PAESTA Podcast Series – You Asked, We Answered!

Episode X – What are the Impacts of Climate Change on Water Resources?

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Hello my name is Nick Malorgio and today I will be answering the question: what are the impacts of climate change on water resources?

On earth, ninety-eight percent of our water is salty and two percent is fresh water. Seventy percent of fresh water is snow, and the remaining thirty percent is ground water [1]. Climate change has negatively impacted the sparse amount of fresh water on Earth. It is important to discuss the key factors that contribute to climate change and global warming as we work to preserve the world’s fresh water.

Water makes up over three-quarters of Earth so 2% of that sounds like a significant amount of fresh water… So why are we so worried about preserving it? Well, water scarcity is actually a major problem caused by climate change. As of right now 1.6 billion people live with water scarcity and by the year 2025 this is expected to increase to 2.8 billion people.

As the earth’s temperature continues to rise it causes a negative impact on our fresh water sources. Glaciers are one of the important sources of fresh water that many people depend on in the world. As global temperatures continue to rise, these glaciers are melting away with some of them predicted to vanish within this century [2]. Regions that use these glaciers as sources of fresh water will need to seek new fresh water because once these glaciers are gone they cannot be restored.

Climate change is also causing our water cycle to act differently than in the past. Scientists now agree that these changes are going to affect water vapor, concentrations, clouds, precipitation patterns, and runoff stream flow patterns [3]. If the lower portion of the atmosphere continues to become warmer, the evaporation rate will increase. The change will cause certain areas to dry out and others to have too much rainfall. These warmer climates cause more water to evaporate from the land and oceans. The excessive rainfall and snow melting will result in fewer places to store the water as it exceeds its holding capacity. This will cause flooding and the additional fresh water will run off into our oceans becoming new salt water. The runoff also makes the ocean level rise; this creates more problems as the rising level makes the salt water drive into freshwater aquifers. At this point, in order to make the water usable in the aquifers we would to need to move it and then treat it. This increased ocean level is also forcing pollutants and waste to wash into our water. This makes the water be unusable because it is not safe [4]. The change in the water cycle is going to cause more droughts to occur and for longer periods of time. The Western side of the United States is having the worst droughts in history. With water already being limited in the west, the fast growing population is making the demand for water to increase.

Energy is another thing being affected because of the impacts on water. The north western part of the United States also relies on water to create energy through hydropower. However due to the water flow becoming lower it is reducing the amount of energy that can be produced. The weaker water flow also makes it harder to cool fossil fuels and nuclear power plants. Energy being produced from different ways is making it worse as the constant burning of coals, gas, and fossil fuels are actually accelerating the climate change to become worse.

Finally, due to climate change, countries such as Turkey, Israel, and Morocco will be greatly affected, with more than fifty percent of their water sources vanishing [5]. These are countries where agriculture is popular and farmers will have a hard time farming with the climate change. The increased amount of rainfall is causing crops to be damaged from the floods and this increases soil erosion. Areas that are already effected by droughts will be faced with even less water resulting in crops and livestock dying.

As we can see, climate change will not have the same effect on all the regions of the world but it will affect each region in some kind of way. Once again my name is Nick Malorgio and thank you for tuning in.

 Work cited

[1] Institute, G., & London, I. C. (2012, December 21). How will climate change impact on fresh water security? *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2012/nov/30/climate-change-water>

[2] The Impact of Climate Change on Water Resources. (n.d.). Retrieved September 8, 2016, from <http://www.gracelinks.org/2380/the-impact-of-climate-change-on-water-resources>

BHANOO, B. S. (2015, November 18). Billions of People Depend on Water From Shrinking

 [3] The Water Cycle : Feature Articles. (n.d.). Retrieved September 26, 2016, from <http://www.earthobservatory.nasa.gov/Features/Water/page3.php>

 [4] Water and Climate Change. (n.d.). Retrieved September 29, 2016, from <http://www.ucsusa.org/global_warming/science_and_impacts/impacts/water-and-climate-change.html>

[5] Climate Change Affecting Water Resources. (n.d.). Retrieved September 27, 2016, from <http://www.voanews.com/a/climate-water-20dec13/1814317.html>