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Hurricane Sandy: October 29, 2012

Mitigation

The Department of the Interior is investing $787 million in federal funding to clean up and repair wildlife refuges, restore and strengthen marshes, wetlands, and shorelines, connect and open waterways to improve flood resilience, and increase local efforts to protect the communities from future storms. Some funds are used to increase the resilience of infrastructure to withstand storms and to restore and rebuild assets across the states that were affected.

Preparedness

The local and state government played a major role in preparing their communities for the hurricane and mobilizing after the storm hit. The American Red Cross mobilized more than 1000 workers all over the east coast. The local Red Cross chapters also provided shelter for those in need. The salvation army positioned several mobile feeding units to serve thousands of meals.

The Federal Emergency Management Agency established Incident Support Bases in Massachusetts and New Jersey. They also established five Federal Staging Areas in New York to provide goods for the communities. Some of these goods include water, meals, blankets, generators, infant and toddler kits, and medical equipment and supplies. They deployed many different teams and task forces in preparation of the storm. Some of these teams include liaison officers, Incident Management Assistance Teams, National Urban Search and Rescue Task Forces, and many more. Some governors such as, Gov. Bob McDonnell of Virginia, advised some residents to prepare to evacuate.

Response

In the immediate aftermath of the storm, FEMA focused on supporting first responders to save lives, maintain safety, restore power, and stabilize communities. As the response continued in the following weeks, FEMA continued supporting affected areas and shipped 20 million liters of water, 1.6 million meals, 1.7 million blankets, 79,000 cots, 138,000 tarps and hundreds of survival kits capable of serving thousands of survivors. FEMA also employed the Sheltering and Temporary Essential Power program as well as the Transitional Sheltering Assistance program to allow survivors in shelters until more suitable housing accommodations became available.

The Environmental Protection Agency (EPA) also aided in providing grants of $340 million to New York and $229 to New Jersey. They also worked with federal agencies and the states of New York and New Jersey to assess damage and protect the public's health. More specifically, the aided damaged wastewater and drinking water facilities to get them running again and also provided information on how to clean up after flooding and mold.

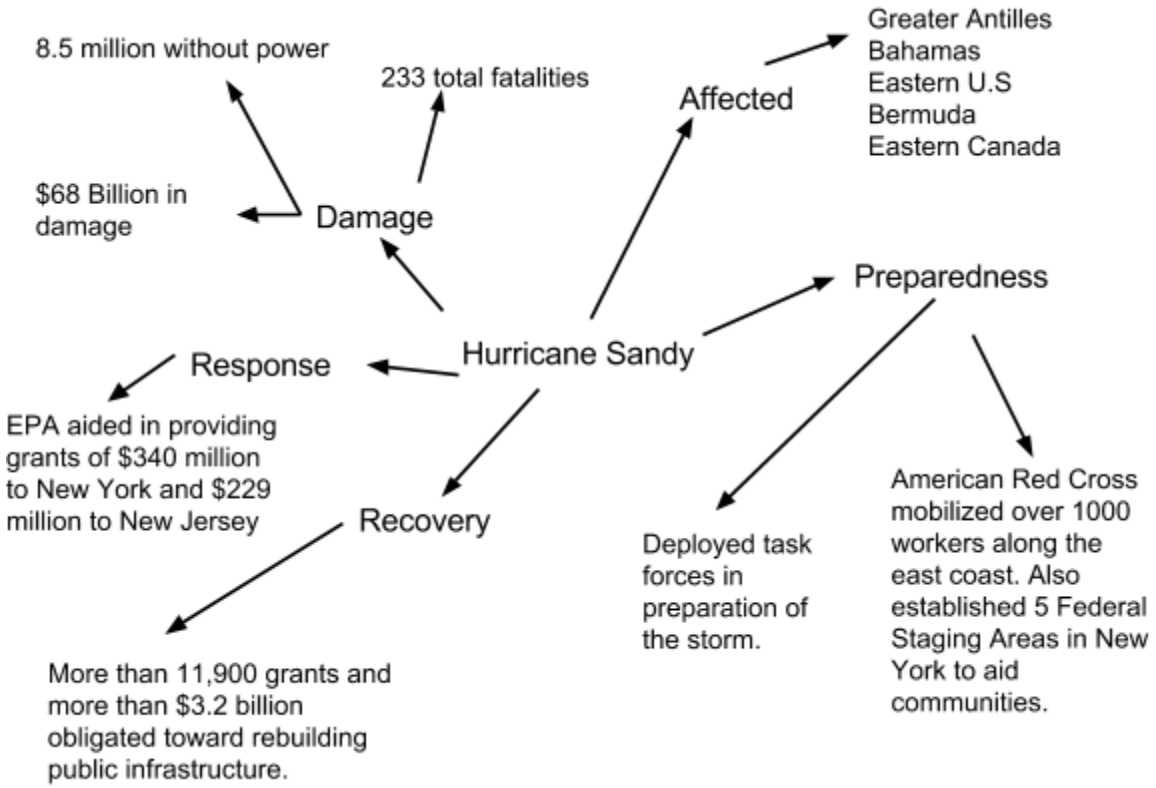
President Obama also directed the FEMA to establish the Energy Restoration Task force to better coordinate Federal, state, local, and private sector efforts to restore power.The U.S Department of Defense and U.S Transportation Command airlifted over 200 power-restoration vehicles and over 400 personnel to help New York and New Jersey restore power as quickly as possible. The U.S Army Corps of Engineers also assisted in pumping water out of flooded public transit systems in New York City.

Recovery

More than 11,900 grants have been approved for emergency work and to rebuild or replace public infrastructure and more than $3.2 billion has been obligated toward these projects. Within three months after the hurricane, FEMA released Advisory Base Flood

Elevations to inform property owners about rebuilding and recovery that will increase their resilience to future disasters. They also obligated more than $74 million in FEMA hazard mitigation grants to prevent future damages through projects that include elevated buildings and assisting of mitigation plans. Nearly $180 million was obligated to New York Medical Center to restore critical services and facilities. More than $19 million has been obligated to repair schools damaged by Hurricane Sandy.

Concept Map



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Chernobyl Accident

A nuclear reactor was built in 1970 in Ukraine that would change the world forever. Little did people know, this would change the surrounding areas for hundreds of years. The reactor was built with many radioactive materials, but they are easily controlled with careful precautions. On April 26, 2015 workers made a mistake that caused the reactor to rupture and go through a series of explosions. This disaster was rated a seven on the Nuclear Event Scale, which is the worst possible event that can happen. Thirty-one people died from the original blast, but experts are still determining the effect of radiation and its effects on cancer and other diseases. It was said that the accident affected over seven million people.

Mitigation- It is easy to discern that reactors are dangerous. They use radioactive materials such as Uranium and Plutonium to spin a steam turbine. This process is done through fission or the splitting of atoms in which they keep splitting to create energy. In most nuclear reactors, people try to stay away in case something would go wrong. In the case of Chernobyl, there were towns within miles of the the reactor. Many of these people were hit with very high amounts of radiation when the reactor failed.

Preparedness- This was the biggest issue with the Chernobyl accident. First of all, nuclear power plants are supposed to be covered with a ten foot deep wall of concrete that can block radiation, and keep the radiation to a minimum. Chernobyl's reactor four did not have this, and it was a huge mistake. This RBMK-1000 design was not safe according to the requirements with nuclear safety. The reactor also had many other flaws. The control rods were poorly designed and were actually almost one and a half meters shorter than they should have been.

That is almost five feet! One of the biggest issues that faced the reactor was how it dealt with different amounts of electricity. It wasn't tested enough of how it reacted to different voltage inputs. Workers were testing to see how long the plant could operate under a power shutdown. They turned the plant to half power but a huge spike in power output occurred. All of this caused a vessel rupture which ended up destroying basically the whole plant. All of these events could have easily been avoided.

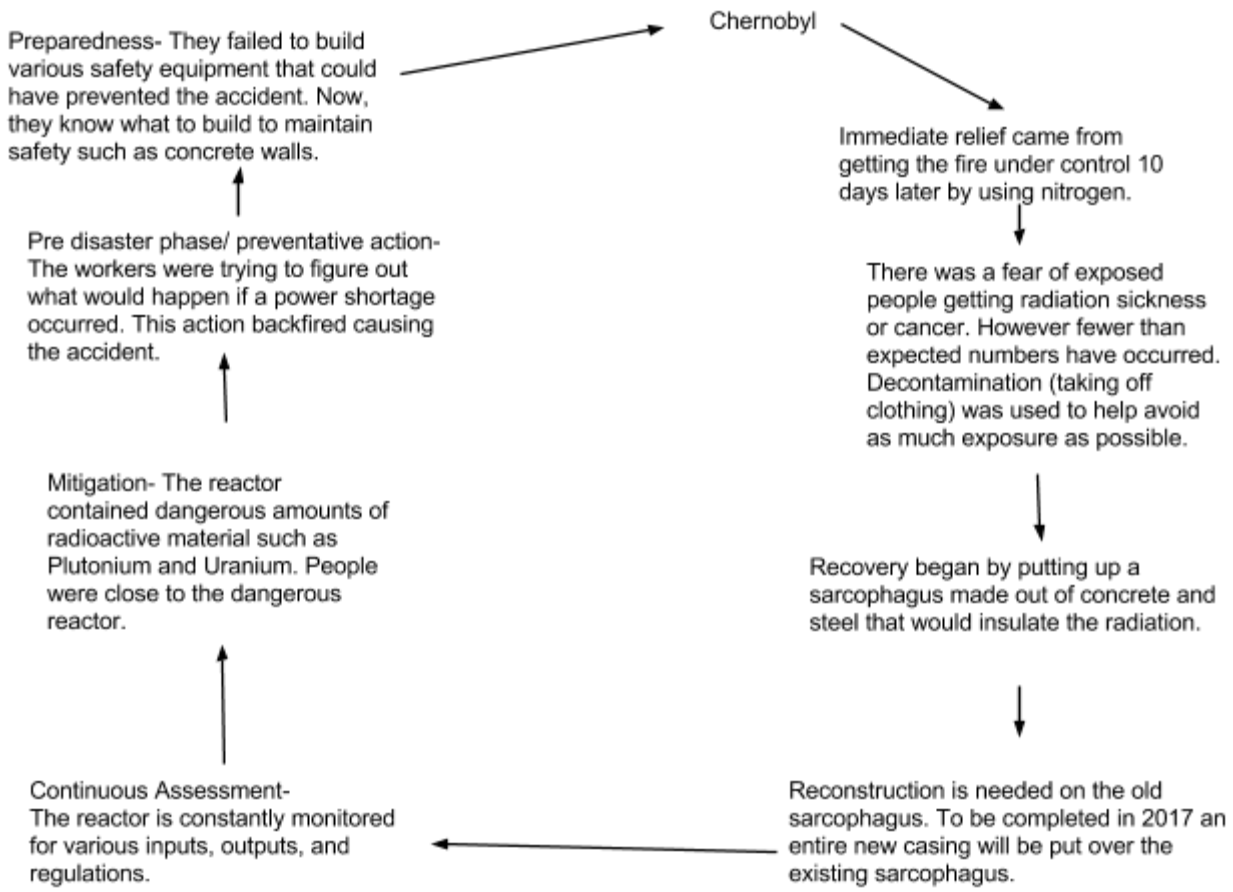
Response- Once the reactor had ignited all focus was on triage efforts. First the firefighters tried to put cooling water on the reactor; however this was ineffective and they stopped after ten hours. Over the next eight days 2400 tons of lead and 1800 tons of sand were dropped from military helicopters. They did this to not only try to deprive fire of oxygen, but also try and absorb as much radiation as possible. This actually worsened the situation, because the temperature of the reactor rose. The next day they were able to finally cool the reactor with the use of nitrogen. In order to contain and prohibit any more radiation from getting into the atmosphere, they built an enormous concrete covering over the entire reactor site. This concrete covering is called a sarcophagus. The people living within the town of Pripyat, which is directly next to the Chernobyl power plant were not told to evacuate until one day after the initial explosion. Pripyat is still a ghost town, however tour groups are now allowed to enter and see the town. The international community helped in the effort of getting funds towards helping contain Chernobyl. The next thing that needs to happen is another sarcophagus, which is to be completed in 2017.

Recovery- Scientists have found that the sarcophagus that is currently covering the reactor site needs to be replaced. They are going to put a new sarcophagus over the old one, which will be made out of steel and concrete in order to not only keep the radiation in, but also keep things such as water out. Presently, there are cracks in the concrete shell which is

allowing water to come in contact with the radioactive isotopes, this water then goes into the soil and contaminates the groundwater supply.

The town of Pripyat was completely evacuated within hours of the citizens being told to do so. This was possible because 1200 buses came to transport the citizens of the town to shelters about 60 miles south near Kiev. Along with the evacuations, scientists and other workers strived to put all of the radioactive materials in the sarcophagus. They put parts such as fuel rods and other radioactive debris so the radiation would stop spreading. The plant was eventually totally shut down. A huge concrete structure was put over top of reactor four, and there are future plans to put an even bigger concrete and steel confinement system on top of this. It will limit the radiation so almost nothing can come out.

Process Diagram



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