

“Challenges and Opportunities Related to Climate Change and Integrated Water Resources Management in the Caribbean”

**Presented by Vincent Sweeney
Regional Project Coordinator (IWCAM), UNEP**

This presentation examines the challenges which climate change poses to water resources management in the Caribbean region. Specifically, it takes note of growing water demand in the face of uncertain water supply, which is exacerbated by salt-water intrusion from over-extraction and sea-level rise, as well as water quality degradation from urbanisation, land use patterns, waste management, and specifically climate variability. Among the issues of concern in the Caribbean relate to water demand by the tourism industry, of which the region is increasingly dependent on for growth. This has resulted in a significant increase in water demand for maintenance of swimming pools, lawns, golf course, sewage disposal, and personal hygiene. In this regard it has been calculated that the Jamaican tourism sector demands ten (10) times more water per capita than the domestic sector and four (4) times more water than the commercial sector. On the positive side, some hotels are taking a more “ecological” approach and are instituting water savings and recycling programmes.

Along with the increase in tourism there is an increase in agricultural activities which result in irrigation and water degradation from run-off. In order to curb the vulnerability of the agricultural sector to climatic change, specific coping/adaptation strategies have been suggested such as improvements in crop varieties; improvements in soil management, fertilization, and pest and weed control so as to improve resource productivity; and improvements in irrigation and other farming practices.

Several countries in the Caribbean have initiated research activities to address the impact of climate variability and change on water resources. Specific examples include: the installation of groundwater monitoring systems and the use of hydraulic network modelling in Barbados; recycling of effluent and use of aquatic plants in wastewater treatment in Jamaica; and the evaluation of improved water intakes for surface waters in Saint Lucia.

The Caribbean is giving greater attention to vulnerability and adaptation/management strategies, recognising the need to understand and quantify the risks posed by climate change and climate variability in order to formulate appropriate strategies in the water resources sector. Useful strategies are offered for coping with the increased vulnerability of water resources to climate variability and change.

The presentation highlights the impact of climate change on sanitation (& by extension, potentially on human health), including water-borne disease. Because climate variability and change, including extreme weather events, affects not only human health, but also agriculture, water supply, tourism, the coastal zone, and other aspects of life, policy and decision makers need to address climate variability and change within an integrated

assessment framework that includes assessing vulnerability, mitigating potential disasters, and building resilient communities.

The presentation examines the issue of sea level rise, floods and hydrology. For example, in Guyana, agriculture, human settlements, infrastructure, fisheries and water resources have been adversely impacted by flooding and sea level rise, through erosion, inundation, and salinization. This has resulted in serious consequences for the agricultural industry as well as human settlements in Georgetown. Suggested coping strategies include an adaptation policy framework and capacity building. In terms of water resources and hydrology, the presentation demonstrates that the impacts of climate variability and change include decreased water supply; slower groundwater recharge rates; increased irrigation demands due to higher temperatures; increased extreme weather events (e.g. hurricanes, floods and droughts); degradation of water resources; disruption of ecosystems; and increased actuarial uncertainty in risk assessment, which inflates insurance premiums. Some of the approaches suggested to address these impacts are more effective integrated water resource management, capacity building, water pollution prevention and control, appropriate cultural and attitudinal changes (e.g. creating a culture of conservation), and an improved water resources information base.

The presentation describes concrete activities that governments, donor institutions, non-governmental organisations, the private sector, and community groups can undertake to adapt their regions to the reality of increased climatic variability, increased water demand, and a seriously threatened water supply.