Water Grand Challenges: Economics of Water

Economic Impact of Drought in Texas

1971 accounted for over 100,000 cattle deaths and drought conditions in 2006 caused an estimated $4.1 billion in associated costs.[1] Neither of these events compares to the drought of 2011, which was the hottest and driest year ever recorded in Texas.[2] At the worst point of the 2011 drought, every county reported rain levels far below expected amounts and 87% of counties reported exceptional drought, the highest category. The drought intensity has continued into 2013 as is shown in figure 1. Quantifying the costs associated with drought is challenging because it affects so many facets of the Texas economy.

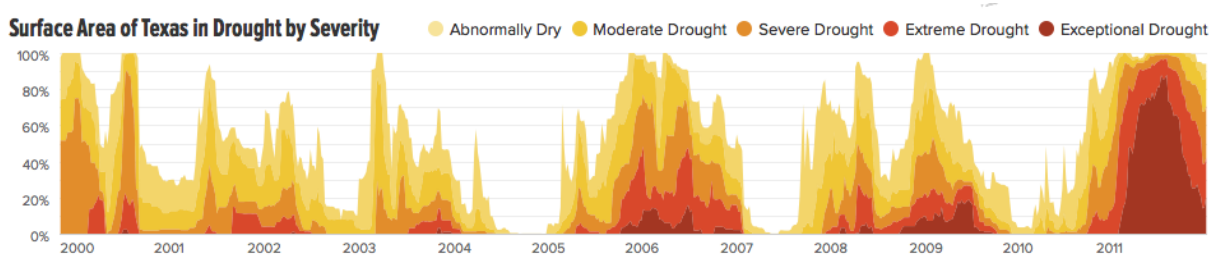

Figure 1: Drought Intensity in Texas[3]

Agriculture – Because of the increase in drought and water scarcity, the agriculture industry is currently experiencing product reduction as demand for inexpensive food rises. Texas is a major producer of a variety of crops including over 50% of cotton and over 30% of wheat for the United States. During the 2011 drought hay, cotton, wheat, corn, and sorghum production in the state lost a combined total of $3.18 billion due to shriveling crops, as well as the extra cost of locating alternative water sources. Watering livestock was also a challenge. Ranchers either had to move cattle to areas with water, transport water in, or lose their business entirely. The losses associated with livestock amounted to $2.06 billion. The total direct cost to Texas agriculture was $5.2 billion, with an estimated $3.5 billion in indirect costs such as increases in crop prices and job losses, bringing the total to $8.7 billion in agricultural losses alone.[2] Texas has been in some stage of drought since 2011, and the associated costs continue to rise.

Recreation and Tourism – Recreational activities in Texas have suffered directly because of the recent and continued drought. Lake levels are lowering at an alarming rate and in the summer of 2013, many lakes in Texas were nearly 50 feet below the normal level. This affects water supply and greatly limits public access to the water. Lake Travis, which historically is one of the most popular lakes in Texas, supports 11 parks and 15 public boat ramps; however, with the dramatic drop in water levels only one of these ramps is still in operation. According to the Texas Parks

and Wildlife Department's (TPWD) Communications Director, Tom Harvey, the drought drastically drove down park attendance, resulting in a need of $4.6 million simply to keep many of the parks open to the public. In 2011, fishing and hunting license sales dropped significantly.[4] In normal years, profits generated from these license sales help fuel the state economy and contribute greatly to the operation budget for TPWD.

Environment – Empirical data suggests that the impact of drought on the Texas environment is far-reaching and not limited to short-term complications. The most destructive single wildfire in Texas history occurred in September and October of 2011 in Bastrop County; it destroyed 1,691 homes and caused $325 million in damages.[5] Drought conditions create the perfect circumstances for such fires. Texas is in the top five states for endangered aquatic species and low water levels caused by drought exacerbate the already tenuous condition for many species. Low water levels have exacerbated the already tenuous condition for many species of fish, causing Texas to be in the top five states for endangered aquatic species.[6] Therefore it is important to protect and maintain environmental flows during times of drought, and not risk these important aquatic habitats. It is important that not all water rights be allocated in order to protect and maintain environmental flows.[7]

Future Conditions – According to John Nielsen-Gammon, the Texas state climatologist, drought-like conditions could last until 2020 due to the establishment of La Niña in the Pacific Ocean, which leads to drier conditions in Texas. Furthermore, Texas is set to experience the second worst drought on record by the end of summer 2013.[8] According to the 2012 State Water Plan, it is estimated that Texas will be short 8.3 million acre-feet of water, resulting in a loss of $116 billion in revenue, if Texas fails to meet this challenge with innovative solutions by 2060.[9] Tree ring analysis indicates that long-term drought is a common occurrence in Texas. The drought of record in 1956 failed to reach levels from prior centuries. According to new projections, Texas may be headed for another decadal-scale drought.[2]

---

[1] Fannin, Blair. Texas Agricultural Drought Losses. College Station: Texas A&M AgriLIFE Research 2011.
[2] Combs, Susan. The Impact of the 2011 Drought and Beyond. Austin: Texas Comptroller of Public Accounts, 2012.
[3] Amico, Chris, Danny DeBelius, Terrence Henry, and Matt Stiles. *Dried Out Confronting the Texas Drought.* 2011. http://stateimpact.npr.org/texas/drought/ (accessed May 21, 2013).
[4] Texas Parks and Wildlife Department. 2012 Texas Outdoor Recreation Plan. Austin: Texas Parks and Wildlife Department, 2012.
[5] Texas A&M Forest Service. "Texas A&M Forest Service." Current Texas Wildfire Information. n.d. http://texasforestservice.tamu.edu/main/article.aspx?id=12888 (accessed 9 19, 2012).
[6] Wythe, Kathy. Extreme Conditions impact fish populations across Texas. Texas Water Resource Institute, 2011.
[7] Texas Water Matters. The Environment. October 7, 2010. http://www.texaswatermatters.org/environment.htm (accessed May 14, 2013).
[8] Nielson-Gammon, John. Lawmakers to Hear Testimony on Drought, Water Plan. Associated Press 2013.
[9] Texas Water Development Board. Water for Texas: 2012 State Water Plan. Austin: Texas Water Development Board, 2012.