



Climate Change Brief No 5: Climate Change and Water

In July 2009, the Heads of Government (HOG) of the Caribbean Community, CARICOM, approved a 'Regional Framework for Achieving Development Resilient to a Changing Climate.' Three years later, in 2012, the CARICOM Heads approved an implementation plan for the Regional Framework. This implementation plan identified water as the most important crosscutting issue for climate-compatible development in the Caribbean.

Water security is defined by UN Water as “the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability” (UN Water, 2013).



In the Caribbean context, water security speaks to the following objectives (Global Water Partnership-Caribbean & Caribbean Community Climate Change Centre, 2014):

1. The management and allocation of water between users including the environment to balance social needs, economic development and environmental sustainability.
2. The provision of clean, reliable and sustainable rural and municipal water services to support the social wellbeing of the population and economic activities including business, tourism and industry.
3. The efficient and effective use of water for agricultural purposes, which supports economic growth and livelihoods while maintaining the natural environment.
4. The protection of water supplies against disasters including hurricane damage, flooding and drought through design, preparedness and response to disaster events.
5. The sustainable management of watersheds to preserve the quality and quantity of water available for human and environmental use against human degradation and natural disasters.
6. The prevention and treatment of wastes and pollutants entering watersheds to preserve the quality of water supplies for human and environmental needs and the protection of the marine environment.

Climate change impacts the water sector in several ways, but it particularly militates against the realization of objectives 4, 5 and 6 above.

Impact of Hurricanes and Major Storms

Increased sea surface temperatures that are associated with global warming are projected to lead to more intense hurricanes and heavier precipitation. Strong storms and hurricanes, particularly those that are accompanied by heavy rainfall, have devastating impacts on national water infrastructure. Heavy rainfall and flooding often lead to land slippage, and this usually causes serious damage to underground water distribution pipelines. Land slippage and the transportation of debris by flood water can also result in the deposition of large volumes of silt and other material into water reservoirs, as was seen in Saint Lucia with the effect of Hurricane Tomas on the John Compton Dam. It has been estimated that the John Compton Dam in Saint Lucia has been robbed of thirty percent of its storage capacity as a result of the passage of two major extreme weather events (DB Sediments, GIZ; 2013).



Heavy rainfall also leads to significant turbidity in water systems, particularly rural water systems. Therefore, it is not uncommon for water systems to be shut down immediately prior to the expected passage of a major rain event in order to protect the system, and for the system to remain shut to allow for the turbidity to settle.

Drought



Climate change is also expected to result in more frequent droughts in the Caribbean. It has been projected that our region may experience anywhere between a 14 and 25 percent reduction in overall rainfall by the end of the century (ECLAC, 2011). This will have serious negative consequences for most of our countries, which, during the traditional season, already experience a significant level of water insecurity.

In countries that depend on groundwater sources, recharge rates will be compromised, leading to the gradual reduction in the availability of water for extraction. For those countries that depend on surface water, a prolonged dry season, which is already being experienced in many jurisdictions, followed by intermittent periods of heavy rainfall, will compromise stream flows and make less water available for capture and storage.

Sea Level Rise

In some of our Caribbean countries, such as Barbados, the Bahamas and Antigua and Barbuda, groundwater represents the primary source of water. As sea levels rise due to the melting of polar ice caps, Small Island Developing States and low-lying countries, which describes the geography of the Caribbean, will



experience significant salt water intrusion. This will lead to the salinization of aquifers, making previously viable aquifers and groundwater sources unusable.

Pollution of Water Sources

Climate change will result in the intensification of weather events, and as stated earlier, more severe rainfall and flooding. Another one of the consequences of this can be damage to wastewater treatment and collection systems, and the flooding of septic tanks. This can result in the pollution of groundwater sources by fecal and other harmful contaminants.

References

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