

MODULAR CERTIFICATE COURSE IN CLIMATE CHANGE

REGIONAL ADAPTATION

CSGM WORKSOP

Mona Campus

28th August 2012

MODULAR CERTIFICATE COURSE IN CLIMATE CHANGE

***REGIONAL
ADAPTATION
CSGM WORKSOP
Mona Campus
28th August 2012***

ADAPTATION TO CLIMATE CHANGE

- Adaptation to climate change can be defined as adjustments of a system to reduce vulnerability and to increase its resilience to climate change.
- Adaptation can either occur
 - in anticipation of change (anticipatory adaptation),
 - or be a response to those changes (reactive adaptation)

ADAPTATION TO CLIMATE CHANGE

- Important concepts for understanding adaptation;
 - Vulnerability- the context in which adaptation takes place, and
 - adaptive capacity - the ability or potential of a system to respond successfully to climate variability and change, in order to reduce adverse impacts and take advantage of new opportunities.

ENHANCING ADAPTIVE CAPACITY

- Smit *et al.* (2001) concluded that enhanced adaptive capacity would reduce vulnerability to climate change. Activities for achieving this include:
 - improving access to resources
 - reducing poverty.
 - lowering inequities of resources and wealth among groups
 - improving education and information
 - improving infrastructure
 - improving institutional capacity and efficiency

CLIMATE CHANGE CARICOM PERSPECTIVE

- . CARICOM countries' contribution to global GHG emissions budget negligible.**
- . However particularly vulnerable to impacts of climate change.**
- . Already region vulnerable to present day risks from climate variability.**
- . Incumbent on region to build capacity to adapt to climate change.**

LILLIENDALL DECLARATION

- 2. **Adaptation** and capacity building must be prioritised and a formal and well financed framework established within and outside of the Convention, including the multi-window insurance facility, to address the immediate and urgent, as well as long term, adaptation needs of vulnerable countries, particularly the SIDS and the LDCs;
- 3. **The need** for financial support to SIDS to enhance their capacities to respond to the challenges brought on by climate change and to access the technologies that will be required to undertake needed mitigation actions and to adapt to the adverse impacts of climate change;

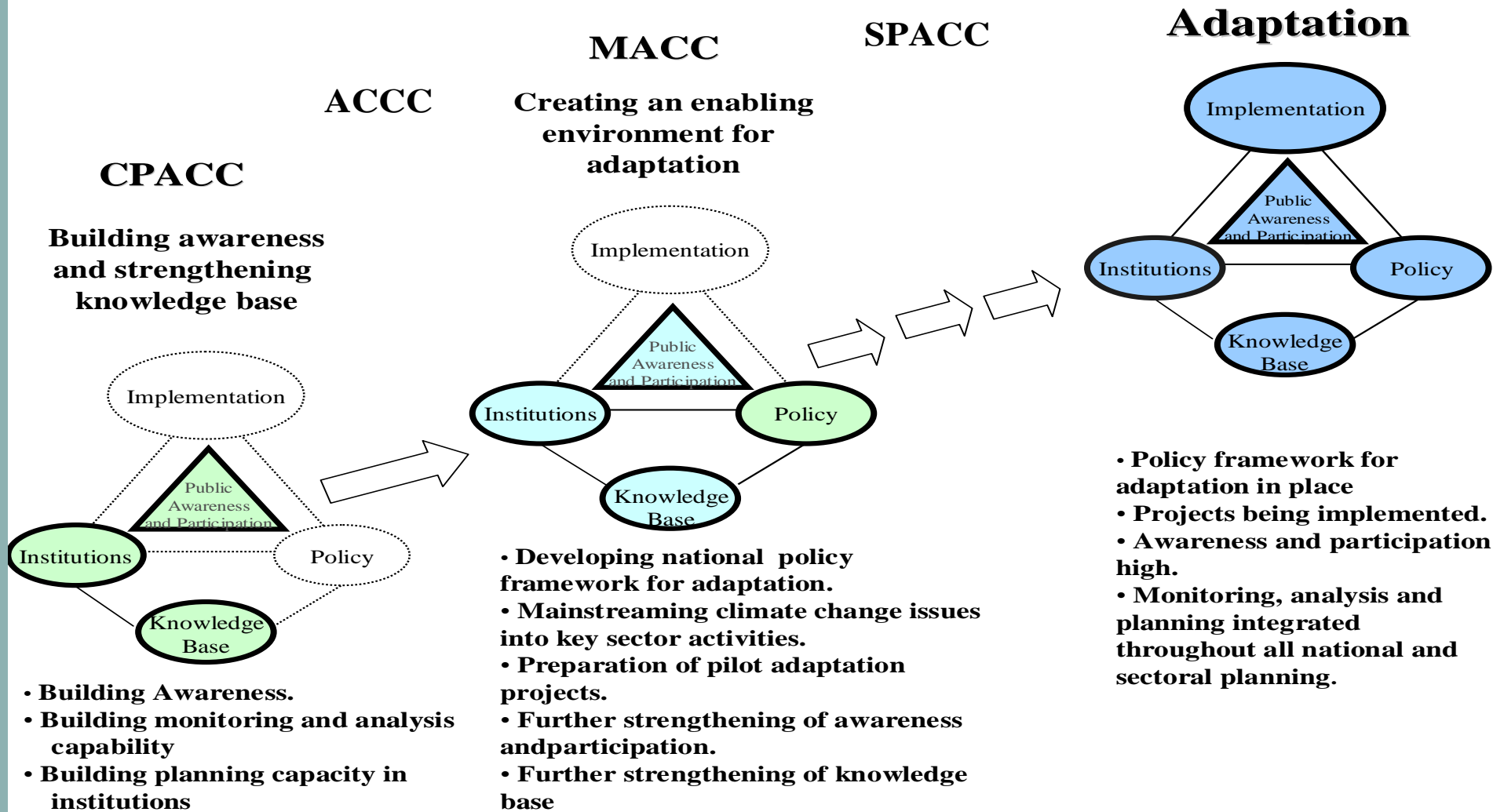
REGIONAL STRATEGIC FRAMEWORK

- This framework is comprised of five key strategies and associated goals designed to significantly increase the resilience of the CARICOM economies. **THREE** of these (goals 1,3,&4) address Adaptation:
 - 1. Mainstreaming climate change adaptation strategies into the sustainable development agendas of CARICOM states.
 - 3. Encouraging action to reduce the vulnerability of natural and human systems in CARICOM countries to the impacts of a changing climate.
 - 4. Promote the implementation of specific adaptation measures to address key vulnerabilities in the region




CARICOM Member States Addressing Climate Change

- **1997 – 2001: Initiated Adaptation Planning through the GEF-sponsored project CPACC (Caribbean Planning for Adaptation to Climate Change)**
- **2001 – 2004: Adaptation Planning continued under the CIDA-sponsored project, ACCC (Adapting to Climate Change in the Caribbean)**
- **2004 – 2008: Mainstreaming the adaptation plans initiated under the GEF-supported project, MACC
(Mainstreaming Adaptation to Climate Change)**
- **2007-2010: The GEF-sponsored SPACC project which supports efforts by three island states (Dominica, Saint Lucia and Saint Vincent and the Grenadines) to *implement specific pilot adaptation measures*.**



Project-to-Programme Transformations



CARICOM APPROACH

- (a) downscaling
- (b)  regional climate change projections
- (c)  regional climate change scenarios
- (d)  (c) + impact models (crop, hydrology models)

CARICOM APPROACH

- (e) impacts of extreme events under different climate scenarios
- (f)  Climate impact scenarios
- (g)  Adaptation options (includes cost benefit analyses of different options).

CARICOM APPROACH

- **Suite of activities to determine:**
 - **extent of risk arising from climate change to which region will be exposed in future.**
 - **vulnerability of the region's natural and socioeconomic systems to climate change.**
 - **impacts of CC on the natural and socioeconomic systems of the region.**
 - **regional response to mitigate those impacts and costs for implementing.**
 - **implementation of mitigative actions (ADAPTATION)**
 - **building regional capacity to carry out the above actions**

WATER SECTOR ADAPTATION

Climate Change Concerns in the Sector

- Need to Adapt
 - Increasing variability in the hydrological cycle evident over last 30 years in many parts of world
 - Chances are that this will intensify with global warming
 - Extreme weather events becoming more common and severe and bring mounting human suffering and escalating economic losses

Sector Adaptation

– Adaptation

- Water resources managers previously utilised past records of rainfall and river flows (allowing for evaporation and other losses) to design water management systems
- Predictable hydrological cycle meant that reservoir storage volumes and operating rules could be used to balance effect of wet and dry season
- No longer feasible due to fluctuations caused by climate change signals
- Strategy to review existing water management operations in the light of today's hydrological circumstances – will move towards coping with future climate change

Sector Adaptation

– Policy Instruments

- **Mainstreaming climate issues into national water management policy:**
 - **Updated assessments of meteorological and hydrological data need to be integral part of water resources management**
- **New ways of planning that cut across individual sectors and areas of responsibility .**
- **Change traditional land use planning practices to give greater weight to new factors such as**
 - **Flood risk**
 - **Maintaining water supply/demand balance**
 - **Security of supply**
- **Demand side management – pricing policies to encourage**
- **Incentives for investments in technological options**

Sector Adaptation

- Technical measures to increase supply e.g.
 - reservoir volumes,
 - water transfers,
 - desalinization.
- Increase efficiency of water use –
 - leakage reduction
 - use of grey water
 - more efficient irrigation
- Landscape planning to improve water balance-
change land use, reforestation.

PV and SWRO Systems -Bequia



SWRO
System



Grid connected
PV System

System design characteristics

- ▶ The SWRO system
 - Paget Farm Community needs: 9600 US gallons per day
 - System capacity: 35,000 US gallons per day
- ▶ PV System
 - SWRO system requirement: ~80,000 KWh per year
 - System capacity: ~115,000 KWh per year
 - System is grid connected with power purchasing agreement with VINLEC
 - Revenue from excess power will be used to maintain the system
- ▶ Both SWRO and PV System design: Modular

Sector Adaptation

Technological and Structural

- Access to and use of forecasting and early warning systems based on short- to medium-term weather forecasts.
- Increased storage (cope with rainfall and runoff)
 - Reservoirs – design & capacity
 - Ground water storage (less evaporation) from storm water runoff, irrigative return flows, reused waste water
 - Rainwater harvesting
- Water-saving domestic devices- domestic, tourism

Sector Adaptation

- (d) Integrated Water Resources Management (IWRM)
- (e) Capacity for vulnerability assessments, hazard mapping, risk management approach to factoring climate risks in water resources planning
- (f) Public Education and Outreach
- (g) Participation of civil society in the articulation of and implementation of policies related to the prudent and sustainable management of water resources

Sector Adaptation

- **Risk-sharing and spreading**
 - New insurance products – crop insurance and micro-insurance mechanisms. Private sector – self-insurance schemes
 - Use of risk-management approach in planning adaptation options for sector
 - Micro-finance schemes for rebuilding
 - Use of alternative crops and planting schedules to spread risks

Sector Adaptation

- **Change of use, activity or location**
 - Resettlement
 - Prescriptive spatial and land use planning
 - Prohibit development in flood plain without necessary safeguards
 - Mariculture in inundated low coastal agricultural lands

Sector Adaptation

– Needs in the region

- (a) Data
 - Restoring and extending hydrological data base
 - Resource inventories
 - Long-term climate data
- (b) Downscaled climate models
 - Resolution scale of global models too small and timescale too long to encompass local climate variability
 - Coupling of climate & hydrological models
- (c) Capacity to forecast climate at basin, regional or national level over seasons or years – short-term forecasting



For further information please contact us at:

THE CARIBBEAN COMMUNITY
CLIMATE CHANGE CENTRE
2nd Floor, Lawrence Nicholas Bldg.
P.O. Box 563
Bliss Parade,
Belmopan City, Belize
Tel: +501-822-1094/1104
Fax: +501-822-1365
Website: www.caribbeanclimate.bz

THANK YOU