Lance Rechner

Lancerechner@gmail.com

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Water Security and Climate Change In Washington State

Climate Change as Reality

In 2007, the Intergovernmental Panel on Climate Change (IPCC) dictated something now well-regarded as almost fact: Climate Change is our reality. Seven years prior, in 2000, The General Social Survey (GSS) quizzed the American public on the Kyoto Protocol, and figured that "Beyond the basic science of global warming, the public is similarly in the dark when it comes to understanding the U.S. position on the Kyoto Protocol" (Nisbet and Myers **PG#**) The IPCC is a joint venture between the United Nations Environment Programme and the World Meteorological Organisation that provides authoritative statements regarding the scientific understanding of climate change, and in 2007, it was awarded the Nobel Peace Prize for its work.

In 2019, the IPCC released the Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC). It was the initiative's most dire warning so far – global mean sea levels will rise between .95 feet and 3.61 feet by 2099. Dr. Michael Oppenheimer of the IPCC, also one of the main authors on the SROCC chapter regarding rising sea levels, implied that this projection is the most likely out of many scenarios, and was conservatively optimistic. Oppenheimer writes in a *Scientific American* article that climate change has been severely underestimated, not just by the public, but by scientists themselves. While the estimates continue to get more alarming, ignorance continues to be bliss, especially in Florida. The first popular mention of Florida being fully submerged in a post-climate-apocalypse is in The Hunger Games, which was released in 2008 (also worth noting is that it is theorized that the story is paced around

the Cascade/PNW area of the country) The ensuing literary analyses included feminist and anti-capitalist themes, but commentary did not shy away from contributing to the climate change conversation. Suzanne Collins' prediction was not far off though, for the novel is set at an unspecified time in the future, most likely 2100, and Resources for the Future (RFF) predicts that swathes of Floridian coastal land will be permanently submerged by that same year.

2100 is a landmark year for many climate change predictions, however, it is perceived as far enough away. 2050 is not. 2040 is 17 years from now. Sea levels in Florida are predicted to rise faster than other coastal areas, and Floridians are at high risk when it comes to flooding. This prediction does not account for changing weather patterns, specifically a lengthened hurricane season, and more destructive storms. Statewide, three feet of flooding puts almost half a million people at immediate risk. In 2005, Miami had $400 million worth of assets at an immediate risk of coastal flooding, but by 2070, that number will climb to an incomprehensible $3.5B. In the United States, climate change is a divisive and political issue, and Florida's current political landscape is worrying, their leaders going so far as to ban the use of the term "Climate Change" within government agencies. Property values in Florida are unconcerned with the inundation that the land is slowly becoming uninhabitable, and states are failing to prepare for a mass exodus from coastal areas within the next seventy years.

Water (In)Security as a Migrational Source

Migration is an intrastate and interstate problem – nations will have to prepare for climate refugees, and the global refugee crisis will become intertwined with climate change. People will become stateless because their state is underwater. The security of the state – the one still above water – is inextricably linked to the habitat in which the state resides. The influx of people to places with relatively stable environments has the capacity to destroy balances long held between

the environment and the people. The United States has been barrelling in the direction of a water-insecurity crisis for decades, and path dependency has kept the state there. The Water Crisis in the United States is a federal problem, but it's concentrated out west, in the Colorado River basin, and the Federal Government isn't really keen to invest in the infrastructure necessary to pull the region out of an impending water crisis. Instead, California, Arizona, and Nevada came together and agreed to use less water, while asking for $1.2 billion to essentially anyone who uses less water (Flavelle, para. 1-2) Washington, however water-secure it appears, is a mountain state that is reliant on snowpack, and in 2015, the snowpack was nonexistent. In April of 2015, Governor Jay Inslee declared a statewide drought. Forks, WA, on the Olympic Peninsula, however, was still billing itself as the "wettest town in the contiguous United States" (Glionna) in March of 2015, which averaged 55 inches of rainfall per year. The state is split in half by the Cascade Mountain range, some 90 million years old, and the rain stops at the foot of it. Without getting too in the weeds, the Cascades draw water toward the western half of the state, creating a unique issue for Eastern Washington. Prior to 2015, Washington had only experienced a few other drought conditions, notably in 2005, where water-insecurity began bubbling on the Eastern side of the state. In 2014, snowpack was reported at 24% of normal, and low precipitation led to unprecedented wildfires in the mountains. In 2015, snowpack plummeted to 16% of normal (Glionna).

Climate change is our current reality. Sea levels are rising, encroaching on the lands that have been claimed by nations and sovereign states. A degrading environment leads to degrading the security of the state. As natural resources become affected by both climate change and human made disruptions, the security of the state becomes fallible.

The Importance of Water Resources

As talked about before, water resources and their availability are going to drive people to migrate. Like with Florida, the rise in sea level is predicted to erode coastlines and encroach on livable land, and flooding will happen more often and cause more damage. These factors combined will drive people to migrate to places deemed safer in terms of resources and physical territory. The World Bank, an international organization dedicated to removing barriers keeping people in poverty, says that a lack of water resources "...[i]n areas that lack good governance… [water resources] could exacerbate vulnerabilities and create tensions over water resources, leading to a vicious cycle of water insecurity and fragility." While this may seem isolated to countries and states deemed "lacking good governance," this is a crisis facing the United States today. A warming climate means more evaporation and a decrease in the overall supply of freshwater around the country. All this as our demand for water only increases, and our population continues to grow.

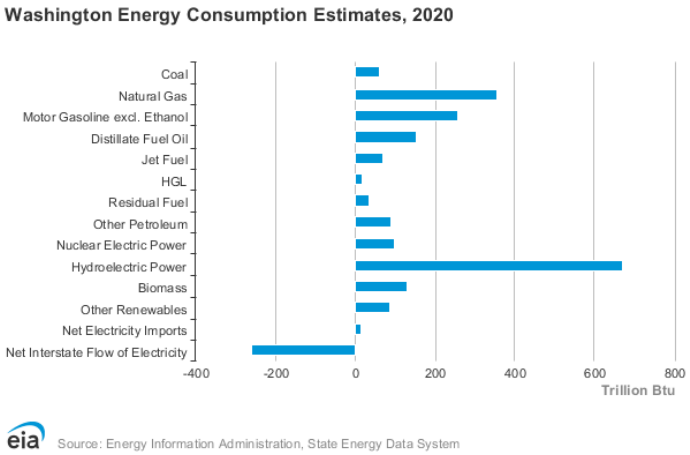
How does losing natural resources create insecurity? Nations and sovereign states are only such because of their territory. When the water rises and the weather changes, we lose vital land for farming and living, and people are forced to move. "Water deficits are linked to 10% of the rise in global migration. Climate change is accelerating the global water crisis: 17 countries that are home to 25% of the world population already face extremely high levels of water stress" (The World Bank). The question then is: where do the people go?

Washington state is primed to receive a huge influx of people, namely migrants. The Office of Financial Management predicts that the main contributor to population growth will be migrants, adding almost 1.79 million people between 2020 and 2050 (*State Population Forecast,* Office of Financial Management). The West Coast as a whole has been talked about in length as the place to go due to its unique position above sea level. Obviously we still have coastlines,

which will be hit by rising tides, but the majority of the West Coast is raised enough to not be immediately affected.

Washington State has its fair share of complications associated with climate change and water resources. Due to rising temperatures, runoff from the mountains and snowmelt happens faster, and with much more water. In the Winter, rain and snow build up natural reservoirs called snowpack in the mountains, steadily releasing water as the seasons change. The Climate Impacts Group from the University of Washington says that these changes lead to "Reduced water available for growing crops [...] Reduced hydropower production in summer and fall [...] Conflicts over water resources [... And] Declines in drinking water quality." (*Impacts of Climate Change on Water.*) All of these areas exist to shore up a state; both individually and nationally. A loss of these resources would be catastrophic for the security of Washington State and its people. Snowpack is integral to the industries throughout the state, and typically follows a pattern of building up during the colder months, and melting for Spring and Summer. As temperatures rise, the length of time between building up and melting is getting shorter and shorter. Colorado for instance, has the Rocky Mountains both building up snow and melting it in the cooler month.

Water resources also uniquely affect our power generation. Washington State is the leading producer of hydropower in the nation. We make up 31% of the nation's total hydroelectric, and 67% of the state's power generation is from hydro electric (Energy Information Administration). In the current world it is hard to imagine a world without



electricity, but the demands are going to change as the climate does. The industries of the state, namely agriculture, lumber, and hydro power, are built on models that are created to be predictable. That predictability is beginning to fluctuate with seasons as we keep warming up. The demand for electricity in Washington State is typically highest in the winter due to shorter, colder days, but as temperatures change the predicted demand of electricity will fall in the winter, and increase in the summer. The effects of this situation in the future are concerning- while continuing to try and meet the needs of the consumers, power generation also has to contend with streamflow and the strength of the water, as well as parts of the Endangered Species Act, which stipulates that certain bodies of water must be maintained at or above a certain level (Casola et al. 26). These guidelines may become harder and harder to meet, as the temperatures could result in a higher premium for power, and increased demand from neighboring states. Will we have to sacrifice other parts of our environment to keep our power going?

Agriculture is another important sector of the state that will be affected by water availability and climate change. Agriculture is essential to the state in terms of industry revenue, not to mention food resources. “Agricultural commodities produced in Washington have an annual value of over $5 billion, and the food industry employs over 160,000 people. Apples, milk, wheat, potatoes, and cattle represent Washington's top five agricultural products by production value, with apples usually worth more than $1 billion per year” (Casola et al. 39) Changes in water availability affects things like irrigation, which will require more water as summers get hotter, and a shift in growing seasons and times. The rising temperatures will affect when a crop starts growing and for how long.

It takes a lot of resources to maintain land for growing crops. Irrigation is more often

provided by streams than groundwater, and with a decline in streamflow, this could drastically reduce the ability and means to thoroughly water crops. The Cascade Mountains act as a sort of natural barrier, and draws most precipitation to the western half of the state. This leaves eastern Washington especially vulnerable to drought and an inability to maintain crop health. In a domino effect, the lack of water and increase in temperature often leave crops open to disease and pests. Interestingly, the rising CO2 and warmer climate can actually be somewhat beneficial to certain crops. The warmer temperatures could result in wetter soil across Eastern Washington, where the soil is currently quite dry. The increased amount of CO2 could actually be used in CO2 fertilization for crops like winter wheat.

The Washington State Department of Natural Resources, in conjunction with the federal government and the tribes, are responsible for maintaining 12 million acres of federally owned forests. Those 12 million acres are now becoming increasingly vulnerable to wildfires due to climate change and its effects. “Projections indicate that the annual area burned will quadruple in Washington’s forests by the 2040s and will double in non-forested areas such as the Columbia Basin and Palouse Prairie.53 Climatic conditions conducive to very large fires—those over 12,355 acres—are also expected to triple in the interior western U.S. by mid-century (2041-2070)” (Climate Resilience Plan). Longer, hotter summers create drier conditions, leaving forests ripe for ignition. Wildfires are costly and only continue to grow bigger, sapping money from response forces. On top of that, “More people are moving to areas adjacent to wildlands, resulting in more communities, homes, and values at risk. Washington state has over 7,400 square miles of wildland-urban interface—a land area almost the size of New Jersey. Approximately 1.4 million homes have been built in this area, each with an average lot size of

0.9 acre." This further increases costs of wildfire fighting, and puts many more people at risk, while spreading the already thin wildfire response units across a lot more territory.

The risk to water resources post-wildfire is where this ties in, specifically drinking water. Freshwater is essential for fighting wildfires, as saltwater can damage freshwater ecosystems if introduced suddenly. The Washington State Lake Protection Agency, in a piece from 2016 titled "*How do wildfires affect water quality?"* covers how "Increased concentrations of dissolved organic carbon are a concern in drinking water sources. The chemicals used to treat drinking water can react with dissolved organic carbon and produce several toxins, including carcinogens." On top of an already decreasing water supply, whatever drinking water left over can be contaminated for years after a fire.

Security/Insecurity- The Dilemma

Water has been vital in the security of the state since ancient times. In *Bounding Power*, Daniel Deudney points out that in ancient Greece, bodies of water were vital in the creation of some of the most prolific city-states. trade and naval prowess were created in Crete and Athens due to their unique view and use of their water resources (97).

In *The Increasing Insecurity of Security studies: Conceptualizing Security in the Last Twenty Years,* Steve Smith discusses how the Cold War changed the conceptions of security and security studies. He argues that the focus of security since then has been shifted to military security of the nation. "In sum, the field of security studies seems poorly equipped to deal with the post-Cold War world, having emerged from the Cold War with a narrow military conception of national security" (79) This leaves other threats to the security of the state and nation largely unaccounted for, namely things like climate change. The United States is guilty of keeping the focus on the military throughout the centuries of its existence, with enormous portions of each

yearly budget being allocated to the Department of Defense (DOD). In this fiscal year alone, $1.99 Trillion in budgetary resources were allocated to the DOD, which is 15.7% of the [Fiscal Year] 2023 U.S. federal budget. By contrast, the Environmental Protection Agency requested only $11.9 Billion. That number is extremely different, yet both can be argued as vital for the security of the nation and security of all 50 states. In the current day and age, one could argue that the EPA deserves the majority of that budget. Climate change is rapidly becoming a more pressing issue, as we have discussed throughout, while the almost $2 trillion that we use for the DOD is used in a show of force. Should we devote our resources to issues we can start solving? Or should we try and prevent any issues militarily from starting?

Conclusion

The common portrayal of the West Coast is that of a sanctum and respite from the growing concerns of climate change. Unfortunately, the notion that Washington is uniquely advantaged because of our position above sea level and our current policies on climate change is ill informed. Washington is uniquely situated because of the variety of ways we use water, as well as the ways the environment affects our water. From enormous hydropower generation that is used across the nation, to agriculture uses like irrigation, and of course freshwater for drinking, water is essential in keeping up an “everyday security” for the people that reside here. Washington has made some good strides to keep our water resources around for longer, namely purposely setting up multi-year plans through its various state agencies. But should people continue to see Washington as the place to go, an influx of people has the potential to decimate our water supply. We need to be more proactive in creating plans and systems that would support more people joining the state, instead of needing to turn them away when it is too late.

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