Assessing The Economics and Financial Implications of Climate Change on the Caribbean: An Overview

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Order of the Presentation

- Background and Framework to Economic Assessments
- Methodological Issues
- Key Findings and Considerations
- Conclusions and Mainstreaming Climate Change in Development Policy

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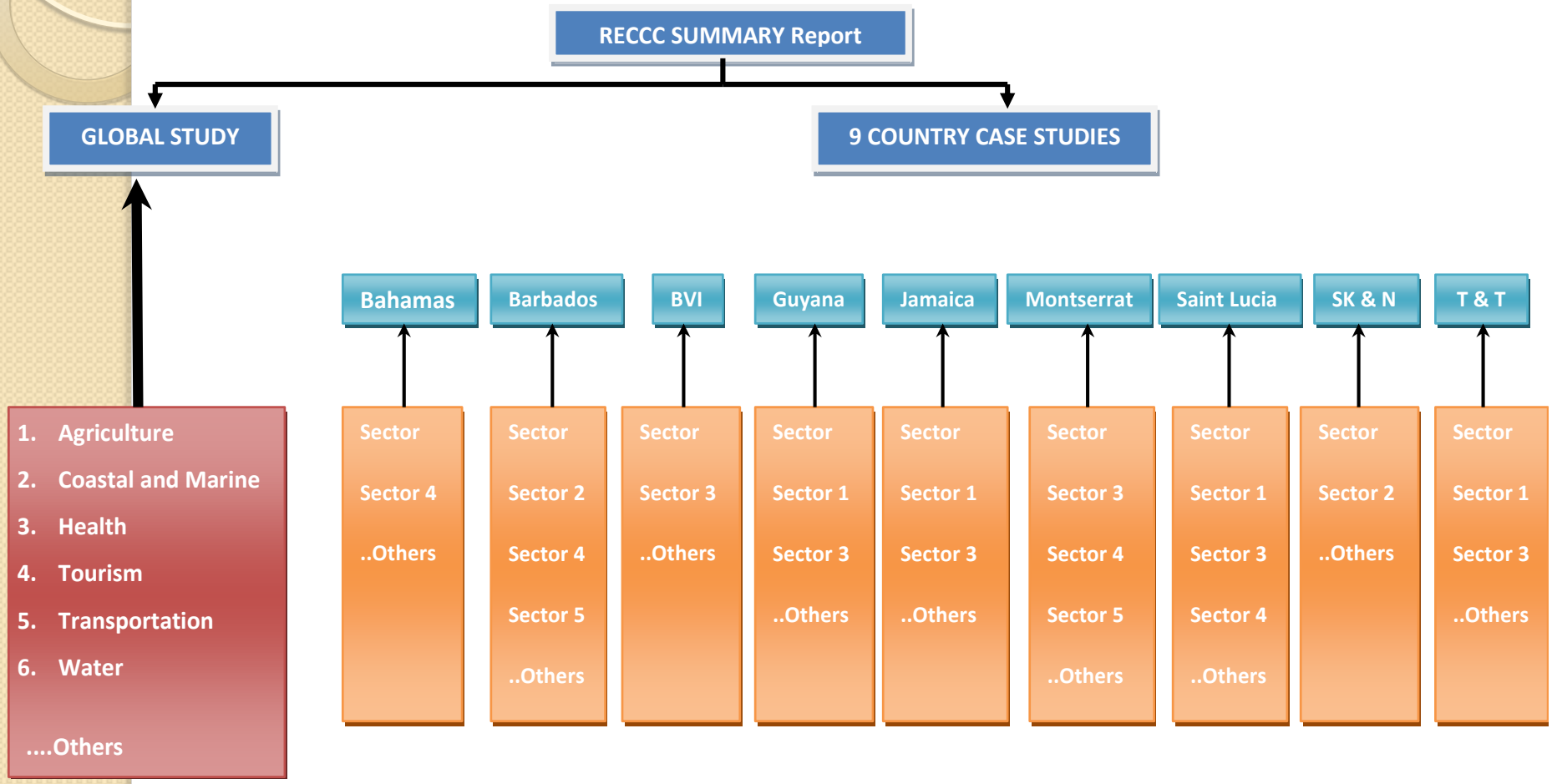
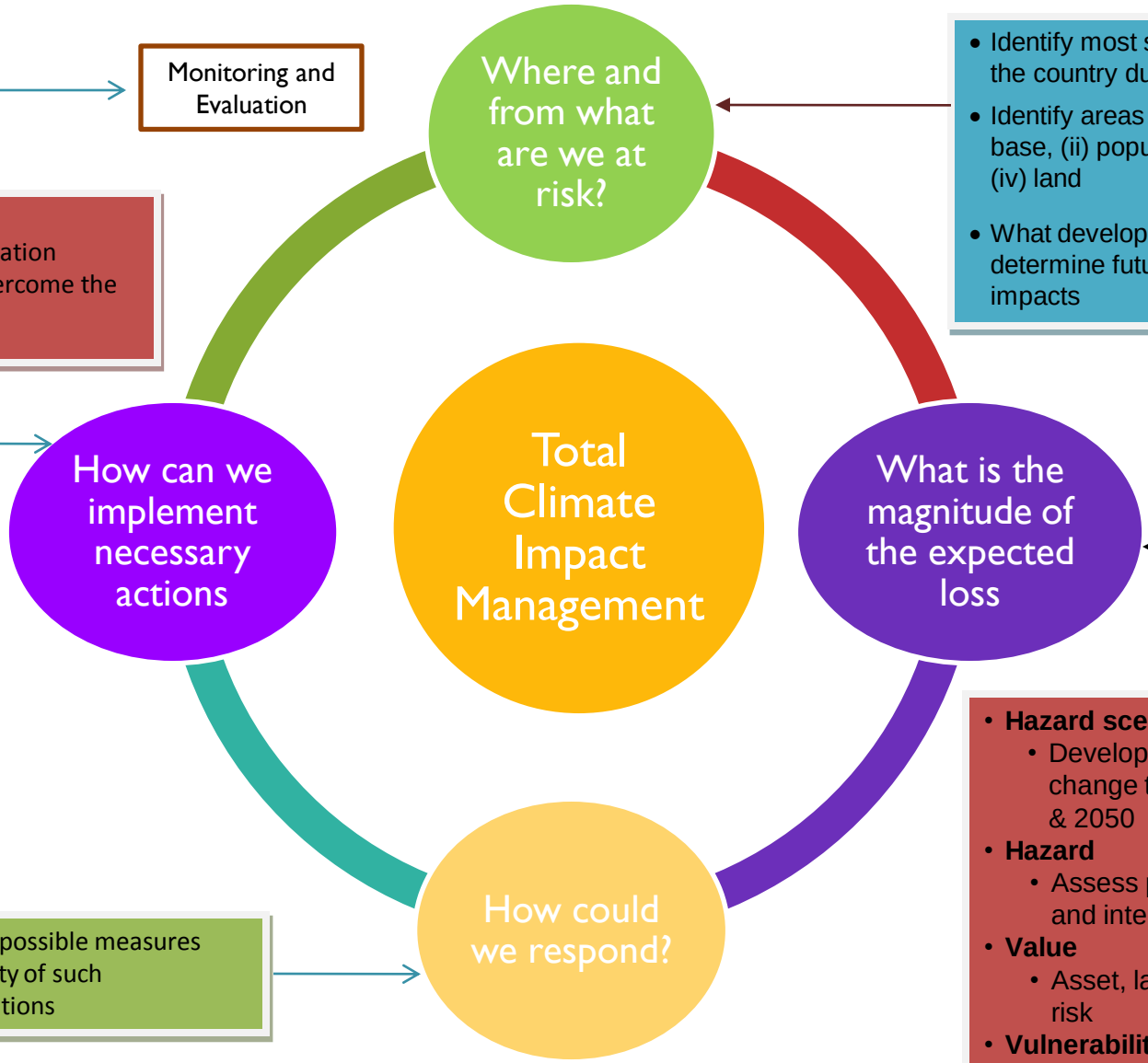
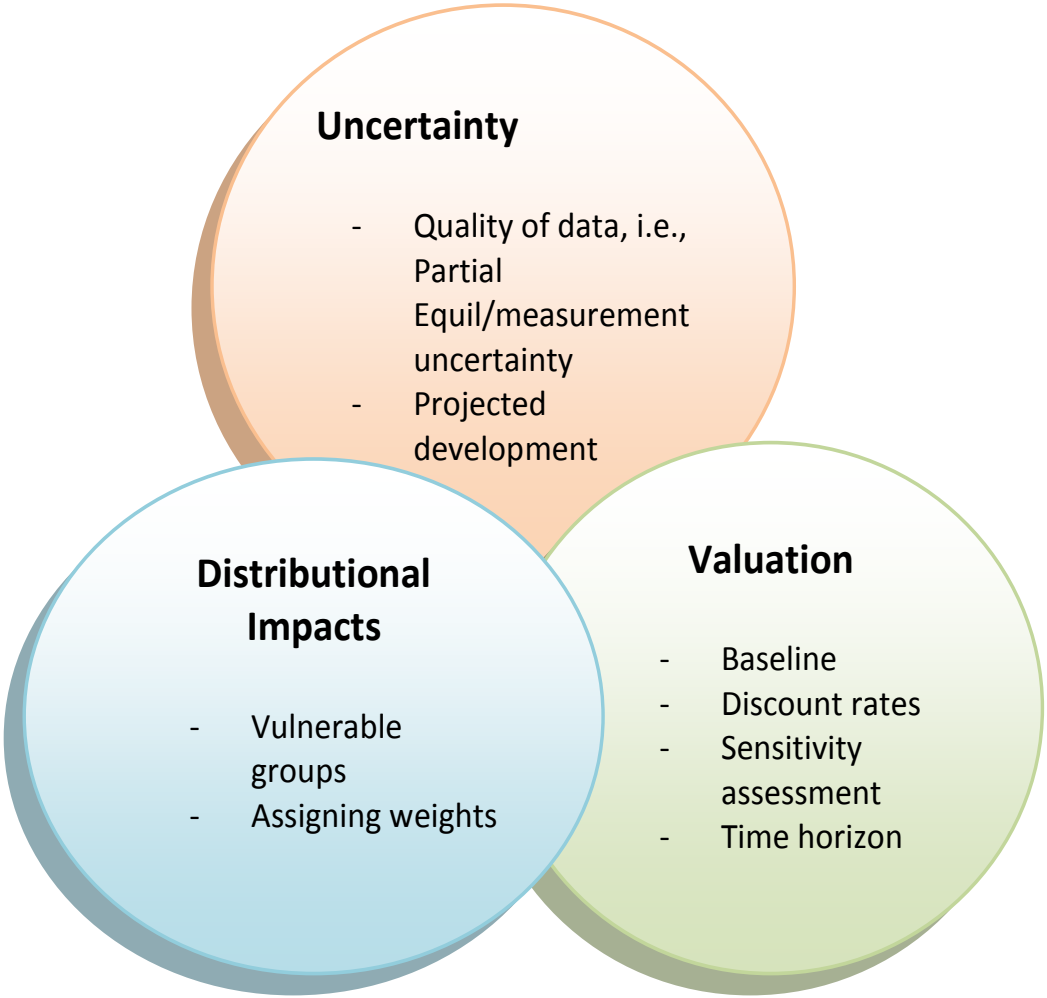
Schematic of the RECCC Study



Impact Assessment Framework



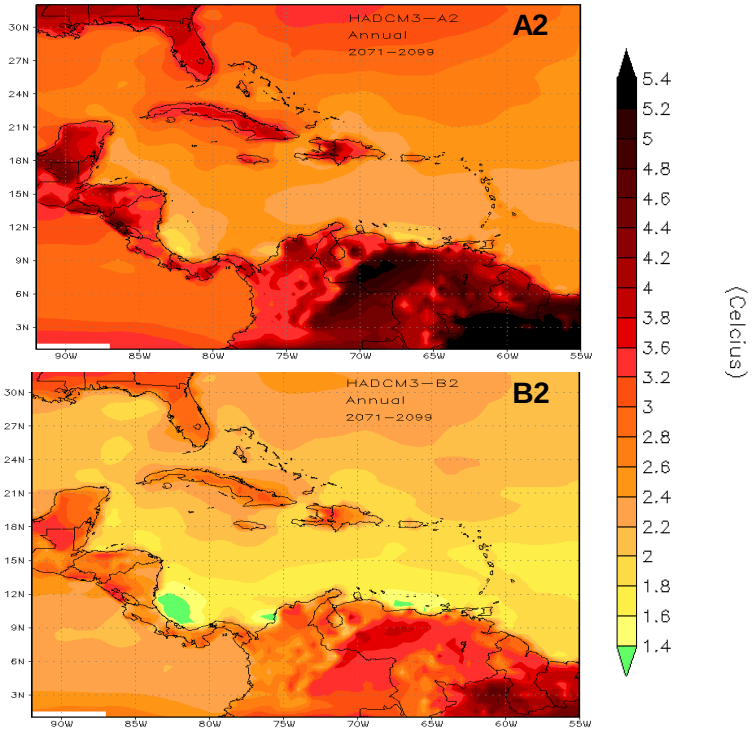
Methodological Concerns of the Assessment



Climate Modelling - Results from PRECIS I

Annual Temperature

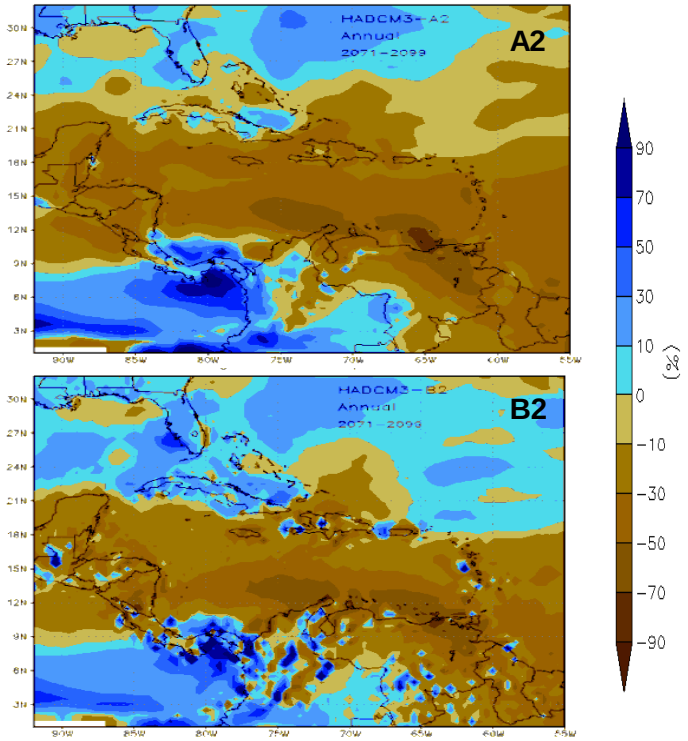
HadAM3P



- Mean Regional Warming 1.8 – 1.9°C by 2050;
- Mean Regional Warming 2.3 – 3.4°C by 2100;
- Greater warming over land areas

Annual Precipitation

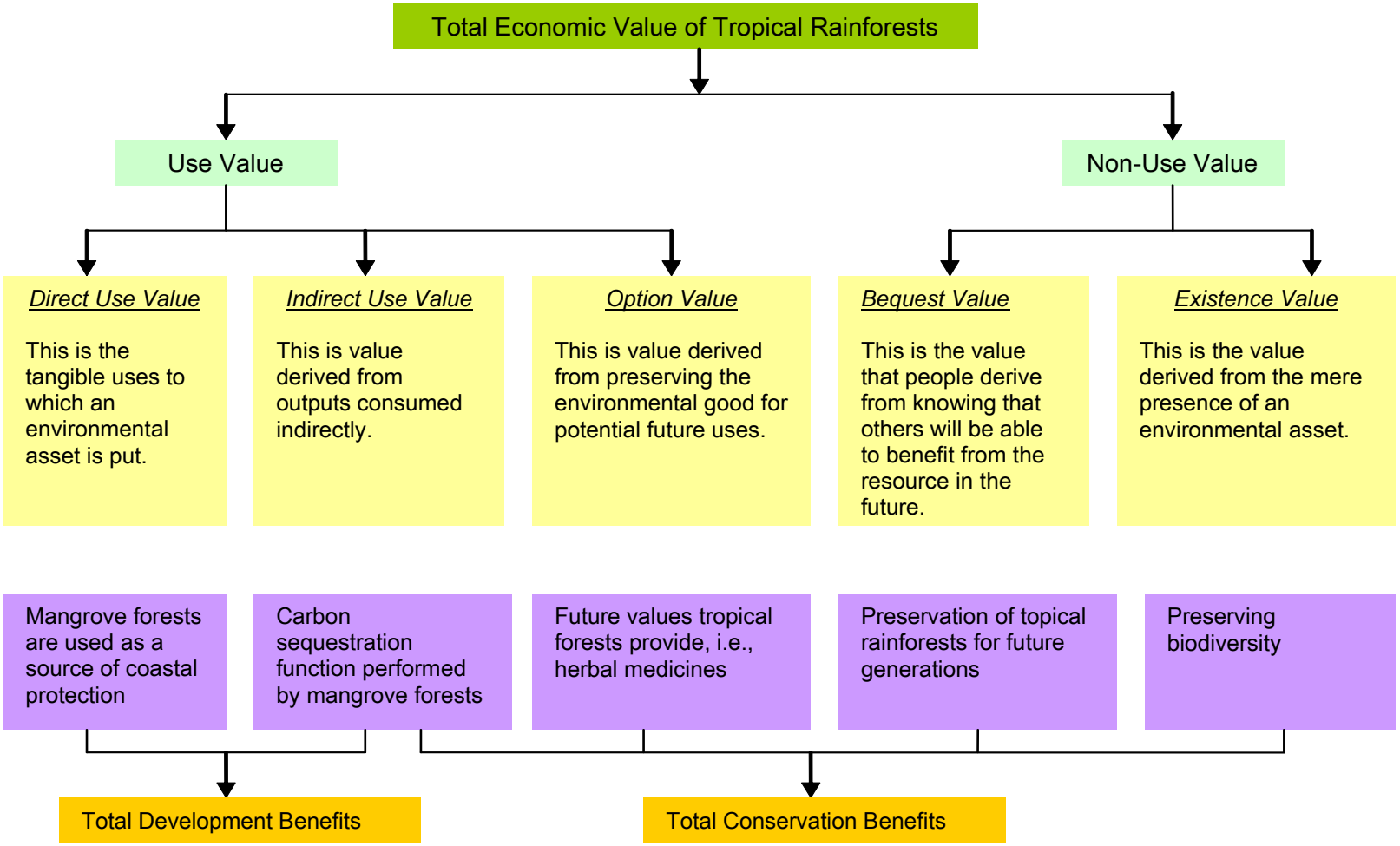
HadAM3P



- Mean changes 2.4 – 3.5% by 2050;
- High consensus of rainfall decrease in almost all islands except Cuba, Bahamas and Dominica Republic of between 2.9 – 11% by 2100

Sea Level Rise of between 23 cm and 77 cm by 2100

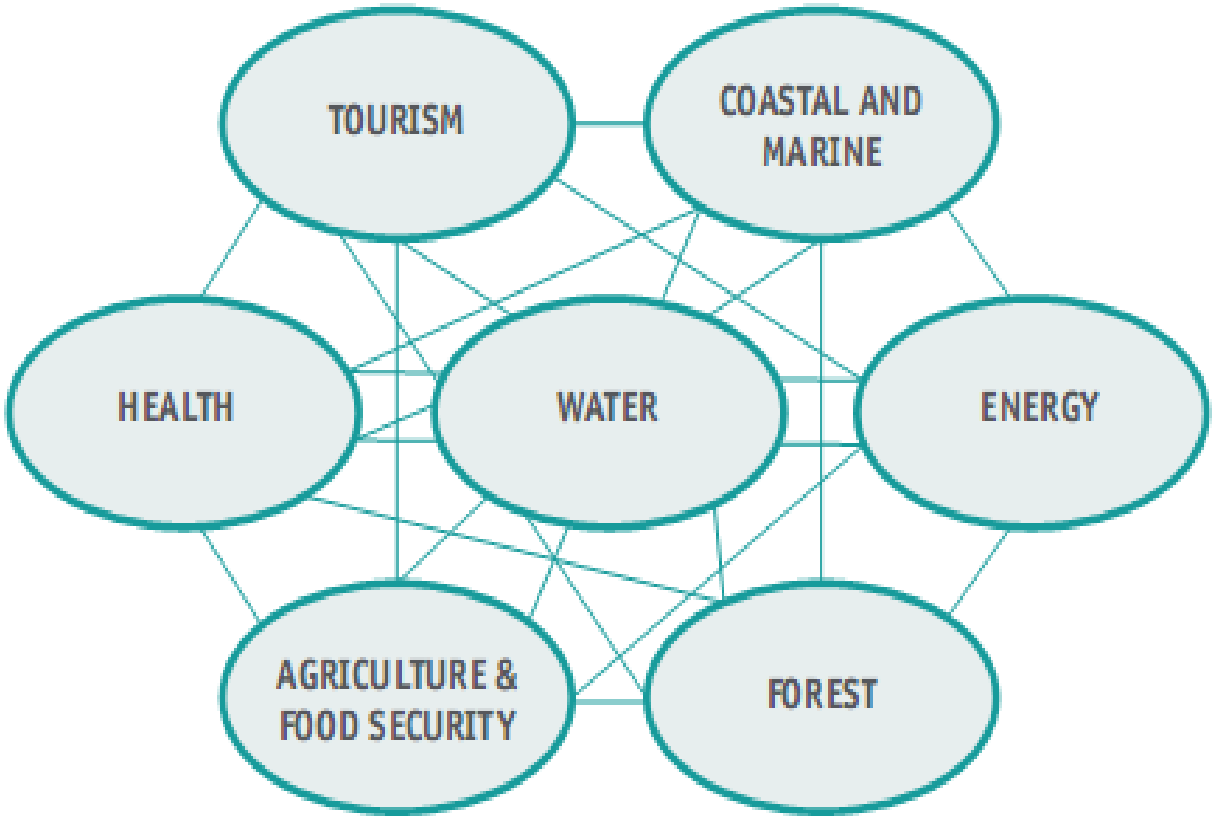
Derivation of Total Economic Value



Economic Assessment Methodologies (CGE)

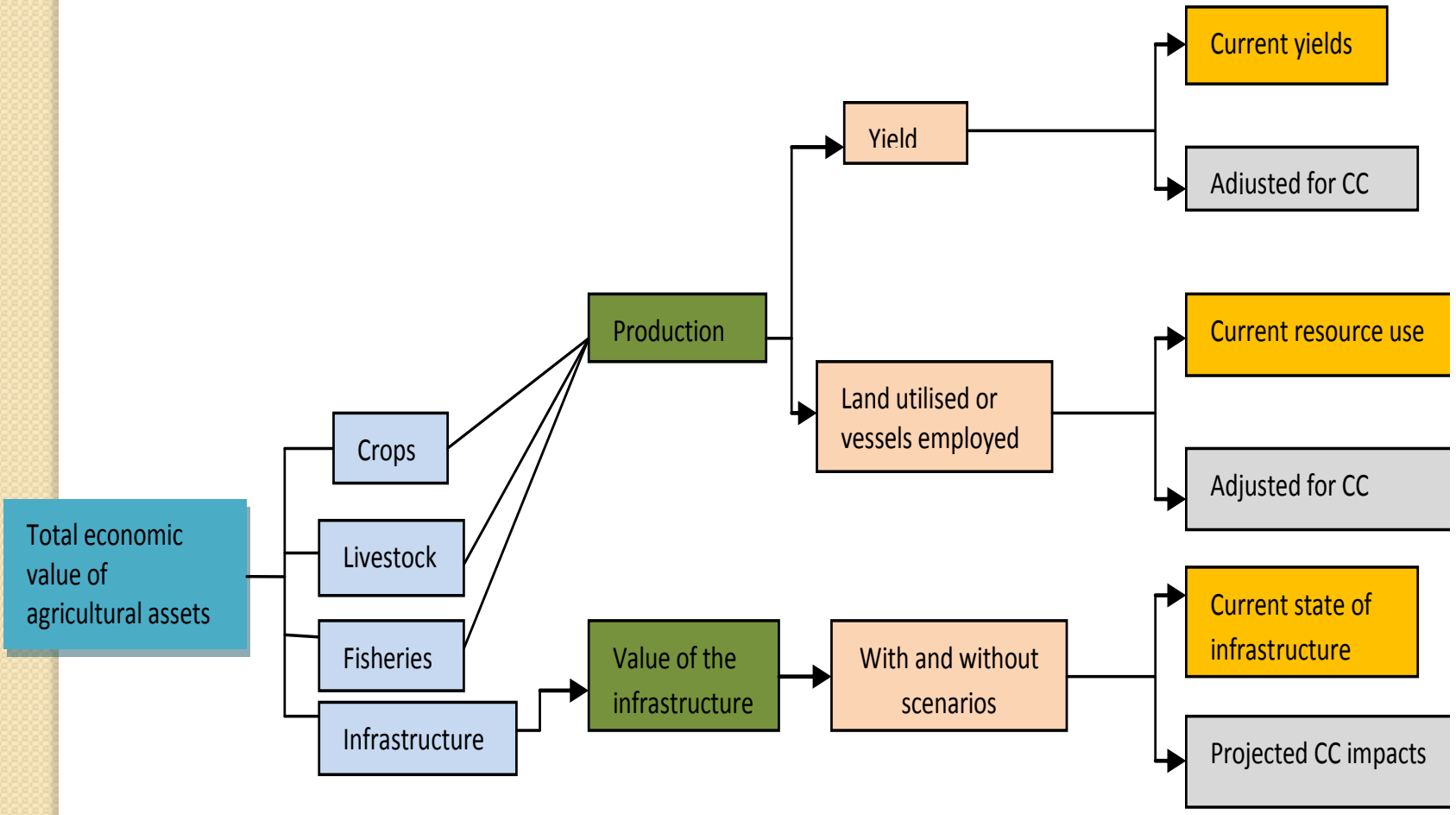
- Computable General Equilibrium Models – System-wide Effects
  - Cross-cutting: multiple impacts simultaneously assessed
  - Flexible: alternative scenarios

Sectoral Inter-Linkages



Partial Equilibrium Model

Framework for the Impact Assessment of Climate Change on the Agricultural Sector



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Key Findings

- Climate risks are already costing the region between 4% and 6% of GDP annually (**comparable in scale to serious economic recession**)
- Annual projected climate change impacts range between 8% and 15% under a BAU by 2050 (between US$5.5 billion to US$9 billion annually at 2008 prices)
- The sectors hardest hit will be **tourism** and **agriculture**.

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Key Findings

- Much of the damage from CC tends to be exacerbated by poor planning and poverty
- Some countries can avoid nearly 80% of damage by implementing cost-effective adaptation measures
- Adaptation is expensive and will require additional funding of between US$3 – US$5.2 billion annually by 2030 under BAU.

Cost Effective Adaptation Options

- Improved building codes and enforcement of such codes
- Mangrove reforestation
- Early warning systems
- SWRO using renewable energy sources
- Land use planning
- Catastrophe insurance

Coral Reef Early Warning System Network

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Cost Benefit Framework in Assessing Adaptation Pilots

- Examined adaptation objectives (*must be quantifiable*)
- Reviewed baseline (*the situation without the adaptation intervention*)
- Quantified and aggregated the costs over specific time periods (*direct and indirect – social welfare losses and transitional costs*)
- Quantified and aggregated the benefits over specific time periods (*market values, avoided losses, contingent valuation*)
- Calculate net benefits (*NPV, BCR, IRR*)

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Saltwater Reverse Osmosis System - Bequia

- 300 households using 10,000 gallons of water per day
- Total Investment of US$993,162 (*SWRO and PV*)
- Life span - 20 year (to 2030)
- NPV (*financial analysis*)
  - (US$1.23 Mn) – (US$0.22 Mn)
- NPV (*economic analysis*)
  - US$0.68 Mn – US$0.80 Mn

Coconut Bay Resort – Greywater Recycling – St. Lucia

- Investment cost (US$439,760) [*Construction of Rainwater Harvesting and Wastewater Recycling Facility*]
- Rainwater harvested (*4.1 million litres annually*)
- Water recycled (*at least 60% re-charging aquifers*)
- 20 year (to 2030)
- NPV (*financial analysis*)
  - (US$0.34 Mn) – (US$0.25 Mn)
- NPV (*economic analysis*)
  - US$0.04 Mn – US$0.13 Mn

Retrofitting the Marchand Community Centre – St. Lucia

- Total Investment cost (US$786,269)
- Lifespan of 20 years
- Water consumption of 300,000 gallons annually
- Rain water harvesting and water storage capabilities
- Water conservation technologies
- Photovoltaic\solar panels technology
- Food and emergency items storage
- NPV (*economic analysis*)
  - US$0.45Mn – US$1.32Mn

Revise Management Plans for Morne Trois Pitons & Diablotin National Parks - Commonwealth of Dominica

- Investment Costs = US$125,500
- Draft Plans for Buffer zones around the parks to improve sustainability
- Conduct Met Data Collection needs assessment, and develop a Data Collection and Management Strategy for Dominica's National Parks Management".
- "Data Scraping" Exercise to collate, Dominica's Environmental reports, and enter documents into a database that is linked to the Centre's Clearing House.

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Important Messages

- *Economic development is a central element of adaptation to climate change, but it should not be business as usual.*
- *The region needs to invest in better data management and early warning systems, enforce building codes, invest in human capital, develop competent and flexible institutions, and tackle the root causes of poverty.*
- *Do not rush into making long-lived investments in adaptation unless these are robust to a wide range of climate outcomes or until the range of uncertainty about future weather variability and climate has narrowed.* **Start with low-regret options.**

Important Messages

- *Adaptation to climate change should start with the adoption of measures that tackle the weather risks that countries already face, for example, more investment in water storage in drought-prone basins or protection against storms and flooding in coastal zones and/or urban areas. Climate change will exacerbate these risks.*
- *Beware of creating incentives that encourage development in locations exposed to severe weather risks.*
- *Hard and soft approaches to adaptation are two sides of the same coin. Good policies, planning, and institutions are essential to ensure that more capital-intensive measures are used in the right circumstances and yield the expected benefits.*
- *Calculate an adaptation business case, including an investment plan.*

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Concluding Statement

"Uncertainty is no excuse for Inaction"

Implementation Plan (draft): pp4

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Muchas gracias!
Thank You!