Importance Of Water: The Impacts Of Droughts In The Central Valley

“Much of the worst hit area is in the Central Valley, where the dominant land use is irrigation-dependent agriculture. Also included in the exceptional drought category are the Sierra Nevada Mountains and a large swath of the central and southern coasts” (Beaudry, 2018, p.1). The droughts in the central valley have been a big topic of discussion for a couple of years now. Coming from a place like the central valley where we are known for our agriculture this has to be one of the biggest problems we continue to face. Water is the single most valuable resource we have in society and it is also the most fought about things other than that of crude oil. The effects of this California water drought indeed affected majority of its California residents and ultimately our central valley farmers because they are the ones who depend on it the most. The California agricultural industry is one that thrives on our beautiful ground and available resources. California is seen by many to be the most productive place revolving around agriculture, even given the nickname the fruit and vegetable basket. This place is responsible for nearly half of all fruits grown in the United States. The agricultural sections in California feed globally and has a major economic impact on its ability to be able to run efficiently. People and other countries depend on us as a whole to provide them with goods and necessities. Without this idea of water comes more consequences, actions are required to help prevent this and it is more than just thinking about the central valley. It has a direct impact on the country and how the economy functions.

The objectives of the objectives of the study are to learn: (1) The impacts of droughts in the central valley (2) The importance of this problem and how it affects agricultural (3) The results and a booming economy from groundwater (4) How it has an effective on everyone else as well and the harm placed upon people experiencing it (5) Actions Required to manage and help preserve as much as we can

Methodology

This is a qualitative study that examines peer reviewed articles as a part of the methodology. The process included searching for the causes of droughts throughout the central valley, majority coming from Fresno State's database. In the database, the search was merely the impacts of droughts in the valley. Articles that contained specific details on droughts and the impacts it created were used, as well as, articles containing information about importance on agriculture and advocated solutions. The articles were pushed to use factual details to support the problems and explain the damage being without water can have on the central valley.

Results and Analysis

Impacts of droughts in Central Valley

As previously proclaimed, Obviously without the proper mandated water allocation, major agricultural and humane factors will be affected in various types of situations. One major resource being agriculture, the San Joaquin valley is well known for their accomplishments,

Everyone is exposed to the great things this area has been able to accomplish due to its thriving agriculture economy. In terms of sustainability and efficiency, there are not many places that can grow a crop from start to finish like farmers in this state. It is observed that, yes, since the drought has deemed over the fact that our water situations have been progressively getting better, but it will still take many more winters of rain and snow to get California back to a point of comfort in of water availability and proper allocation. Precipitation over the years has been typically remained the same from the 1930 to present. It is the necessary and improper handling of water and runoff that has impacted majority of the downfall that causes our crop production and agriculture to drop significantly. Without an adequate amount of water, farmers are unable to perform certain tasks and other criteria that it takes to maintain the scale of production in California.

Figure 1. Percent area for California Resource: Drought.Gov (2019) The legend displays the severity of droughts California has faced within the last 19 years. The first couple of years were subtle but once it reached 2014 to 2017 it dramatically inclined. Those years were drastically hard for many people, including farmers and other countries. 2019 has been better for California, especially the Central Valley.

The drought that has been occurring throughout the valley has brought along plenty of economic and humanitarian struggles to farmers in this state. Many California farmers were forced to leave thousands of acres of crop due to not having enough water needed to produce. A prime example of this was 2014, the devastating drought led to over 100,000 acres being destroyed and over 15,000 jobs being lost. As a result of that action occurring 2.2 billion dollars were used to salvage the economic cost. California's Jerry Brown started conserving water to the point that lakes and state reservoirs would run dry and unaccounted for while majority of water would be held elsewhere due to other environmental issues. "Governor Brown introduced unprecedented mandatory water use restrictions on urban users, requiring them to reduce usage by 25%. In California, where irrigation is responsible for 74% of water withdrawals" (Maupin et al., 2014). Luckily, over the last few years and even currently to date, the economy has been fortunate with good winters, a healthy and sustainable snowpack, and adequate rainfall. Although with consistent years of necessary rainfall and snow, the central valley are also going to need new sufficient water storage solutions to be enough to help sustain the amount of production we have of our crops. The issue in California is that of a political one, the agricultural sector is that of a pivotal one. Another being that water is not entirely scarce, what lacks is our ability to manage and store water effectively.

Figure 2. Central Valley Aquifer Regions Source: ResearchGate (2017) This legend displays the water aquifers that run throughout the valley.

Importance to agriculture

As the number of planted acres is going to decline drastically, the economy would hope that the yield per acre would go up. Decades and centuries of developing better sustainable agriculture practices have got us to the levels of optimal production we are at today. The SGMA that is being implemented by the government by 2020 is going to be a big change for production agriculture in California. When farmland starts getting whipped out due to being deemed a "white zone," there will be a void in production that needs to be filled no matter what crop is grown on it. The white zones are areas of land in the SGMA program cannot be farmed due to

the state restriction of water in those areas. This will result in many unintended consequences because our economy will be exposed to another side of the spectrum. “Much is understood about local impacts of drought to agricultural production (Howitt et al., 2014; Cooley et al., 2015; Faunt and Sneed, 2015). However, the food system is global in nature, such that agricultural commodities are part of a complex supply chain and typically consumed far from their location of production, in an example of a telecoupled system” (Liu et al, 2013, 2015).

Supply and demand of crops from Water

What this does to the economy describes the relationship we have with supply and demand. When we do have a good rain year and winter, the supply is typically rather good and demand for the product of crop is not as high. But when we need to become more conservative with our water supply, then that usually brings the demand for these crops and ingredients extremely high and even more expensive in terms of market price. When the price of these commodities becomes too high for sustainability people will indeed be forced turn to its substitutes or even look to import from commuting countries. This is not entirely good for our local economy as its puts many farmers and farm workers out of business, that is the beauty and downfall of free trade. The more expensive many of these crops become to grow, the less attainable it is for the consumer and the more of an economic burden it becomes.

Groundwater

“During average climate conditions, 40% of irrigation in the Central Valley comes from groundwater, but during drought groundwater provides closer to 70% of irrigation supplies, with more reliance on groundwater in the arid Tulare and San Joaquin Basins, and less groundwater use in the more humid Sacramento Basin” (Faunt and Sneed, 2015; Jones, 2015). More issues can arise with proper irrigation needed for optimum productivity. This not only hurts the farmers producing the crops, but also the companies drilling wells. Well drilling and pumping of groundwater has been America’s main source of water needed for irrigation as well as for moving water. “This not only has implications for Californians who depend on the aquifer for agricultural and urban uses but also has millions of people globally who consume groundwater-dependent agricultural products grown in the Central Valley (Marston et al., 2015). When a domestic well failure happens it begins to dry up and puts many people in the hole for a new drilling spot that can become very expensive. They are spending money fixing and maintaining their wells when they could use that money towards more land or production. This again can alter the market and economy in terms of getting produce and other agricultural products ready at the right time for a successful season. As well as well failures messing with farmers it can also interfere with residential homes that get their drinking water from the ground needed to survive. Many people rely on their own water to circulate throughout their property and without it, problems will occur. One prime example of this was the humanitarian crisis in 2016 of no water in East Porterville served to the importance of water and proper water storage. The time that is wasted because the supply of water is not present can be devastating. This translates to how humans can be impacted by this idea.

Resource: Willoughby City Council (2019) Figure 3 above displays the process of how groundwater is stored and replenished. The whole cycle is important to our economy because the amount of money spent can be wasted and that is something the central valley can retain.

Harm on humans

Droughts play a large role in human lives as well. Droughts tend to focus on the social aspect of humans, it aims towards depression and anxiety of social economic losses. When the amount of water is lowered, people start to lose jobs, less activities are allowed, and the most important one being human life expectancy. The people that own land and have the opportunity to produce for themselves and others are worried because the land is unable to produce. The activity of the land is limited and the amount of water has increased cause them to find water from other unreliable sources.

Conclusions

In conclusion, In all, there are many factors in this world that this economy has no control over. One thing it can control is water regulation and how our state distributes water between agricultural and residential purposes. The central valley can’t control climate change, but can control how we use our water and how we maximize it to its full potential. The goal of our government should have in mind is to keep the economy and crop production levels at an equilibrium for effective use in this world’s economical supply chain because everyone's benefits from it. California agriculture is a huge industry and has an enormous global impact that the state cannot afford to lose and it's something we are known for. To reduce the percentage of a drought recurring, our economy must ensure our actions towards more amounts of storage for access water. Also, reducing the amount of water used and trying its best to limit it if possible. Water is the single most valuable resource in the world, and the many uses its valuable for is feeding the entire world and a majority of that starts right here in the central valley.