Achieving a Low Carbon Climate-Resilient Economy: Cayman Islands' Climate Change Policy

Produced by the National Climate Change Committee for presentation to the Cabinet of the Cayman Islands

Final Draft – September 2011

Achieving a Low-Carbon Climate-Resilient Economy
- Cayman Islands' *Climate Change Policy*

I. BACKGROUND

The National Climate Change Committee is pleased to present this consensus-based (final draft) *Climate Change Policy* which is the product of three years consultation convened under the *Enhancing Capacity for Adaptation to Climate Change* (ECACC) project funded by the United Kingdom Department for International Development (DFID) with technical support provided by the Caribbean Community Climate Change Centre (CCCCC). The Policy is based on an extensive technical review contained in the *Green Paper* - 'Climate Change Issues for the Cayman Islands: Towards a Climate Change Policy' (2010) - *(see http://www.doe.ky),* which is the most comprehensive reference document to date on the potential implications of climate change for the Cayman Islands' economic, social and environmental sectors.

The Cayman Islands' *Climate Change Policy* outlines consensus-based interventions to be implemented over the next 5 years that are required to address priority adverse impacts of climate change to be faced by these Islands. Additionally, the *Climate Change Policy* contains measures required to curb greenhouse gas emissions from activities that contribute to the problem of continued climate change. This *Climate Change Policy* recognizes that the combined actions of responding to the inevitable impacts of a changing climate (adaptation) and reducing further contributions to climate change (mitigation) are cost-effective and urgently needed in order to ensure low-carbon climate-resilient development in the Cayman Islands.

This final draft *Climate Change Policy* will be published on the Department of Environment's website for a two week period, prior to being submitted to Cabinet in October 2011.

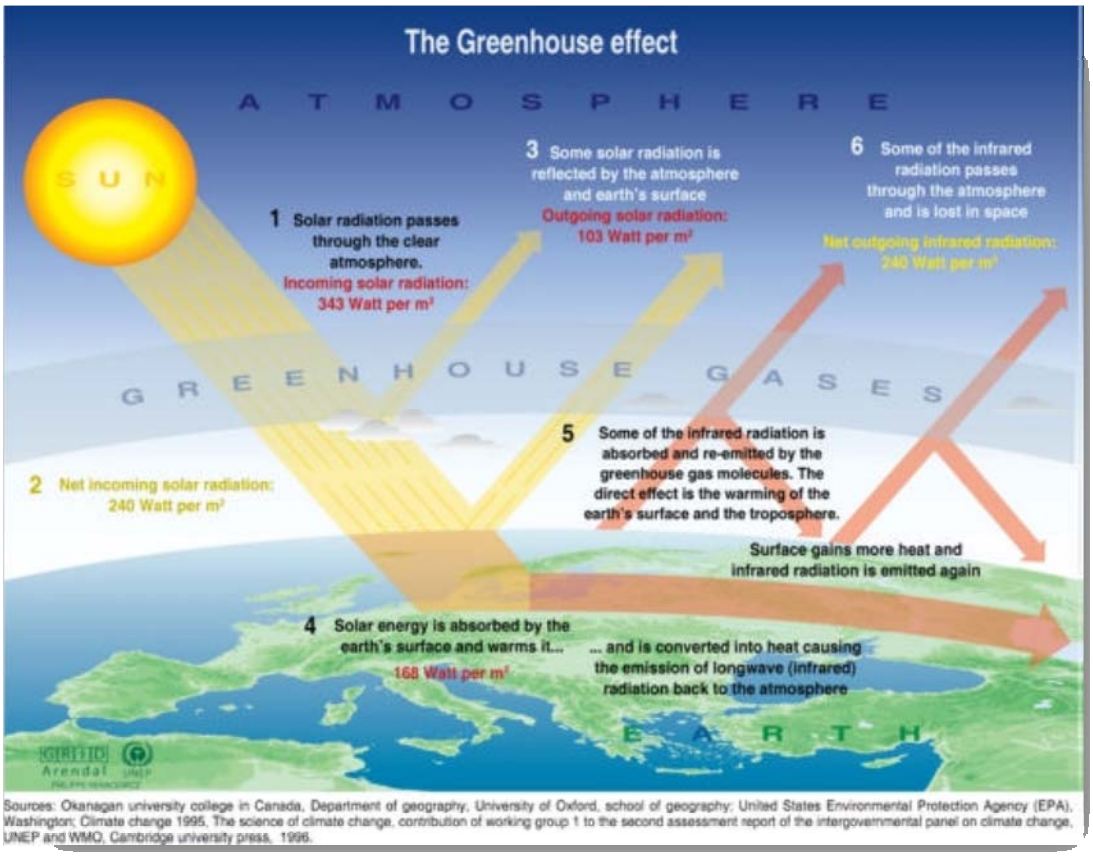
II. CONTEXT

The Earth has warmed on average by 0.74°C over the last hundred years, with 0.4°C of this warming occurring since 1970 (Mimura *et al*. in IPCC Fourth Assessment Report, 2007). The past decade is the warmest on record since the beginning of instrumental climate records in 1850, according to data sources compiled by the World Meteorological Organization (WMO). Globally the rate of warming averaged over the last 50 years has been nearly twice that of the last 100 years. The Intergovernmental Panel on Climate Change (IPCC) has determined that 90% of the warming effect can be attributed to human activities since the onset of the industrial revolution such as burning of fossil fuels for power generation, transport, industrial processes and housing. Global temperature increases are cause for concern worldwide. The IPCC, in periodic reports summarizing the extensive review of scientific literature, has determined that the impacts of this warming is already changing the world's climate and causing an increase in extreme events (floods, droughts, storms), a progressive rise in sea level, and is likely to result in an increase in hurricane intensity. Natural environments and biodiversity globally, together with human health and livelihoods, and the economies and sustainable development aspirations of most nations are being affected by global climate change.

The Intergovernmental Panel on Climate Change (IPCC) is a scientific body with a mandate to provide the world with a clear view on the current state of scientific knowledge on climate change and its potential environmental and socio-economic impacts.
www.ipcc.ch

Emissions of Greenhouse Gases (GHGs), which are the primary cause of global warming and associated climate change (Figure 1), continue to rise. The current atmospheric concentration of greenhouse gases is 430 parts per million (ppm). Measured atmospheric concentrations of carbon dioxide (CO_2) alone, the most important GHG, are currently 100 ppm higher than pre-industrial (1750) levels (IPCC Fourth Assessment Report, 2007).

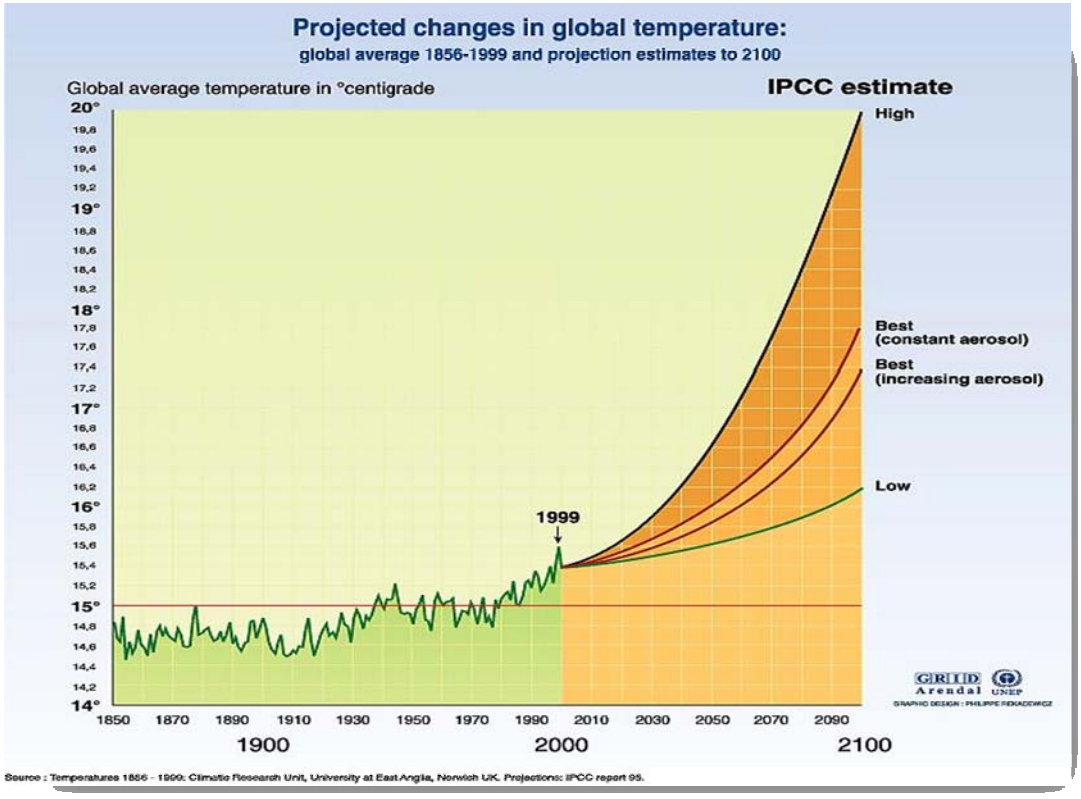
Figure 1: The Greenhouse Effect



Most developed countries and rapidly developing nations share the common view that in order to avoid the most dangerous effects of human-caused climate change, global average temperature should not rise more than 2ºC above pre-industrial levels before the year 2100 (Figure 2). Limiting warming to 2ºC by 2100 will mean capping the current concentration of greenhouse gases at 550 ppm, or in other words reducing global GHG emissions by 50% compared to 1990 levels by 2050.

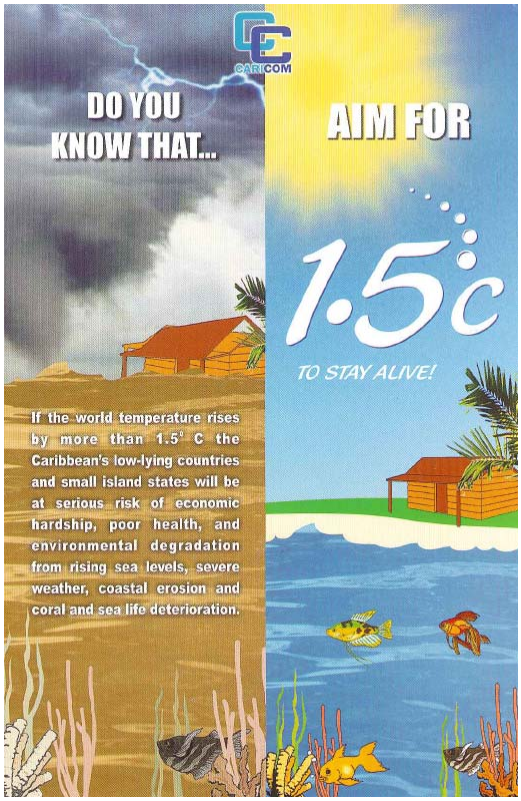
The cost of action to reduce GHG emissions and stabilize atmospheric concentrations to 500-550 ppm has been quantified by Sir Nicholas Stern in *The Economics of Climate Change* (2007) to be in the order of 1% of gross global Gross Domestic Product (GDP), with delayed action escalating damage costs to as much as 20% of global GDP taking into account the higher losses in most developing countries.

Figure 2: Projected Changes in Global Temperature



The United Nations Development Programme (UNDP) *Human Development Report 2007/2008* considers warming of 2°C as the threshold above which dangerous climate change will occur such that irremediable effects on human development and irreversible ecological damage will become unavoidable. This threshold is expected to be particularly detrimental to small islands, coastal communities and the poor and vulnerable worldwide. The business-as-usual (BAU) scenario or current course of action could see global temperatures rise to 3ºC to 4ºC which will most surely spell disaster for many small islands.

For this reason, small islands worldwide under AOSIS (Association of Small Island States) including CARICOM countries have rallied together to defend their proposed target of stabilizing global atmospheric concentrations of CO_2 at 350 ppm correlating to a temperature increase of about 1.5°C above pre-industrial levels, which is expected to avoid the worst impacts of 21st century climate change on their nations and across the globe.



While Caribbean countries combined contribute less than 0.1% to global greenhouse gas emissions they will be amongst the earliest and worst affected by climate change. Their small size, relative isolation, concentration of communities and infrastructure in coastal areas, narrow economic bases, dependence on natural resources, susceptibility to external shocks and limited financial, technical and institutional capacities are inherent vulnerabilities of small island developing states (SIDS).

Exposure to current weather-related hazards and other climate variability compound these vulnerabilities, which are often linked to inappropriate development policies and practices. Changing weather patterns associated with climate change are expected to exacerbate the vulnerabilities and impacts currently experienced in the region. Heavier rainfall events are already challenging the capacity of some nations to cope, leading to more frequent flooding of settlements and infrastructure, and raising human health concerns.

These weather extremes are likely to be accompanied by stronger hurricanes bringing the potential for increased damage and larger financial losses, greater pressure on national budgets and lengthier recovery times. The aggregate economic losses incurred by the small island states of the Caribbean Basin as a result of storms during the period 1979 – 2005 is estimated at US $16.6 billion (in current value), or US $613 million annually (World Bank: Financing for Relief and Development).

III. WHAT MAKES THE CAYMAN ISLANDS VULNERABLE TO CLIMATE CHANGE?

Like many Small Island Developing States (SIDS), the Cayman Islands are inherently vulnerable to current natural hazards because of features which include:

- **Small Size**: Limited natural resource base, high competition between land uses, interdependence of environmental systems, and spatial concentration of economic assets.

- **Remoteness**: Time delays and high costs in accessing imports and external assistance giving rise to a certain level of self-sufficiency.

- **Environmental Factors**: Low-lying interiors with extensive areas affected by marine and coastal processes, use of biodiversity for sustainable development.

- **Demography**: Small population, limited human capital, single urban centre, high per capita cost for infrastructure and services due to dis-economies of scale, ad hoc land use planning, and limitations in governance and public administration.

- **Economy:** Small economy, highly reliant on primary imports, dependent on external finance and sensitive to external market shocks, small internal market, extremely dependent on natural resources, little or no production capacity.

Global climate change is expected to exacerbate the vulnerability of SIDS in general, with the Cayman Islands being no exception.

An analysis of currently vulnerable sectors and facilities and the types of weather-related impacts already experienced by these Islands gives an indication of the challenges presented by climate change. According to a Preliminary Vulnerability Assessment of Grand Cayman conducted in 2009, a small but still significant percentage of emergency response facilities, critical infrastructure and government assets presently have a high vulnerability to natural hazards owing to their physical locations (Figure 3). Policies and action geared toward relocating or further protecting the most vulnerable interests would reduce their exposure to climate-related hazards in future.

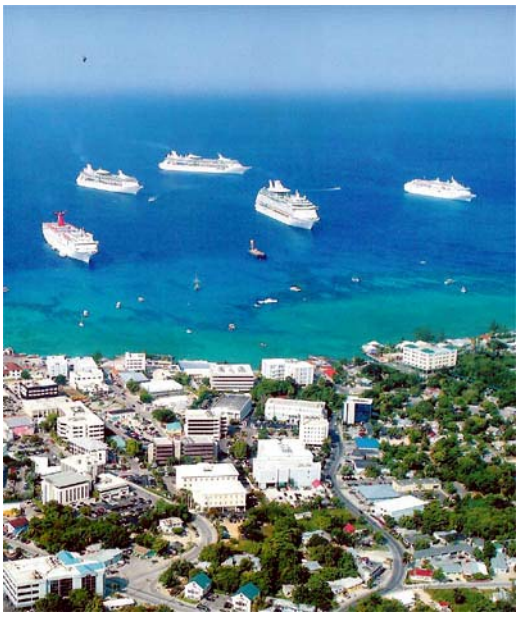
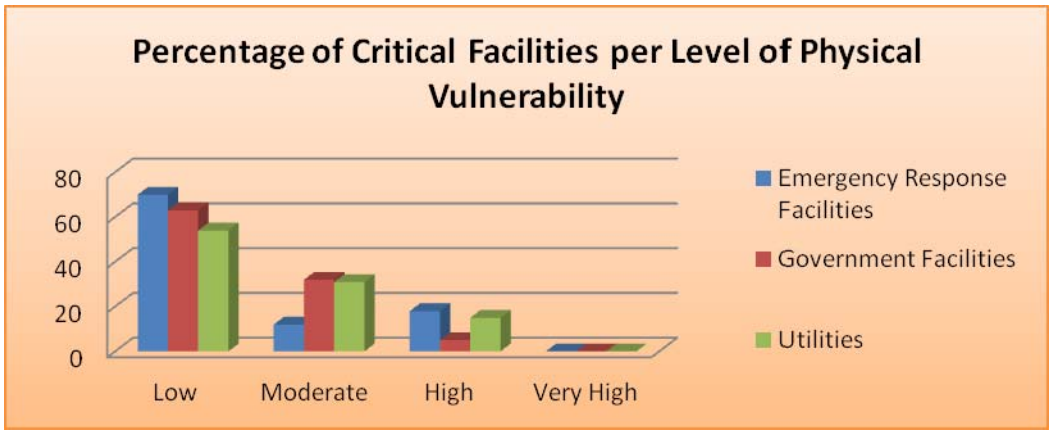


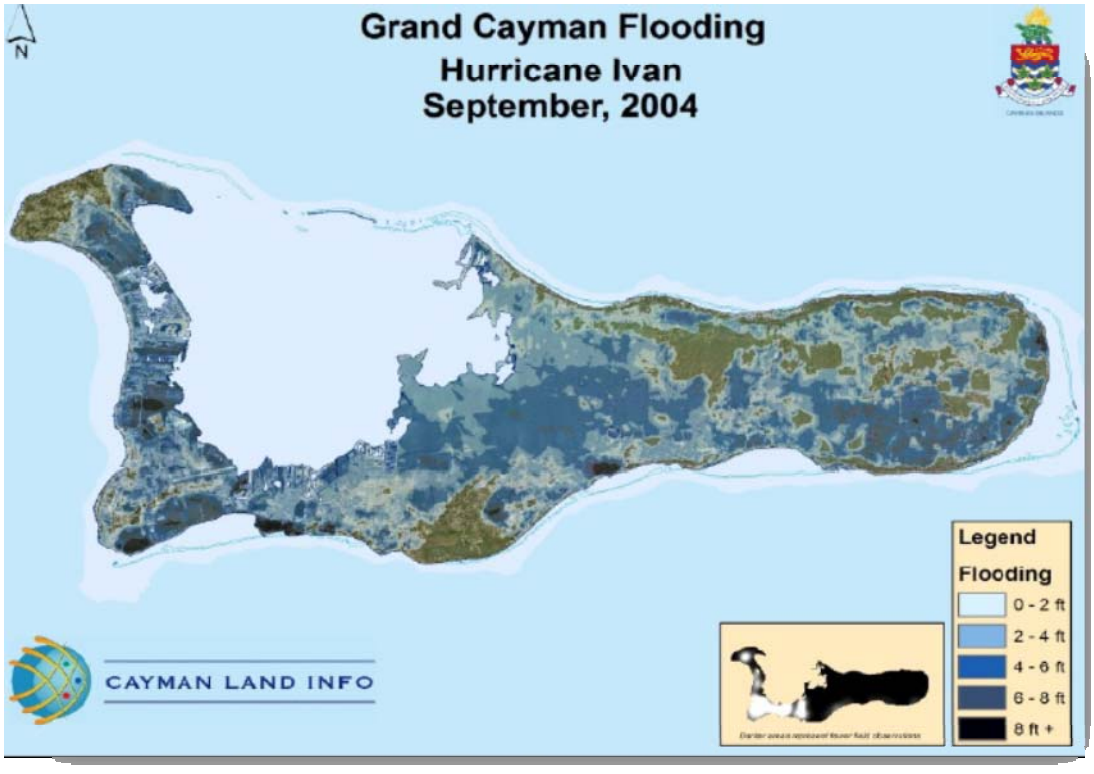
Figure 3: Physical Vulnerability of Critical Facilities in Grand Cayman



Source: Natural Disasters Assessment Consulting Group, 'Preliminary Vulnerability Assessment of Grand Cayman', 2009

Past storms and hurricanes, such as 'Ivan the Terrible' in 2004, have shown these islands to be particularly vulnerable to storm surge coastal flooding, the effects of which can be widespread - over 70% of Grand Cayman flooded from a few inches to as much as 10 ft from Ivan coastal flooding and heavy rainfall (Figure 4).

Figure 4: Areas of Flooding Associated with Hurricane Ivan



Source: Simpson, Robson & Smith, 'Sea Level Rise and its impact on The Cayman Islands', 2009

Economic losses from hurricanes affecting the Cayman Islands during the 20-year period, 1988 – 2008, have been mounting as infrastructure development and population growth continue to increase the country's level of vulnerability and associated damages (Table 1).

Table 1: Losses from Hurricanes affecting the Cayman Islands

Year	Hurricane	Category	CPA (statute miles)	Loss (CI$M)	Percentage of GDP (Year)
1988	Gilbert	IV	24 to GCM	16	N/A
2001	Michelle	IV	130 to GCM	22	1.5 (2001)
2004	Ivan	IV	22 to GCM	2,800	183.0 (2003)
2008	Paloma	IV	9 to LYC	154	7.4 (2008)

N/A = Not Available

CPA = Closest Point of Approach (has to be below 75 statute miles to be considered a direct hit)

Source: Hurlston-McKenzie *et al*, 'Climate Change Issues for the Cayman Islands: Towards a Climate Change Policy', 2010

Hurricane Ivan represents the greatest loss to date in at CI$2.8 billion or 183% of GDP. The passage of major hurricanes (category 3 and above) is expected to increase in a warmer future, bringing higher wind and rainfall intensities and larger storm surges. These events will continue to disrupt the daily lives of residents and impact tourism and financial services activities upon which future GDP growth relies and the wider national economy.

With rising sea levels, higher storm surges associated with major hurricanes will exacerbate losses from coastal erosion and flooding and inland inundation. Sea-level rise further threatens freshwater aquifers from intrusion of salt water which could impact agricultural production and quality of drinking water.

IV. POTENTIAL IMPACTS OF CLIMATE CHANGE ON THE CAYMAN ISLANDS

Regional and international climatologists have developed climate change projections for the Caribbean based on past climate observations in the region and regional and global climate modelling. The changes in climatic variables and their general impacts on Caribbean islands, including the Cayman Islands, are summarised in Table 2.

Table 2: Regional Projections of Climate Change over the next century

CHANGE FACTOR	IMPACT

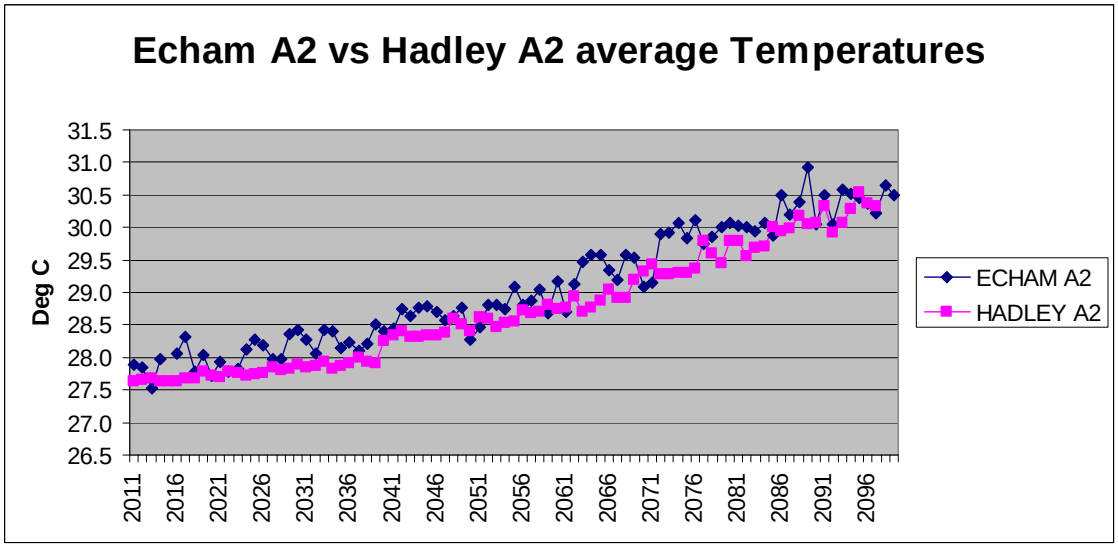
Temperature	• Rates of warming in the region expected to be lower than the global average
	  • 2050s: Increases between 2.0˚C and 2.8˚C
	  • 2080s: Increases of 3.1˚C to 4.3˚C

Rainfall	• Changes in rainfall patterns expected with generally heavier rainfall events • Regional variations expected • 2050s: decline in rainfall over the Greater Antilles • 2100: significantly less rainfall region wide in the summer wet season • Conditions likely to become more El Niño-like, i.e. drier Caribbean region
Storms and Hurricanes	• Stronger hurricanes (category 4 and 5) expected • Substantially more rainfall and peak winds intensity
Sea Level Rise	• Changes in the Caribbean expected to be near the global mean • 2100: 18 cm (low emission scenario) to 58 cm (high emission scenario) (IPCC conservative estimates) • 2100: 2 m to 3 m global sea level rise (thermal expansion of oceans and surface melting of Greenland and West Antarctic Ice Sheets)

Source: Hurlston-McKenzie *et al*, 'Climate Change Issues for the Cayman Islands: Towards a Climate Change Policy', 2010

Utilizing historic climate data for the Cayman Islands in the PRECIS (Providing REgional Climates for Impact Studies) regional climate model, the Cayman Islands National Weather Service found consistency with regional temperature projections for these Islands from 2011 to 2099. Similar to the regional projections shown in Table 2, a 2.0°C to 2.7°C (or 0.02°C to 0.03°C per year) increase in surface air temperature is expected in the Cayman Islands (Figure 5).

Figure 5: Average Annual Temperature, 2011-2099



Source: National Weather Service, 2010 In: Hurlston-McKenzie *et al*, 'Vulnerability and Capacity Assessment of the Climate Change and Sea-Level Rise Impacts on The Cayman Islands' Tourism Sector', 2011

When combined with a continued increase in sea surface temperatures as observed locally by the Department of Environment, the implications of these temperature changes include:

- increase in cooling loads across all economic sectors and higher fuel costs associated with supplying energy for cooling needs;
- rise in the occurrence of pests and vectors, contagious diseases and stress-related diseases;
- loss of marine and terrestrial biodiversity as a result of changes in temperature and rainfall, especially loss of coral reefs as a result of bleaching and ocean acidification affecting marine tourism interests; and
- reduced agricultural productivity and decline in commercially important fish stocks, increasing the threat to food security

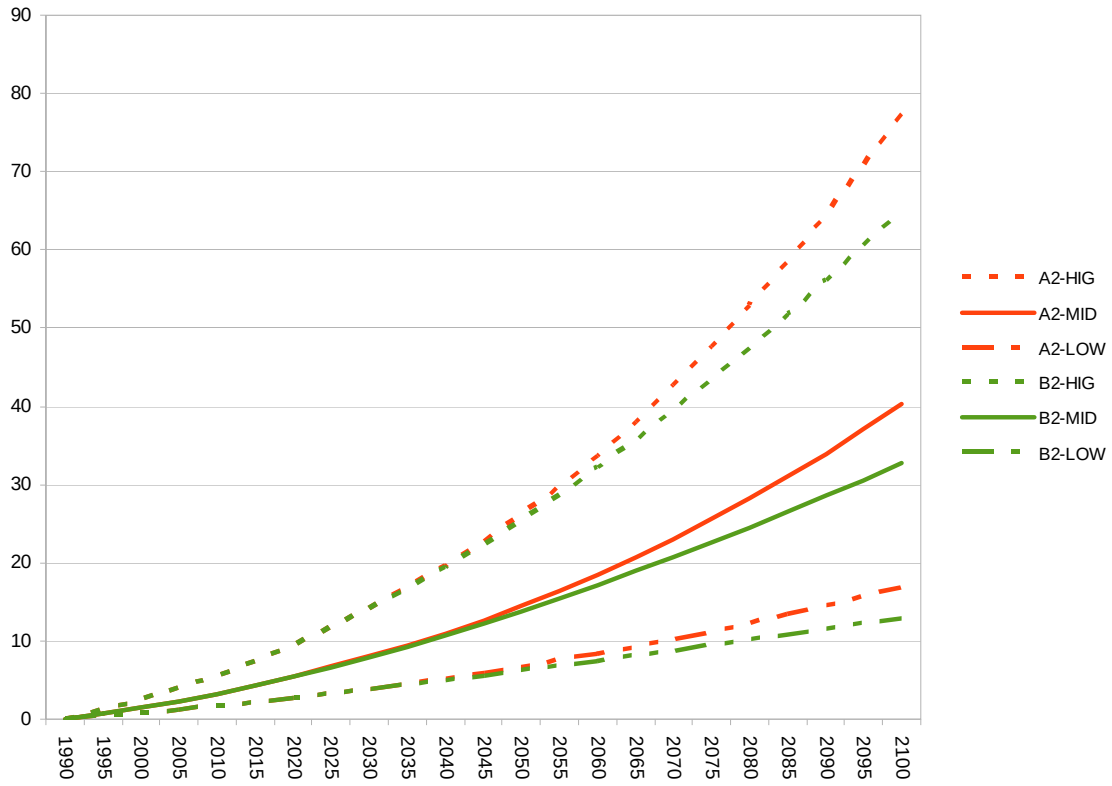
The Cayman Islands are amongst those islands showing regional variation in rainfall projections, with a decrease of between 10 and 50 mm in annual rainfall totals predicted between 2011 and 2099.

Such a decline in precipitation within the Cayman Islands could result in:

- depletion of ground water supplies and water quality;
- increase in production of potable water through desalination and energy costs and greenhouse gases associated with this process; and
- more frequent drought conditions with the potential to reduce agricultural productivity and thus threaten food security

Estimates of future sea-level rise within the Caribbean utilizing the Model for the Assessment of Greenhouse-gas Induced Climate Change (MAGICC) revealed an increase of 12 cm (0.4 ft) to 80 cm (2.6 ft) in sea levels by 2100 from a 1990 baseline. This range encompasses the conservative estimates by the IPCC for global sea-level rise and represents a rise of approximately 0.14 cm to 0.91 cm per year (Figure 6).

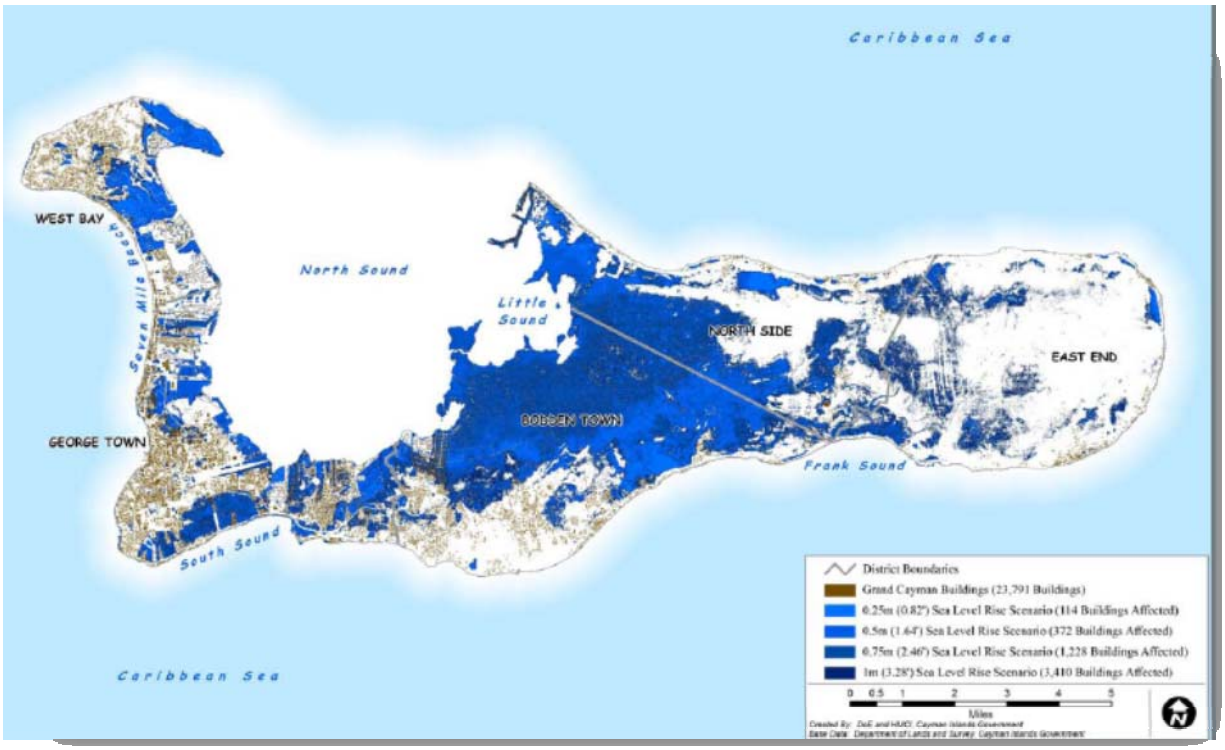
Figure 6: Sea-Level Rise Estimates Relative to 1990



Source: National Weather Service, 2010 In: Hurlston-McKenzie *et al*, 'Vulnerability and Capacity Assessment of the Climate Change and Sea-Level Rise Impacts on The Cayman Islands' Tourism Sector', 2011

The impacts expected from the range of sea-level rise anticipated are spatially represented in Figure 7 in terms of number and distribution of buildings on Grand Cayman impacted. Roughly CI$22 million worth of real estate across all building sectors is affected by a 0.25m (0.82 ft) rise in sea level, while approximately CI$243 million is at some level of risk under the 0.75m (2.46 ft) sea-level rise scenario.

Figure 7: Areas Affected by 0.25cm to 1m Rises in Sea Level, Grand Cayman



Source: Department of Environment, 2010

Other effects of continually rising seas on the Cayman Islands include:

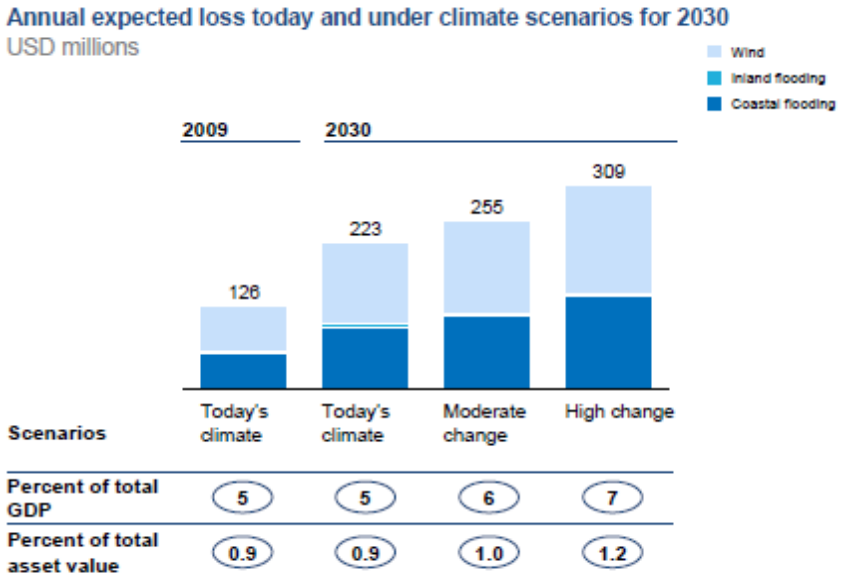
- erosion and submergence of beaches, wetlands and coastal lowlands affecting recreational areas and residential and commercial real estate;
- temporary or permanent loss of, or more costly damage to, critical infrastructure and human settlements as a result of increased frequency of coastal flooding and inundation from higher tides and storm surges;
- reduced quality of potable water from traditional groundwater supplies; and
- degradation of biodiversity and natural ecosystems, jeopardizing the nature-based tourism sector.

Quantifying anticipated climate change impacts can be quite challenging but is an essential part of risk management, climate change adaptation and ultimately responsible national development planning. Globally a growing number of studies using a variety of tools are assessing these impacts in terms of the avoided costs saved to regions or nations if timely and appropriate interventions are put in place.

In 2010 the Cayman Islands was fortunate to be included in the Caribbean Catastrophe Risk Insurance Facility's 'Economics of Climate Adaptation' Study conducted in partnership with the Caribbean Community Climate Change Centre and UN ECLAC, with analytical support from the McKinsey Group and Swiss Re. Present-day and future expected losses from hurricane-induced winds, coastal

flooding from storm surge and inland flooding from both hurricanes and tropical systems for three climate change scenarios were assessed, and the potential loss was then estimated using an approach similar to that applied for calculating insurance premiums. The study found that annual expected losses for the Cayman Islands is already high at 5% of local GDP and under a high climate change scenario could amount to 7% by 2030 (Figure 8). While the contribution of storm surge-induced flooding remains at about 45% of the total damage potential across all three scenarios, expected loss nearly triples from US$126 million in 2009 to US$309 million by 2030.

Figure 8: Annual Expected Loss from Climate Risks 2009 and 2030



Source: Caribbean Catastrophe Risk Insurance Facility, 'Enhancing the Climate Risk and Adaptation Fact Base for the Caribbean: preliminary results of the ECA Study', 2010

Comparatively, the Cayman Islands is one of the highest loss jurisdictions of all the Caribbean countries studied. Historically, this is also true with hurricane Ivan losses equal to over $75,000 per person, the highest per capita loss ever encountered by UN ECLAC. Insurance experts view the Cayman Islands at risk of being uninsurable in the near future as many properties in Grand Cayman in particular are currently close to the 'limit of insurability' (Muir-Wood, 'Climate Change & the Cayman Islands – Building Resilience', 2008). The occurrence of another Ivan-type event, exposure to more intense hurricanes over the long term, and continued acceleration of sea-level rise are all factors expected to cause a tipping point for insurance coverage in the Cayman Islands.

ACHIEVING A LOW-CARBON CLIMATE-RESILIENT ECONOMY IS NOT AN OPTION FOR THE CAYMAN ISLANDS – IT IS NECESSARY FOR OUR VERY SURVIVAL.

V. POLICY STATEMENT

Climate change is threatening the security, sustainable development and economic welfare of the Cayman Islands and this threat can only be addressed effectively through public, private sector and civil society partnerships. The aim of this ***National Climate Change Policy*** is to foster, direct and enable an integrated, holistic, informative and participatory national process that will achieve low-carbon climate-resilient development while protecting and enhancing our economic prosperity, livelihoods, human health, culture and environment for present and future generations.

VI. GUIDING PRINCIPLES

The transition to a climate-resilient, low-carbon economy - which is essential to meet sustainable development aspirations in the Cayman Islands and to implement viable adaptation & mitigation measures in accordance with commitments under the *United Nations Framework Convention on Climate Change* (UNFCCC) and the *United Kingdom Climate Change Programme*- shall be guided by the following principles:

- society, at all levels and in all sectors, must be adequately informed on the risks and opportunities afforded by climate change;
- Government shall endeavour to obtain the involvement and participation of all stakeholders in facilitating the transition to a climate-resilient, low-carbon economy, and ensure that such involvement and participation occurs on a fully coordinated and consultative basis;
- addressing climate change in a sustainable manner requires the creation of an institutional, administrative and legislative framework supported by sustainable climate change financing;
- the adoption of appropriate technologies and practices will be required to address the causes and effects of climate change;
- the maintenance of food security together with the resilience of people, infrastructure and the natural environment is key to coping with climate change risks, and
- economic resilience is key to coping with climate change and the development of a strong and diversified economy is essential to sustain climate-resilient low-carbon development.

VII. POLICY GOALS AND OBJECTIVES

This policy will facilitate the transition to a climate-resilient, low-carbon economy by implementing measures that will:

- Reduce Greenhouse Gas Emissions, in line with agreed national targets, through promoting energy conservation, reducing energy use and encouraging greater use of renewable energy;
- Enhance the resilience of existing critical infrastructure to climate change impacts, while avoiding the construction of new infrastructure in vulnerable areas or with materials prone to climate hazards;
- Promote water conservation and improved rainwater harvesting while reducing impacts from flooding and enhancing the resilience of natural water resources;
- Enhance the resilience and natural adaptive capacity of terrestrial, marine and coastal biodiversity and ecosystems;
- Minimise the vulnerability of insured and mortgaged properties to climate change impacts;
- Strengthen food security by promoting increased use of locally produced food products and appropriate technologies, and
- Create and maintain a more environmentally responsible tourism industry while enhancing the resilience of tourism infrastructure and facilities to climate change impacts.





VIII. APPLICATION

This policy shall guide the work of all Governmental, statutory, private sector, non-governmental and civic entities, supporting the transition to climate-resilient low-carbon development in the Cayman Islands.

IX. POLICY DIRECTIVES

Outlined in further detail are high priority predicted impacts arising from climate change in the coming years. The following interventions will be implemented within 5 years of the adoption of this policy.

Marine & Coastal Resources

Climate change is likely to cause considerable impacts on the Cayman Islands' marine and coastal resources, including:

- ***turtle*** nesting and breeding patterns due to beach erosion (habitat loss), periodic inundation and elevated sand temperatures (skewing of sex ratio);
- ***fisheries & reef health*** from physical destruction by hurricanes and degraded reefs from warming seas, resulting in changing range of tuna and grouper;
- ***coral reefs*** impacted from warmer sea temperatures (coral bleaching), ocean acidification and sea level rise;
- ***mangroves/wetlands*** loss from increased hurricane intensity, inundation by storm surge and through impoundment and outpacing by sea level rise, resulting in the loss of natural storm buffers and protection for coasts, and
- ***beach and shoreline erosion and land loss*** from stronger hurricanes, storm surges and sea level rise.

In order to *enhance the resilience and natural adaptive capacity of marine and coastal ecosystems by increasing protection and reducing local impacts*, the Government of the Cayman Islands will undertake the following tasks:

<u>Legislation and Policy Actions</u>

√ Enact a National Conservation Law with accompanying regulations;
√ Amend development and planning legislation to address climate change and natural disaster risks, which should include:

- increasing site-specific coastal construction setbacks to take account of climate change, other hazards and coastal dynamics while protecting traditional access rights;
- establishing appropriate and region-specific coastal construction setbacks for mangrove shorelines;
- new coastal developments incorporating measures to mitigate the impacts of climate change, e.g. "wash-through" ground floors;

- revising Part IV, of the Development and Planning Law (2008) to include adequate coastal setbacks and climate change risk management measures as reasons for refusing applications (and therefore not subject to compensation);
- revising the Development and Planning Regulations (2006) to establish effective control over sand and ballast;
- requiring coastal setbacks to be determined from a setback line (see BRAC Report (2003) for recommendations), as opposed to the high water mark, and
- for mangrove coastlines, amend the definition of the high water mark in the Land Surveyors Regulations to refer to the extent of tidal inundation.

√ Enact new regulatory control measures to reduce harmful pollutants entering the marine environment;
√ Develop a Seven Mile Beach re-nourishment contingency plan (see BRAC Report), and
√ Adopt Florida DoE Mangrove Trimming Guidelines.

Research, Monitoring & Education

√ Monitor & control land-based sources of pollution on reef systems and fish populations;
√ Monitor and control overfishing of fish species, and
√ Enhance coral reef monitoring programmes.

Environmental Best Management Practices

√ Implement appropriate sections of the Cayman Islands *Species Action Plan (2009)* for marine turtles and grouper and the *Habitat Action Plan (2009)* for coral reefs, mangroves, pools, ponds and lagoons;
√ Implement appropriate recommendations from the *Beach Review & Assessment Committee Report (2003)* and *Environment & Coastal Zone Management Special Issue Committee Report (2002)*;
√ Assess potential flooding threats for mangrove areas and undertake timely drainage of impounded mangroves, where appropriate;
√ Expand mangrove replanting programmes in conjunction with a review of mangrove high water mark delimitation, or with provision that replanted mangroves are not to subsequently be developed;
√ Utilize the Environmental Protection Fee Fund for conservation of vulnerable coastal and marine resources, and
√ Integrate hazard mapping and climate change risk management as part of the physical planning process.

Terrestrial Resources

Climate change is likely to cause considerable impacts on the Cayman Islands' terrestrial resources, including:

- ***Loss of biodiversity*** especially endemic, native and culturally important species, and
- ***Increase in invasive species*** of flora and fauna.

In order to *enhance the resilience and natural adaptive capacity of terrestrial biodiversity/resources,* the Government of the Cayman Islands will undertake the following tasks:

Legislation and Policy Actions

√ Enact a National Conservation Law;
√ Implement the *Cayman Islands National Biodiversity Action Plan (2009);*
√ Implement recommendations of the *Environment & Coastal Zone Management Special Issue Committee Report (2002),* and
√ Update current Plant Quarantine Legislation to adequately address risk of increased invasive species.

Environmental Best Management Practices

√ Continue to collect specimens under the seed bank project (Kew Gardens), and
√ Investigate carbon offsetting schemes for possible habitat protection benefits.

Energy Security

Climate change is likely to cause considerable impacts on the Cayman Islands' energy security, including:

- ***Increased electricity demand/cost*** due to addressing increased incidence of heat extremes and rising demand for desalinated water, and
- ***Damage to electrical infrastructure*** from increased hurricane intensity.

In order to *promote energy conservation, reduce energy use and encourage greater use of renewable energy,* the Government of the Cayman Islands will:

Legislation and Policy Actions

√ Formulate and adopt a *National Energy Policy* (NEP) – which will seek to, amongst other things:
  - o reduce the country's carbon footprint in line with agreed national targets;
  - o diversify energy supplies including the development of renewable resources, and

- encourage and promote energy conservation and efficiency throughout public and private sectors

√ Establish a national GHG emissions reduction target, assisted as appropriate by UK and other relevant expertise;
√ Develop and adopt an energy code and supporting legislation aimed at increasing energy efficiency in new buildings across all sectors, with a particular focus on efficiency requirements for cooling systems;
√ Adopt energy efficiency standards for appliances (e.g. Energy Star), equipment (e.g. air conditioning systems), building products and materials (e.g. R-value), and vehicles;
√ Develop a comprehensive strategy for a national public transport system in the context of a National Transportation Plan;
√ Enact traffic control legislation to promote the use of fuel efficient, low emissions vehicles;
√ Provide incentives for the importation and use of building materials, products and technologies that result in higher energy efficiency, and
√ Legislate the use of energy audits and explore their use in securing financing and attractive insurance rates for new buildings, and acquiring energy saving mortgages for retrofit of existing building stock.

Research, Monitoring & Education

√ Test and update safety measures and hurricane contingency plans for critical infrastructure;
√ Work with local utilities to create suitable programs (rebates, tax breaks, fee reductions, price disincentives) to encourage greater water and energy conservation and efficiency practices in the residential and commercial sectors and increase the use of renewable technologies;
√ Develop programmes with the tourism sector to:

- Conduct energy audits of the Cayman Islands tourism plant;
- Reduce overall energy use from facility operations, especially demand for cooling;
- Provide financial incentives and technical assistance to achieve reductions, with particular emphasis on retrofitting lighting and cooling systems and installing renewable energy alternatives, e.g. solar water heating;
- Encourage tourists to conserve energy at their hotel or tourism facilities and attractions visited, and
- Provide opportunities for tourists to offset carbon emissions associated with their hotel stay or activities which benefit on-site or local energy conservation and efficiency programs or renewable energy initiatives.

√ Establish public education and outreach programs to:

- Make the motoring public more efficient drivers and responsible vehicle owners, and
- Promote energy conservation and energy efficiency in the home and office, and increase awareness of the importance of systems maintenance to increase efficiencies.

Environmental Best Management Practices

√ Climate-proof existing and planned fuel terminals and critical & vulnerable electricity distribution systems to reduce vulnerability to climate threats;
√ Encourage architectural design of homes and other buildings that incorporates both active (HVAC, lighting) and passive strategies for cooling and lighting (e.g. natural ventilation, shading and day lighting);
√ Promote mixed-use development to facilitate pedestrian and other non-motorized activities, and
√ Establish incentives to encourage:

- the importation and use of smaller, more fuel efficient vehicles;
- the conversion of existing vehicle stock to use biodiesel where feasible;
- the importation and use of hybrid, electric and alternatively fuelled vehicles, and
- vehicle licensing fees tied to carbon emissions or fuel efficiency.

Water Resources and Hydrology

Climate change is likely to cause considerable impacts on the Cayman Islands' water resources through:

- Increased occurrence of ***inland flooding***;
- ***Loss of groundwater resources*** from annual rainfall decrease and saltwater intrusion associated with sea level rise, and
- ***Increased costs*** for desalinated water as the price of fossil fuels rise.

In order to *promote water conservation and improved rainwater harvesting while reducing impacts from flooding and enhancing the resilience of natural water resources,* the Government of the Cayman Islands will:

Legislation and Policy Actions

√ Develop and/or implement comprehensive plans to alleviate current flooding problems which are to be reviewed by engineers and other relevant stakeholders;
√ Implement the *National Biodiversity Action Plan (2009)*;
√ Increase investment in storm water management programmes and move away from deep wells (towards other flood control methods, e.g. swales, retention ponds, etc. to complement deep wells) on a site by site basis;

- √ Develop and implement comprehensive regulations for proper storm water management;
- √ Revisit *Mosquito Research & Control Unit* (MRCU) and Development and Planning Regulations regarding the filling of reclaimed and low-lying lands (evaluate the need to fill entire parcel vs. filling of building footprint only and assess standards for the overall height of filled land);
- √ Strengthen provisions for retaining in-situ vegetation on development sites within the Development and Planning Regulations, and
- √ Revise Water Authority Law to allow use of grey water for irrigation (especially at hotels, golf courses and other large-scale development), as well as reuse in buildings for toilet flushing, with adequate public health controls.

Research, Monitoring& Education

- √ Undertake a feasibility analysis for the expansion of centralized sewerage system(s) for the Islands;
- √ Incentivize and encourage investment in renewable alternatives to fossil fuel-based production systems such as solar powered desalination technology;
- √ Establish public education and awareness programs to promote water conservation and recycling;
- √ Establish incentives to promote rainwater catchment systems being used in new construction (or added to existing buildings), and
- √ Enhance & enforce development controls over the use and abstraction of underground water.

Environmental Best Management Practices

- √ Require new developments in wetland areas to retain a percentage of in-situ wetland, particularly freshwater habitats, by incorporation as landscape features and public amenities;
- √ Require new developments to minimize the extent of impervious surfaces by incorporating technologies designed to facilitate and increase infiltration (e.g. Grasscrete, porous concrete), and
- √ Expand rainwater harvesting, storage and distribution infrastructure and encourage (through economic incentives) new developments to incorporate these into schemes, with appropriate public health (especially mosquito) controls.

Food Security

Climate change will likely cause considerable impacts on the Cayman Islands' prospects for attaining food security, through:

- ➢ ***Reduced local food production and availability*** due to increased incidents of drought, invasive species, crop damage, soil salinization, and competition from imported produce and development pressures on scarce, good quality arable land, and

- ***Increased food costs*** and incidents of disruption to food supply as climate change impacts other regions and supplies disrupted when ports are damaged or inoperable.

In order to *strengthen food security by promoting increased use of locally produced food product,* the Government of the Cayman Islands will:

Legislation and Policy Actions

√ Develop a *Food Security and Nutrition Policy* (focussing on Availability, Access and Utilisation);
√ Establish land use and zoning policies to identify and protect agricultural land;
√ Amend Development and Planning Regulations and guidelines (where necessary) to promote landscaping, soil preservation, community gardens and the planting of fruit trees,
√ Establish locally funded crop insurance or a crop recovery fund, and
√ Develop and enact stringent Food Safety Policy & Regulations.

Environmental Best Management Practices

√ Conserve and protect water sources for agricultural production;
√ Establish weather forecasting and early warning systems for farmers, and
√ "Climate proof" air and sea port facilities, road networks and other critical infrastructure.

Critical Infrastructure

Climate change is likely to cause considerable impacts on the Cayman Islands' critical infrastructure, through:

- Increased ***flooding of homes***, critical facilities, roads and developable lands (both inland and in low-lying coastal areas), and
- Increased ***operational disruptions to critical services*** (airports, sea ports, utilities, waste management including sewage, water & electrical distribution systems) from weather extremes and rebuilding after significant damage.

In order to *enhance the resilience of existing critical infrastructure to climate change impacts, while avoiding the construction of new infrastructure in areas or with materials prone to climate hazards,* the Government of the Cayman Islands will:

Legislation and Policy Actions

√ Revise Development and Planning Regulations and building code to include provisions for reducing flood and climate change risks;

- √ Integrate hazard vulnerability and risk assessments into development planning processes and utilize environmental impact assessments (EIAs) to assist with decision making;
- √ Implement remediation plans for chronic flooding 'hot spots';
- √ Establish coastal construction setbacks based on flood risk mapping;
- √ Vegetate buffer zones and establish other stormwater run-off controls;
- √ Promote adequate property insurance for home owners;
- √ Ensure adequate insurance for critical infrastructure and investigate insurance pool schemes for portions of infrastructure not currently insurable (e.g. distribution systems or replacement financing);
- √ Design new critical infrastructure intended as a hurricane shelter as multi-use shelters (passive survivability) to withstand Category 5 hurricane;
- √ "Climate proof" existing and future waste management sites and designate temporary waste collection sites for storage of hurricane debris/waste, and
- √ Develop and implement appropriate guidelines for seawall location and construction.

Research, Monitoring & Education

- √ Establish community-based vulnerability mapping and disaster planning;
- √ Undertake risk mapping to identify critical infrastructure/developments at risk;
- √ Design, cost and phase implementation of a national level sewerage system(s) with appropriately located pumping/lift stations and treatment facilities;
- √ Review Disaster Management Plans for district landfill sites and ensure the design and operation of future facilities consider climate change impacts, and
- √ Ensure Disaster Management and Emergency Response plans at all critical services are tested and upgraded regularly.

Tourism Sector

Climate change will likely cause considerable impacts on the Cayman Islands' tourism sector, through:

- ***Increased risk*** to tourism facilities from sea level rise, stronger hurricanes, storm surges and flooding;
- ***Impact on tourism product*** from more extensive coastal erosion (e.g. degraded beach amenities), increased damage to local attractions, and more frequent coral bleaching events.

In order to *create a more environmentally responsible tourism industry and preserve the quality of natural, historical and cultural attractions, while enhancing the resilience of tourism infrastructure and facilities to climate change impacts,* the Government of the Cayman Islands will:

Legislation and Policy Actions

√ Amend the Tourism legislation to ensure that applications for new tourism development are submitted to the Department of Tourism, Department of Environment and other relevant agencies for review and a climate change risk assessment, and
√ Implement "no regrets" measures.

Research, Monitoring & Education

√ Undertake mapping to identify critical tourism infrastructure at risk and review current Hotel/Tourism zoning in highly vulnerable areas;
√ Determine highest-risk areas and designate as 'vulnerable' zones requiring climate change risk management plans for tourism facilities;
√ Diversify the Cayman Islands tourism product from 'sun-sea-sand' - enhance visitor experience (in broadest terms) by increasing the number and type of attractions, and
√ Develop scheme for tourists to offset greenhouse gas emissions.

Environmental Best Management Practices

√ Implement the recommendations of the National Tourism Management Plan (2009-2013).
√ Require tourism facilities to develop, implement and test disaster & climate change risk management and business continuity plans – attached to licensing of business;
√ Require climate change risk assessment as part of inspection and licensing of tourism properties, and
√ Cost-share beach re-nourishment projects with all beach front property owners.

Insurance and Financial Services

Climate change will likely cause considerable impacts on the Cayman Islands' insurance and financial services sector, including:

- increased losses from more frequent incidents of natural disasters;
- sea level rise resulting in higher insurance premiums, and
- inability to obtain insurance coverage.

In order to *minimize the vulnerability of insured and mortgaged properties to climate change impacts,* the Government of the Cayman Islands will:

Legislation and Policy Actions

√ Enact legislation to establish a climate change reinsurance market in the Cayman Islands;
√ Promote the establishment of climate change risk management protocols for the finance sector;

- √ Require all companies to file a Corporate Social Responsibility (CSR) statement to report their impact upon the environment and plans for reducing climate change risks and carbon footprint, and
- √ Reduce the exposure of the Cayman Islands insurance and financial services sector by updating the Building Code to address climate change risks.

Research, Monitoring & Education

- √ Identify Government assets located in climate change risk-prone areas and formulate and implement measures to reduce the vulnerability of such assets, and
- √ Work with regional institutions (e.g. CCCCC, CCRIF) to better define the Cayman Islands' risk profile and find affordable solutions to manage risk caused by natural hazards and climate change.

Environmental Best Management Practices

- √ Collaborate with the insurance and financial services sector to establish economic incentives for owners to climate proof existing and new buildings.

XI. ACCOUNTABILITY

Responsibility for the timely and coordinated implementation of this *Climate Change Policy* is vested with the *National Climate Change Council* (NCCC) that will be established and chaired by the Premier. The *NCCC* shall have representation from the Governor's Office, all Government ministries, Members of the Opposition, civil society, the private sector, academia, the National Youth Assembly, non-governmental organisations, Statutory Authorities, and Utilities. The *NCCC* shall establish Technical Subcommittees to support and assist the work of the Council. Funding and resourcing of the work of the NCCC will, where possible, be absorbed within the operational budgets of Government ministries and portfolios.

A *Climate Change Trust Fund* shall be established to help fund the effective implementation of this *Climate Change Policy*. This Fund shall be established by law, and administered by a Board of Trustees that shall be tasked to: (a) **mobilize funds** from a variety of sources including carbon trading, carbon offsets, incentive programs, carbon levies, etc; and (b) **manage the funds** to ensure that the resources of the *Climate Change Trust Fund* are efficiently utilised to support the timely and effective implementation of this *Climate Change Policy.*

XII. MONITORING

The implementation of this *Climate Change Policy* shall be monitored by the *NCCC* or its successor body. Government shall review the Mandate, Terms of Reference and composition of this entity with a view to better equipping it to fulfil its mandate.

The Council shall report to Cabinet through the Premier's Office on a semi-annual basis, as well as at any other time deemed necessary. The *NCCC* shall keep this policy under regular review, and shall monitor implementation of the directives of this policy.

The *NCCC* shall present to Cabinet an annual report on measures that have been undertaken to implement this policy. This report is to be tabled in the Legislative Assembly.

Beginning no later than the fifth anniversary of the date of this policy, the *National Climate Change Council* shall conduct a public review of this policy to determine its effectiveness in achieving its goals and objectives, and update the policy based on the findings of the review and best practices at the time; the report of this review shall be presented to Cabinet within one year of the beginning of the review.