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**AN ASSESSMENT OF THE IMPACT OF
CLIMATE CHANGE ON THE WATER
SECTOR IN THE CARIBBEAN**

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Potential Climate Change Impact

The diagram is set against a light beige background with a subtle perspective effect. It features three main components: 1) A landscape illustration on the left showing a coastline with a cliff and a bay, with the sea level noticeably higher than the surrounding land. 2) A central thermometer graphic with a yellow circular glow behind it. The thermometer scale is labeled 'TEMPERATURE' and has markers for 'VERY HOT', 'HOT', 'WARM', 'COOL', and 'COLD'. The liquid level is positioned between 'HOT' and 'VERY HOT'. 3) A precipitation diagram on the right showing four clouds with rain falling from them, labeled 'Precipitation' below. The clouds are arranged in a 2x2 grid, with the top-right cloud having a significantly larger area of rain falling from it compared to the others.

Temperature

Sea level rise

Precipitation

CPACC

- Establishment of a sea level and climate monitoring system
- Improved access and availability of data
- Increased appreciation of climate change issues at the policy-making level
- Meeting country needs for expanded vulnerability assessment
- Establishment of coral reef monitoring protocols
- Created a network for regional harmonization

MACC

- Mainstreaming adaptation to climate change in national development planning and public and private investment decisions.
- Expanding GCC monitoring and impact assessment as a basis for national and regional level decision making on adaptation. The following activities will be supported:
 - Cross-regional Dissemination and Replication
- Assisting Institutional and Technical Support mechanisms:

The diagram illustrates the evolution of the ACCC (Accounting and Cost Control Commission) over time. It features three main components: CPACC (1998-2001) on the left, ACCC (2002-2004) in the center, and MACC (2003-2007) on the right. The ACCC is represented by a large double-headed arrow pointing towards both CPACC and MACC, indicating its role as a transitional or central body. The CPACC and MACC are represented by stacks of dark blue rectangular blocks, suggesting multiple documents or reports. The background is a light blue circular pattern.

CPACC
1998-2001

ACCC
2002 - 2004

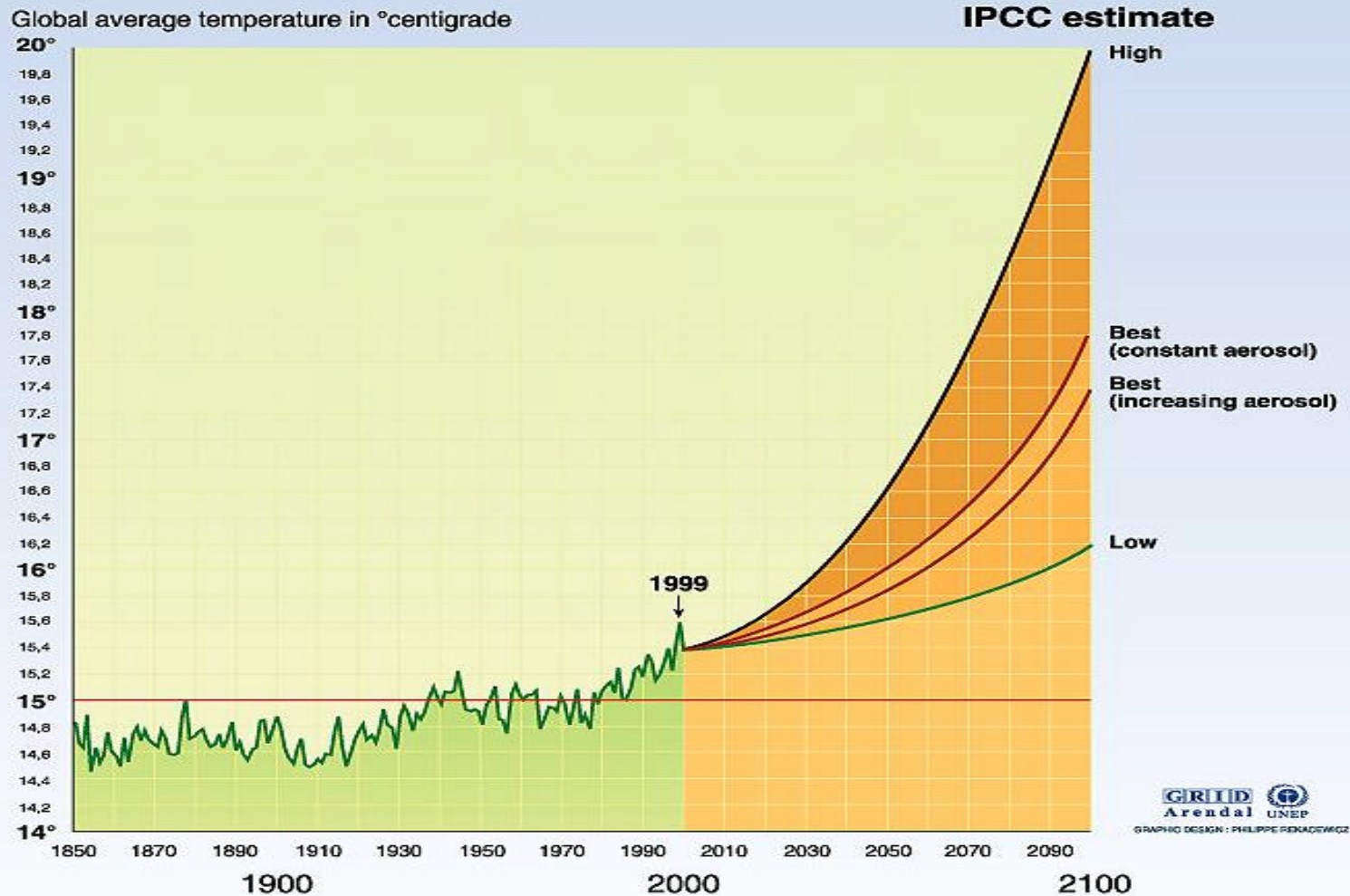
MACC
2003-2007

ACCC

- **Formulation of implementation strategies for adaptation in the water**
- **Sustainable regional climate change centre**
- **Regional and local climate change projections**
- **Risk Management approach to climate change issues**

Projected change in global temperature

Projected changes in global temperature:
global average 1856-1999 and projection estimates to 2100



Global Climate Change

- Projections for the future

Caribbean Climate Change

Present Status

- Mean temperature increases of about 1⁰C
- Max and Min Temperatures ~ 5% increase
- Reduction of annual rainfall
- Increase in frequency of high intensity rains,
- Max number of Consecutive Dry Days declined by 6 days
- Sea level increases of up to 20 cm

Caribbean Climate Change

Temperature increase by season

	Temp increase Scenario 1 (low)	Temp increase (oC) Scenario 2 (high)
Dec - Feb		
2050	1.4	2.0
2080	2.0	3.3
June - August		
2050	1.5	1.0
2080	2.0	3.3

Caribbean Climate Change

Precipitation changes by season

	Ppt change % Scenario 1 (low)	Ppt change % (oC) Scenario 2 (high)
Dec – Feb		
2050	-1.5	+13.1
2080	-4.4	+24.4
June – August		
2050	-18.4	+17.1
2080	-25.3	+8.9

Caribbean Climate Change Mean Seal Level Rise

	Scenario 1 (low)	Scenario 2 (high)
2050	0.08m	0.88m
2080	0.13m	0.70m
Eventual	0.5m	2.0m

Tropical Storms and Hurricanes

	Scenario 1 (low)	Scenario 2 (high)
# tropical storms per year	7-10	7-10
# severe hurricanes per year	2	4
Increased wind speed of strongest hurricane	5%	10-15%

Potential impacts on the water sector

Climate change factors impacting on the water sector:

- ✓ Drought, decrease in precipitation
- ✓ Increase frequency and intensity of rainfall events
- ✓ Increased frequency and intensity of hurricanes and tropical storms
- ✓ Sea Level Rise

Drought

- ✓ Intensification of water scarcity
- ✓ Reduced base flow
- ✓ Increased evapotranspiration rates
- ✓ Decrease in hydroelectric potential
- ✓ Shift in biodiversity

Implications of drought

- ✓ Impact on other sectors (tourism, agriculture)
- ✓ Reduced crop production
- ✓ Impacts on livestock
- ✓ Increased demand for cooling water
- ✓ Loss of hydro electric power potential
- ✓ Increase energy demand
- ✓ Impact on the forest and terrestrial resources
- ✓ Impact on endemic fauna and flora

Increase frequency and intensity of rainfall events

- ✓ Sedimentation, coastal erosion
- ✓ Siltation of watercourses are
- ✓ Damage to croplands
- ✓ Disruption of the economic activities,

Increased frequency and intensity of Hurricanes and tropical storms

- ✓ Storm activity impacts would affect the entire economy and foreign exchange earning potential.
- ✓ Will negatively impact the arrival of tourist
- ✓ Damage to coastal infrastructure,
- ✓ damage agricultural production
- ✓ Flooding of sewerage systems
- ✓ Alteration in forest cover
- ✓ Alteration of habitat for flora and fauna
- ✓ Potential loss of rain forest, biodiversity and endemic species

Sea level rise

- ✓ Increased evaporation from elevated water table
- ✓ inundation of fresh water resources by storm surges
- ✓ increase contamination of near surface lenses
- ✓ Saline intrusion in underground aquifers
- ✓ Salinization of agricultural soil

Generic Adaptation Options

Stage I: Planning (short term)

- General Capacity Building: Impact Studies; Identification of Vulnerable Areas
 - ✓ Regional climate change predictions
 - ✓ Predictions of water demand
 - ✓ Supply management options
 - ✓ Demand-side management
- Identification and General Assessments of Policy Options

Generic Adaptation Options

- **Stage II: Preparation (medium term)**
 - ✓ Create institutions and train staff
- Further Capacity Building in Vulnerable Regions; Development of Appropriate Adaptation Plans
 - ✓ R&D in desalination and recycling schemes
 - ✓ Public Education and information

Generic Adaptation Options

- Stage III: Initiation (long term) Formulation of Measures to Facilitate Adaptation in Vulnerable Areas; Feasibility Studies; Insurance
- ✓ Pilot studies for supply measures
- ✓ Pilot studies for demand measures
- ✓ Efficient water management

Challenges faced

- ✓ primary scientific and monitoring data.
- ✓ inadequacy of global climate models
- ✓ expanding the number of monitoring sites
- ✓ capacity building in vulnerability assessment and adaptation planning.
- ✓ comprehensive public awareness programme

Further Work

Component 6 of ACCC project

- ✓ Identify downscaled future climate scenarios
- ✓ Develop template for testing by a pilot water agency in the region,
- ✓ Caribbean Region report to the Kyoto, 2003.
International consultation
- ✓ Dissemination to water managers in the region.

Further Work

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