana. 2021. "Haiti Earthquake | Facts & FAQs." World Vision Canada. <https://www.worldvision.ca/stories/disaster-relief/2010-haiti-earthquake>.
- American Red Cross. 2012. "JAPAN EARTHQUAKE AND TSUNAMI." Red Cross. [https://www.redcross.org/content/dam/redcross/atg/PDF\\_s/Chapters/Seattle/JapanEarthquakeTsunami\\_OneYear.pdf](https://www.redcross.org/content/dam/redcross/atg/PDF_s/Chapters/Seattle/JapanEarthquakeTsunami_OneYear.pdf).
- Angulo, Erika. 2015. "What Does Haiti Have to Show for \$13 Billion in Earthquake Aid?" NBC News. <https://www.nbcnews.com/news/investigations/what-does-haiti-have-show-13-billion-earthquake-aid-n281661>.
- Bartels, Susan, and Michael VanRooyen. 2011. "Medical complications associated with earthquakes." Sciencedirect. [https://www.sciencedirect.com/science/article/pii/S0140673611608878?ref=pdf\\_download&fr=RR-2&rr=774f71c0ca517e46](https://www.sciencedirect.com/science/article/pii/S0140673611608878?ref=pdf_download&fr=RR-2&rr=774f71c0ca517e46).
- Becker, Marc. n.d. "Ecuador and Galapagos - Country Profile." Nations Online Project. Accessed December 5, 2022. <https://www.nationsonline.org/oneworld/ecuador.htm>.
- Bräutigam, Deborah. n.d. "Aid Dependence and Governance." Openaid. Accessed December 5, 2022. <https://eba.se/wp-content/uploads/2021/04/2000.1-Aid-Dependence-and-Governance.pdf>.
- Chalk, Nigel, and Otaviano Canuto. n.d. "Ecuador: Purchase Under the Rapid Financing Instrument-Press Release; Staff Report; and Statement by the Executive Director for." International Monetary Fund. Accessed December 5, 2022. <https://www.imf.org/external/pubs/ft/scr/2016/cr16288.pdf>.
- "Confluence Mobile." n.d. Confluence Mobile - Digital Logistics Capacity Assessments. Accessed December 5, 2022. <https://dlca.logcluster.org/display/public/DLCA/3.4+Ecuador+Telecommunications>.
- "Country Analysis Executive Summary: Ecuador." 2021. EIA. [https://www.eia.gov/international/content/analysis/countries\\_long/Ecuador/ecuador.pdf](https://www.eia.gov/international/content/analysis/countries_long/Ecuador/ecuador.pdf).

- “Details of Tax Revenue - Ecuador.” 2022. OECD Statistics.  
<https://stats.oecd.org/Index.aspx?DataSetCode=REVECU>.
- Drash, Wayne. 2011. “Why Japan relies on nuclear power.” CNN.  
<http://www.cnn.com/2011/WORLD/asiapcf/03/14/japan.nuclear.history.qa/index.html>.
- “Earthquakes.” n.d. World Health Organization (WHO). Accessed December 5, 2022.  
[https://www.who.int/health-topics/earthquakes#tab=tab\\_2](https://www.who.int/health-topics/earthquakes#tab=tab_2).
- “Ecuador: Earthquake - Emergency Plan of Action (EPoA) Final Report, Operation no. MDREC012 - Ecuador.” 2018. ReliefWeb.  
<https://reliefweb.int/report/ecuador/ecuador-earthquake-emergency-plan-action-epoa-final-report-operation-no-mdrec012>.
- “Education in Haiti.” n.d. Global Partnership for Education. Accessed December 5, 2022.  
<https://www.globalpartnership.org/where-we-work/haiti>.
- “Evaluación de los Costos de Reconstrucción.” 2016. Planificacion.  
<https://www.planificacion.gob.ec/wp-content/uploads/downloads/2016/08/Evaluacion-de-los-Costos-de-Reconstruccion-Resumen-Ejecutivo.pdf>.
- FTS. n.d. “Ecuador Earthquake Flash Appeal 2016.” FTS OUNCHA.  
[https://fts.unocha.org/appeals/522/flows?order=flow\\_property\\_simple\\_2&sort=desc](https://fts.unocha.org/appeals/522/flows?order=flow_property_simple_2&sort=desc).
- Gavett, Stephen H. n.d. “Physical characteristics and health effects of aerosols from collapsed buildings.” PubMed. Accessed December 5, 2022.  
<https://pubmed.ncbi.nlm.nih.gov/16551219/>.
- Gracia, Nancy L., and Paolo Avner. 2018. “Daily commute in Haiti: How do people get to work?” World Bank Blogs.  
<https://blogs.worldbank.org/latinamerica/daily-commute-haiti-how-do-people-get-work>.
- Grigoli, Francesco. 2016. “Ecuador Gets \$364 Million IMF Loan to Tackle Earthquake Reconstruction.” International Monetary Fund.  
<https://www.imf.org/en/News/Articles/2016/07/21/18/20/NA070816-Ecuador-Gets-364-Million-IMF-Loan-to-Tackle-Earthquake-Reconstruction>.
- Government of the Republic of Haiti, United Nations, and World Bank. 2010. “Haiti Earthquake PDNA: Assessment of damage, losses, general and sectoral needs.” GFDRR.  
[https://www.gfdr.org/sites/default/files/GFDRR\\_Haiti\\_PDNA\\_2010\\_EN.pdf](https://www.gfdr.org/sites/default/files/GFDRR_Haiti_PDNA_2010_EN.pdf).

- GZERO Staff. 2022. "Haiti stuck in a "vicious circle," says IMF economist." GZERO Media.  
<https://www.gzeromedia.com/global-stage/crisis-recovery/haiti-stuck-in-a-vicious-circle-says-imf-economist>.
- H. Jara, Xavier. Unemployment Insurance And Income Protection In Ecuador, WIDER Working Paper 2018/151 Helsinki: UNU-WIDER, 2018.
- "Haiti approves a new Risk and Disaster Management Plan - Haiti." 2020. ReliefWeb.  
<https://reliefweb.int/report/haiti/haiti-approves-new-risk-and-disaster-management-plan>.
- "Haiti - Energy." n.d. Privacy Shield. Accessed December 5, 2022.  
<https://www.privacyshield.gov/article?id=Haiti-Energy>.
- "Haiti 'on the verge of an abyss', warns UN rights chief." 2022. UN News.  
<https://news.un.org/en/story/2022/11/1130182>.
- "Haiti - The World Factbook." n.d. CIA. Accessed December 5, 2022.  
<https://www.cia.gov/the-world-factbook/countries/haiti/>.
- "Haiti | World Food Programme." n.d. WFP. Accessed December 5, 2022.  
<https://www.wfp.org/countries/haiti>.
- "Health Effects of Tsunamis." n.d. CDC. Accessed December 5, 2022.  
<https://www.cdc.gov/disasters/tsunamis/healtheff.html>.
- Henriques, Martha. 2019. "How Japan's skyscrapers are built to survive earthquakes." BBC.  
<https://www.bbc.com/future/article/20190114-how-japans-skyscrapers-are-built-to-survive-earthquakes>.
- Hosey, Lance. n.d. "The Ecuador Exchange: A Step Toward Earthquake-Resistant Cities." Architect Magazine. Accessed December 5, 2022.  
[https://www.architectmagazine.com/practice/the-ecuador-exchange-a-step-toward-earthquake-resistant-cities\\_o](https://www.architectmagazine.com/practice/the-ecuador-exchange-a-step-toward-earthquake-resistant-cities_o).
- "How are earthquakes recorded? How are earthquakes measured? How is the magnitude of an earthquake determined? | U.S. Geological Survey." n.d. USGS.gov. Accessed December 5, 2022.  
<https://www.usgs.gov/faqs/how-are-earthquakes-recorded-how-are-earthquakes-measured-how-magnitude-earthquake-determined>.



- IDB. 2016. "IDB supports Ecuador with credit line of \$300 million after the earthquake | IADB." Inter-American Development Bank.  
<https://www.iadb.org/en/news/news-releases/2016-04-20/credit-line-of-300-million-in-ecuador%2C11450.html>.
- IMF. 2010. "IMF Survey: IMF Provides Economic Support for Haiti." International Monetary Fund. <https://www.imf.org/en/News/Articles/2015/09/28/04/53/socar072110c>.
- IMF. 2010. "Press Release: IMF Executive Board Cancels Haiti's Debt and Approves New Three-Year Program to Support Reconstruction and Economic Growth." International Monetary Fund. <https://www.imf.org/en/News/Articles/2015/09/14/01/49/pr10299>.
- IMF. 2010. "World Bank Announces Total Cancellation of Haiti's Debt." World Bank.  
<https://www.worldbank.org/en/news/press-release/2010/05/28/world-bank-announces-total-cancellation-of-haitis-debt>.
- IMF. 2011. "IMF Survey: Japan Set to Recover Sharply, but Disaster Takes Heavy Toll." International Monetary Fund.  
<https://www.imf.org/en/News/Articles/2015/09/28/04/53/socar060811a>.
- IMF. 2011. "2011 Article IV Consultation with Japan: Concluding Statement of the IMF Mission." International Monetary Fund.  
<https://www.imf.org/en/News/Articles/2015/09/28/04/52/mcs060711>.
- IMF. 2016. "IMF Executive Board Approves US\$ 364 Million in Financial Support for Ecuador." International Monetary Fund.  
<https://www.imf.org/en/News/Articles/2016/07/11/17/19/PR16328-Ecuador-IMF-Executive-Board-Approves-US-364-Million-in-Financial-Support>.
- IMF. 2016. "The IMF's Rapid Financing Instrument (RFI)." International Monetary Fund.  
<https://www.imf.org/en/About/Factsheets/Sheets/2016/08/02/19/55/Rapid-Financing-Instrument>.
- IMF. n.d. "About the IMF." International Monetary Fund. Accessed December 5, 2022.  
<https://www.imf.org/en/About>.
- IMF. n.d. "Acting together to extend our reach, our response, and our results." International Monetary Fund. Accessed December 5, 2022.  
<https://www.imf.org/external/np/cpac/pdf/IMFGivingTogetherAR2016.pdf>.

- IMF. n.d. "Finance & Development, June 2011 - Shaken to the Core." International Monetary Fund. Accessed December 5, 2022.  
<https://www.imf.org/external/pubs/ft/fandd/2011/06/danninger.htm>.
- IMF. n.d. "SDR Valuation." International Monetary Fund. Accessed December 5, 2022.  
[https://www.imf.org/external/np/fin/data/rms\\_sdrv.aspx](https://www.imf.org/external/np/fin/data/rms_sdrv.aspx).
- IMF. n.d. "Where the IMF Gets Its Money." International Monetary Fund. Accessed December 5, 2022. <https://www.imf.org/en/About/Factsheets/Where-the-IMF-Gets-Its-Money>.
- International Federation of Red Cross. 2018. "Ecuador: Earthquake - Emergency Plan of Action (EPoA) Final Report, Operation no. MDREC012 - Ecuador." ReliefWeb.  
<https://reliefweb.int/report/ecuador/ecuador-earthquake-emergency-plan-action-epoa-final-report-operation-no-mdrec012>.
- InterNations. n.d. "Everything You Need to Know About Working in Haiti." InterNations. Accessed December 5, 2022.  
<https://www.internations.org/haiti-expats/guide/working-short>.
- "JAPAN." n.d. OECD. Accessed December 5, 2022.  
<https://www.oecd.org/els/soc/29734836.PDF>.
- Joyce, Christopher. 2010. "Haiti's Buildings Weren't Fit To Withstand Quakes." NPR.  
<https://www.npr.org/2010/01/14/122547242/haitis-buildings-werent-fit-to-withstand-quakes>.
- Labrador, Rocio C., Diana Roy, and John Campbell. 2022. "Haiti's Troubled Path to Development." Council on Foreign Relations.  
<https://www.cfr.org/background/haitis-troubled-path-development>.
- Lacey, Marc. 2010. "Estimates of Quake Damage in Haiti Increase by Billions (Published 2010)." The New York Times.  
<https://www.nytimes.com/2010/02/17/world/americas/17haiti.html>.
- Laney, Kimberly. n.d. "Reports on Emergency Earthquake Response in Ecuador." GlobalGiving. Accessed December 5, 2022.  
<https://www.globalgiving.org/projects/emergency-earthquake-response-in-ecuador/reports/>.

- Marder, Jenny. 2011. "Japan's Earthquake and Tsunami: How They Happened." PBS.  
<https://www.pbs.org/newshour/science/japans-earthquake-and-tsunami-how-they-happened>.
- Miller, Talea. 2010. "Economic Cost of Haiti Quake Could Hit \$14 Billion." PBS.  
<https://www.pbs.org/newshour/health/economic-cost-to-haiti-could-hit-14-billion>.
- Moody's. n.d. "Haiti | Economic Indicators | Moody's Analytics." Economy.com. Accessed December 5, 2022. <https://www.economy.com/haiti/indicators>.
- "M7.8 Coastal Ecuador Earthquake of 16 April 2016 - Ecuador." 2016. ReliefWeb.  
<https://reliefweb.int/map/ecuador/m78-coastal-ecuador-earthquake-16-april-2016>.
- Nikolaou, Sissy. 2016. "M7.8 Muisne, Ecuador Earthquake on April 16, 2016." Learning From Earthquakes.  
[http://learningfromearthquakes.org/2016-04-16-muisne-ecuador/images/2016\\_04\\_16\\_Muisne\\_Ecuador/pdfs/EERI-Ecuador-2016-Recon-Report-Reduced.pdf](http://learningfromearthquakes.org/2016-04-16-muisne-ecuador/images/2016_04_16_Muisne_Ecuador/pdfs/EERI-Ecuador-2016-Recon-Report-Reduced.pdf).
- "Nuclear Power in Japan | Japanese Nuclear Energy." n.d. World Nuclear Association. Accessed December 5, 2022.  
<https://world-nuclear.org/information-library/country-profiles/countries-g-n/japan-nuclear-power.aspx>
- Ohbayashi, Mika. 2022. "Japan's Transition Toward a Renewable Energy Future - The National Bureau of Asian Research (NBR)." National Bureau of Asian Research.  
<https://www.nbr.org/publication/japans-transition-toward-a-renewable-energy-future/>.
- Pallardy, Richard. 2010. "2010 Haiti earthquake | Magnitude, Damage, Map, & Facts." Encyclopedia Britannica. <https://www.britannica.com/event/2010-Haiti-earthquake>.
- Ranghieri, Federica. 2014. "Learning from Megadisasters." GFDRR.  
<https://www.gfdrr.org/sites/default/files/publication/Learning%20from%20Megadisasters%20%20Lessons%20from%20the%20Great%20East%20Japan%20Earthquake.pdf>.
- Reconstruction Agency Japan. n.d. "Great East Japan Earthquake." Reconstruction Agency. Accessed December 5, 2022.  
<https://www.reconstruction.go.jp/english/topics/GEJE/index.html>.
- "Recovery from Ecuador Earthquake." n.d. Americares. Accessed December 5, 2022.  
<https://www.americares.org/emergency-program/ecuador-earthquake/>.

- Ritchie, Hannah, and Max Roser. n.d. "Ecuador: Energy Country Profile." Our World in Data. Accessed December 5, 2022.  
<https://ourworldindata.org/energy/country/ecuador#what-sources-does-the-country-get-its-energy-from>.
- Robinson, Tyler D., Thiago M. Oliveira, and Stephanie Kayden. 2017. "Factors affecting the United Nations' response to natural disasters: what determines the allocation of the Central Emergency Response Fund?" Online Library.  
<https://onlinelibrary.wiley.com/doi/full/10.1111/disa.12226>.
- Roth, Kenneth. n.d. "World Report 2021: Ecuador." Human Rights Watch. Accessed December 5, 2022. <https://www.hrw.org/world-report/2021/country-chapters/ecuador>.
- Saito, Tomoya, and Ayano Kunimitsu. 2011. "Public health response to the combined Great East Japan Earthquake, tsunami and nuclear power plant accident: perspective from the Ministry of Health, Labour and Welfare of Japan." NCBI.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3729063/>.
- Sosa, César A. 2017. "¿Se utilizó o no el crédito del FMI para el terremoto?" El Comercio.  
<https://www.elcomercio.com/actualidad/negocios/credito-fmi-terremoto-ecuador-reconstruccion.html>.
- "The Law for Solidarity and Joint Responsibility of Citizens now has its Regulations - PBP." 2016. PBP Pérez Bustamante & Ponce.  
<https://www.pbplaw.com/en/ley-organica-solidaridad-corresponsabilidad-ciudadana-ya-tiene-reglamento/>.
- "Tsunamis." n.d. CDC. Accessed December 5, 2022.  
<https://www.cdc.gov/disasters/tsunamis/index.html>.
- Umezawa, Shinichi. n.d. "The Great East Japan Earthquake: Its Damages, Impacts on the Labor-economy and Restoration Measures of the Government." The Great East Japan Earthquake: Its Damages, Impacts on the Labor-economy and Restoration Measures of the Government. Accessed December 5, 2022.  
[https://www.jil.go.jp/english/reports/documents/jilpt-reports/no.13\\_japan\\_umezawa.pdf](https://www.jil.go.jp/english/reports/documents/jilpt-reports/no.13_japan_umezawa.pdf).
- UNDP. n.d. "1 Year Later." United Nations Development Programme. Accessed December 5, 2022.  
<https://www.undp.org/sites/g/files/zskgke326/files/publications/Haiti-1YearLater-E-final-sm.pdf>.

- “Unemployment Insurance.” n.d. General Union. Accessed December 5, 2022.  
<https://www.generalunion.org/unemployment-insurance/569-unemployment-insurance>.
- “Unemployment insurance and income protection in Ecuador.” 2018. EconStor.  
<https://www.econstor.eu/bitstream/10419/211189/1/1043475761.pdf>.
- United Nations. n.d. “History of the United Nations | United Nations.” the United Nations.  
Accessed December 5, 2022. <https://www.un.org/en/about-us/history-of-the-un>.
- United Nations. n.d. “UN System | United Nations.” the United Nations. Accessed December 5, 2022. <https://www.un.org/en/about-us/un-system>.
- United Nations. 2016. “Ecuador: quake damage to schools impacts 120000 children – UNICEF.” UN News. <https://news.un.org/en/story/2016/04/527852>.
- United Nations. 2016. “UN supporting authorities in Ecuador following strongest earthquake in decades.” UN News. <https://news.un.org/en/story/2016/04/526922>.
- “United States Earthquake Assistance Reaches \$5.45 million - U.S. Embassy & Consulate in Ecuador.” 2016. U.S. Embassy and Consulate in Ecuador.  
<https://ec.usembassy.gov/united-states-earthquake-assistance-reaches-5-45-million/>.
- “USAID History.” 2021. U.S. Agency for International Development.  
<https://www.usaid.gov/who-we-are/usaaid-history>.
- USGS. n.d. “Which country has the most earthquakes? | U.S. Geological Survey.” USGS.gov.  
Accessed December 5, 2022.  
<https://www.usgs.gov/faqs/which-country-has-most-earthquakes>.
- USIP. 2010. “Haiti After the Earthquake.” 2010. United States Institute of Peace.  
<https://www.usip.org/sites/default/files/resources/PB%205%20Haiti%20After%20the%20Earthquake.pdf>.
- Ventura, Luca. 2022. “Poorest Countries in the World 2022.” Global Finance Magazine.  
<https://www.gfmag.com/global-data/economic-data/the-poorest-countries-in-the-world>.
- Vitorino, Hugo, Hugo Rodrigues, and Carlos Couto. 2019. “Evaluation of post-earthquake fire

capacity of reinforced concrete elements.” Elsevier.  
<https://doi.org/10.1016/j.soildyn.2019.105900>.

“Water governance in Ecuador.” n.d. Sustainable Development Goals Fund. Accessed December 5, 2022. <https://www.sdgfund.org/case-study/water-governance-ecuador>.

Weitzdörfer, Julius, and S. J. Beard. 2021. “Double Debt Disaster: Law, Policy, and Social Justice in the wake of Japan’s 2011 Tsunami.” German Institute for Japanese Studies.  
<https://www.dijtokyo.org/wp-content/uploads/2021/03/DIJ-Miscelle-22-WeitzdorferBeard-Double-Debt-Disaster-rev.pdf>.

WFP. n.d. UN World Food Programme (WFP). Accessed December 5, 2022.  
<https://www.wfp.org/>.

“Who would bear the burden of a VAT?” n.d. Tax Policy Center. Accessed December 5, 2022.  
<https://www.taxpolicycenter.org/briefing-book/who-would-bear-burden-vat>.

World Bank. 2010. “World Bank to Provide an Additional \$100 Million to Haiti, Following Earthquake.” World Bank.  
<https://www.worldbank.org/en/news/press-release/2010/01/13/world-bank-to-provide-an-additional-100-million-to-haiti-following-earthquake>.

World Bank. 2010. “Haiti: Bank Team Prepares for Damage Assessment, Recovery Plan.” World Bank.  
<https://www.worldbank.org/en/news/feature/2010/01/15/haiti-bank-team-prepares-for-damage-assessment-recovery-plan>.

World Bank. 2010. “World Bank Statement on Haiti Debt.” World Bank.  
<https://www.worldbank.org/en/news/press-release/2010/01/21/world-bank-statement-on-haiti-debt>.

World Bank. 2010. “World Bank Pledges Half Billion US Dollars for Haiti Over 14 Months.” World Bank.  
<https://www.worldbank.org/en/news/press-release/2010/03/31/world-bank-pledges-half-billion-us-dollars-for-haiti-over-14-months>.

World Bank. 2010. “Haiti: WB Grants US\$30 Million for Housing Reconstruction.” World

Bank.

<https://www.worldbank.org/en/news/press-release/2010/10/26/haiti-wb-grants-us30-million-housing-reconstruction>.

World Bank. 2010. "Haiti: US\$3 Million World Bank Grant to Help Local Banks." World Bank. <https://www.worldbank.org/en/news/press-release/2010/12/15/haiti-us3-million-world-bank-grant-to-help-local-banks>.

World Bank. 2011. "Impact of quake on Japan's growth likely to be 'temporary'; 'Limited impact' on strong regional economy, says World Bank East Asia and Pacific Economic Update." World Bank. <https://www.worldbank.org/en/news/press-release/2011/03/21/impact-of-quake-on-japan-growth-likely-to-be-temporary-limited-impact-on-strong-regional-economy>.

World Bank. 2014. "Haiti Improves Nutritional Security and Safety Nets." World Bank. <https://www.worldbank.org/en/results/2014/10/20/haiti-improves-nutritional-security-and-safety-nets>.

World Bank. 2016. "World Bank Stands Alongside Ecuador and Offers Support Following Earthquake." World Bank. <https://www.worldbank.org/en/news/press-release/2016/04/17/banco-mundial-se-solidariza-con-ecuador-y-ofrece-apoyo-ante-el-terremoto>.

World Bank. 2016. "World Bank and Ecuador Sign US\$150 Million Agreement to Speed Up Assistance to Earthquake Victims." World Bank. <https://www.worldbank.org/en/news/press-release/2016/04/22/banco-mundial-y-ecuador-firman-acuerdo-por-usd150-millones-para-acelerar-ayuda-a-afectados-por-terremoto>.

World Bank. 2021. "A cinco años del terremoto, Ecuador sigue trabajando en su resiliencia frente a desastres." Banco Mundial. <https://www.bancomundial.org/es/news/feature/2021/04/27/a-cinco-a-os-del-terremoto-ecuador-sigue-trabajando-en-su-resiliencia-frente-a-desastres>.

World Bank, and GFDRR. 2021. "# DIJ Miscelle 22 Weitzdörfer.fm." German Institute for Japanese Studies. <https://www.dijtokyo.org/wp-content/uploads/2021/03/DIJ-Miscelle-22-WeitzdorferBear-d-Double-Debt-Disaster-rev.pdf>.

World Bank. "GDP per capita (current US\$) - Haiti" The World Bank Group.

[https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=HT&most\\_recent\\_value\\_desc=false](https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=HT&most_recent_value_desc=false).

World Bank. n.d. "About the World Bank." World Bank. Accessed December 5, 2022.  
<https://www.worldbank.org/en/about>.

World Bank. n.d. "Haiti Overview: Development news, research, data." World Bank. Accessed December 5, 2022. <https://www.worldbank.org/en/country/haiti/overview>.

World Bank. n.d. "Organization - History." World Bank. Accessed December 5, 2022.  
<https://www.worldbank.org/en/about/history>.