



# How to Protect Our Water Resources from Climate Change

A brief from the Integrated Climate Change Adaptation Strategies (ICCAS) Programme



## Challenge

Grenada, Carriacou and Petite Martinique are highly dependent on sufficient and timely rainfall to ensure a safe water supply for the people. However, projected climate change impacts like increasing temperatures, shorter rainy seasons and heavy rainfall events along with less annual rainfall in total will seriously affect the water resources and water security in the tri-island state. During the 2009/2010 drought water production was reduced by up to 65%. In the last years, the Caribbean has been experiencing a significant increase in the number of consecutive dry days - and at the same time storm events with associated heavy rainfalls are becoming more frequent and intense. Due to run-off and erosion there is siltation of rivers and dams which can cause watershed degradation. In combination with water pollution and improper land use practices it further reduces the availability of safe water resources.

### **How to deal with less annual rainfall and higher temperatures?**

Low rainfall will lead to reduction in river flows and reduction in water that can be harvested. Projections indicate that the annual mean temperature will increase by 0.7 to 2.6°C by the 2060s, and 1.1 to 4.3 degrees by the 2090s. Annual rainfall might decrease by 13 to 21% by 2090.

- **Rainwater harvesting (RWH) and water storage facilities** are the best solutions to catch and store water during rainfall and meet demand for dry periods. Carriacou and Petite Martinique already rely totally on RWH: water is supplied through 33 community rainwater catchments and 78 public storage systems in addition to cisterns and private catchment and storage facilities.
- **Desalination facilities** substitute for rainwater during periods of drought as well as augment fresh water availability for tourism development. To meet increased

water demand in the tourist season, some private businesses have established their own desalination plants. Reverse Osmosis desalination plants are currently being constructed in Carriacou and Petite Martinique. However, potential high electricity and maintenance costs have to be considered.



Les Avocat Dam, St. David in May 2014 (© NAWASA)

### **How to deal with intense rainfall?**

High runoff during intense rainfall and lack of suitable land areas for dams will result in significant loss of surface water and also disrupt or damage the water supply network. Low lying areas less than 2m above sea level are prone to flooding, like Grenville and the Carenage in St. George's. Flooding is a danger for humans and buildings, and also affects water quality, sanitation and can cause soil erosion.

- RWH can mitigate the severity of flooding and storms. In Grenville, rooftop RWH by households lowered the peak flow by 25%. Following both hurricanes Ivan in 2004 and Emily in 2005, the availability of potable water to Carriacou residents, as compared to those on mainland Grenada, was not seriously compromised due to the prevalence of rainwater harvesting systems.

- Impervious surfaces such as sidewalks, drive-ways and parking lots do not allow the rain to seep into the ground and thereby creates more run-off. Water that travels too quickly can pick up a lot more sediment and other pollutants and hits streams in a rush which increases erosion and the likelihood of flooding. Use as little concrete as possible on your property and where possible use permeable surfaces (e.g. stone bricks).
- Watershed rehabilitation mitigates soil erosion and avoids sediment loading of rivers. Also, loss of water through runoff is reduced.
- Trees, forests and other vegetation conserve ground and surface water resources and minimize soil erosion. Maximize a site's permeability by retaining existing trees and green space.



World Water Day Conservation March 2012 (@ NAWASA)

### How to avoid water pollution?

Water is polluted from various sources: inadequate agricultural practices emit chemicals and waste in rivers and lakes, poor solid waste management, poor sanitation and inadequate disposal of effluents. Pollution can be avoided by:

- **Adequate waste disposal:** solid waste and agro chemicals have to be disposed in adequate disposal areas and should not enter river or lakes. This is particularly important for livestock farms close to rivers, water catchment areas and pumping stations.
- **Waste water treatment:** grey-water from domestic households and tourism can be treated and used for irrigation for agriculture after simple treatment.

### 10 simple water wise rules

1. **Do** take short showers and save 5 to 7 gallons a minute and fill the tub halfway and save 10 to 15 gallons.
2. **Do** install water-saving (low-flow) toilets. Place a plastic to a low-flow toilet.
3. **Do** repair leaky faucets and turn taps off tightly. A slow drip wastes 15 to 20 gallons each day.
4. **Do** run the dishwasher and washing machine only when full.
5. **Do** install water-saving appliances like faucet and showerhead aerators.
6. **Do** use a self-closing nozzle on your hose.
7. **Don't** run the water while shaving, washing your hands or brushing your teeth. Faucets use 2 to 3 gallons a minute.
8. **Don't** let the water run while washing dishes. Kitchen faucets use 2 to 3 gallons a minute. Filling a basin only takes 10 gallons to wash and rinse.
9. **Don't** water your sidewalk or driveway -- instead, sweep them clean.
10. **Don't** overwater your lawn or plants. Water before 9 a.m. or after 7 p.m.

## Water is Life

## Grenada Adapts to Climate Change. Now!

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