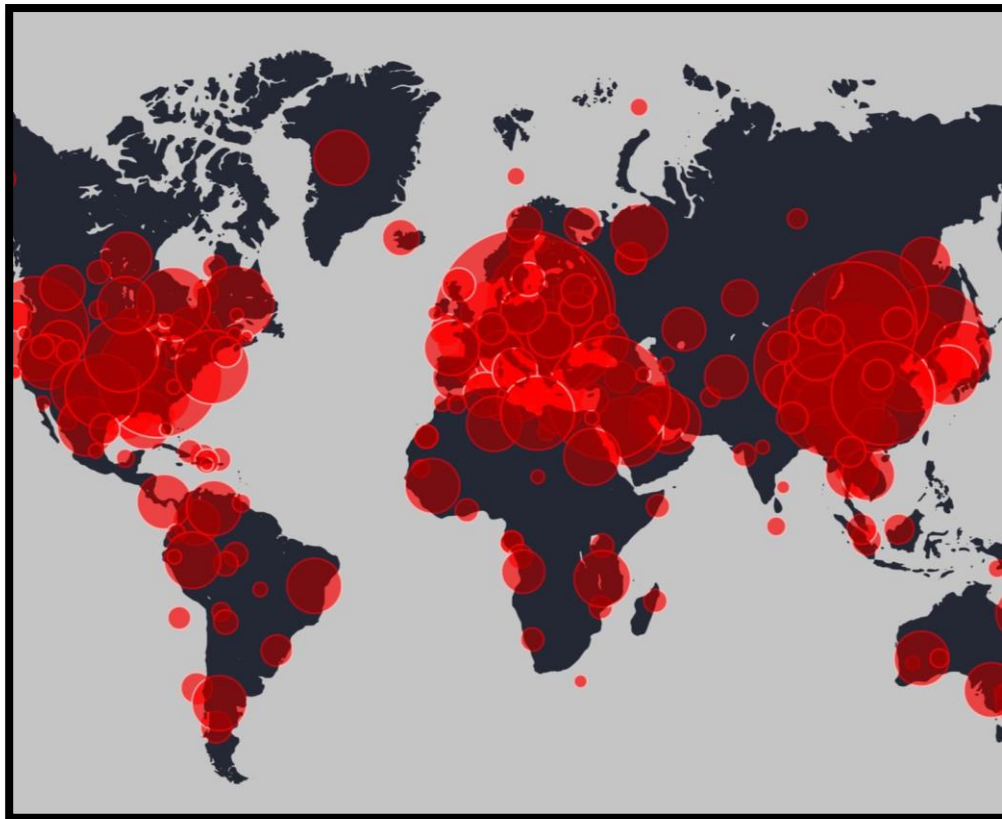




Caribbean  
Public Health  
Agency

**CARPHA**

Preventing disease  
Promoting and protecting health



# Adapting and Mitigating the Impacts of Climate Change on the Region's Human Health

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CARPHA  
6<sup>th</sup> April 2022



# Climate Trends in the Caribbean

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## Thus far....

- Average annual air temp. increases, new highs - 0.5 °C higher than previous
- Sea level rise 10 cm per 100 yrs
- Variations in dry/wet spells
- Increasing hurricane strength

## Scenarios for the Future

- 0.5 - 4.2 °C from 2010 to 2099
- Drier mid-year, wetter end of year
- Sea level rise: 35-50 cm over the next 50 years
- More intense tropical storms (10-20% wind speed increase)
- Ocean acidification



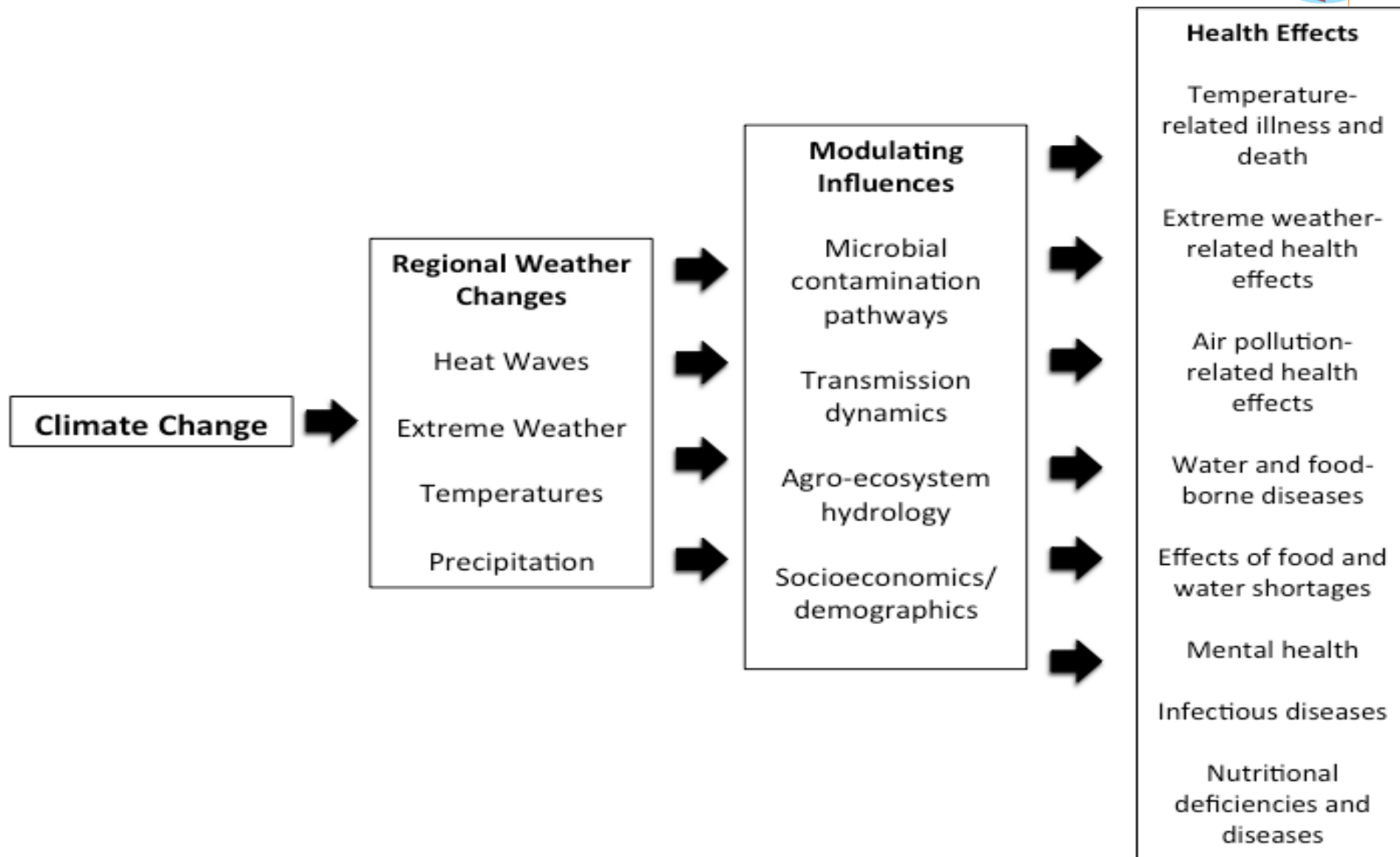


# Caribbean Climate and Health Context

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- Frequent and intense extreme climatic events in the Caribbean: Hurricanes, floods, droughts, heat waves, Saharan dust incursions
- Effects on human health and social development in the Caribbean region.
- Adverse health outcomes: respiratory complications, heat-induced morbidity, outbreaks of vector-, food- and water-borne diseases, injuries, fatalities.
- Caribbean SIDS have limited capacity to respond presently – current and future focus on building climate resilience with appropriate adaptation and mitigation strategies.

# Climate change affects human health through multiple pathways



# Impacts to Health from Increased Temperatures

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Direct impacts to health:

- **Heat cramps** – muscular pains and spasms
- **Heat exhaustion** – body fluids are lost through heavy sweating
- **Heat stroke** – is life threatening.

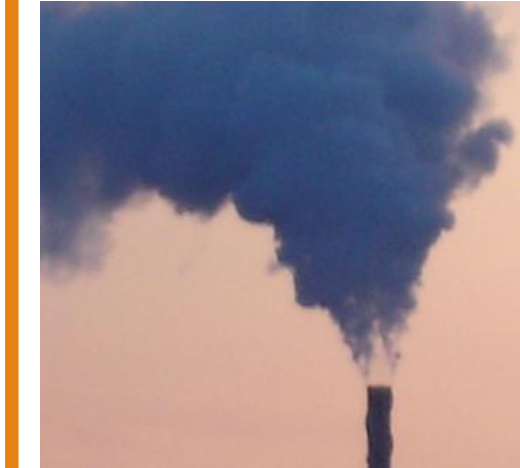
Indirect impacts:

- Range of areas that can potentially be affected with gradual and extreme temperature increases
- Includes impacts on ecosystems, water, food, disease-carrying vectors, lifestyle, community resilience.

# Health Impacts of Floods

- Immediate deaths and injuries
- Non-specific increases in mortality
- Infectious diseases – leptospirosis, hepatitis, diarrhoeal, respiratory, and vector-borne diseases
- Exposure to toxic substances
- Mental health effects
- Indirect effects
- Increased demands on health systems.





# Climatic Change: Air Quality

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- Weather has a major role in the development, transport, dispersion and deposition of air pollutants
- Air pollution episodes are often associated with stationary or slowly moving air masses
- Air pollutants and fine particulate matter may change in response to climate change.





# Climatic Change: Drinking Water Supply

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Drying climate causes:

- Changes to land cover and run-off patterns (erosion)
- Increased bushfire risk
- Increased sediment, nutrient and debris.

Flooding can also affect drinking water supplies:

- Coastal intrusion
- Contamination.



# Mosquito-borne-disease: Environmental Changes

Distribution of vectors will change arising from:

Increasing temperature

Changing rainfall:

- Increase or decrease

Cyclones, flooding

Changes in animal host/reservoir populations

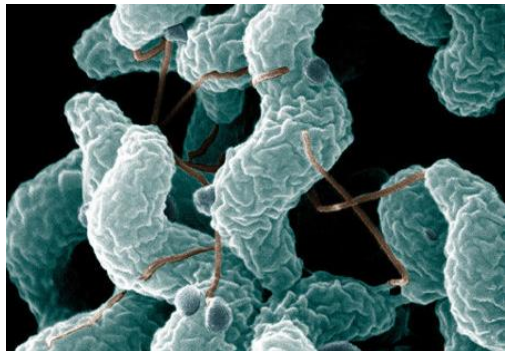
Rising sea levels

Extreme tides

Loss of coastal margins.



# Food Safety



Food borne disease may cause food poisoning:

- May increase the proliferation of bacterial pathogens including Salmonella, Campylobacter and Listeria spp.
- May increase mycotoxins and aflatoxins in seafood.



# Social Impacts

Lifestyle and behaviour are likely to be affected in the following ways:

Increased temperatures:

- Increases in crime - particularly involving aggression
- Accidents - workplace and traffic
- Decline in physical health
- Hot nights may cause sleep deprivation
- Recreational opportunities - changes to exercise patterns
- Changes in alcohol consumption
- Stress
- Lack of cold water- reduced ability to cool down





# Social Impacts

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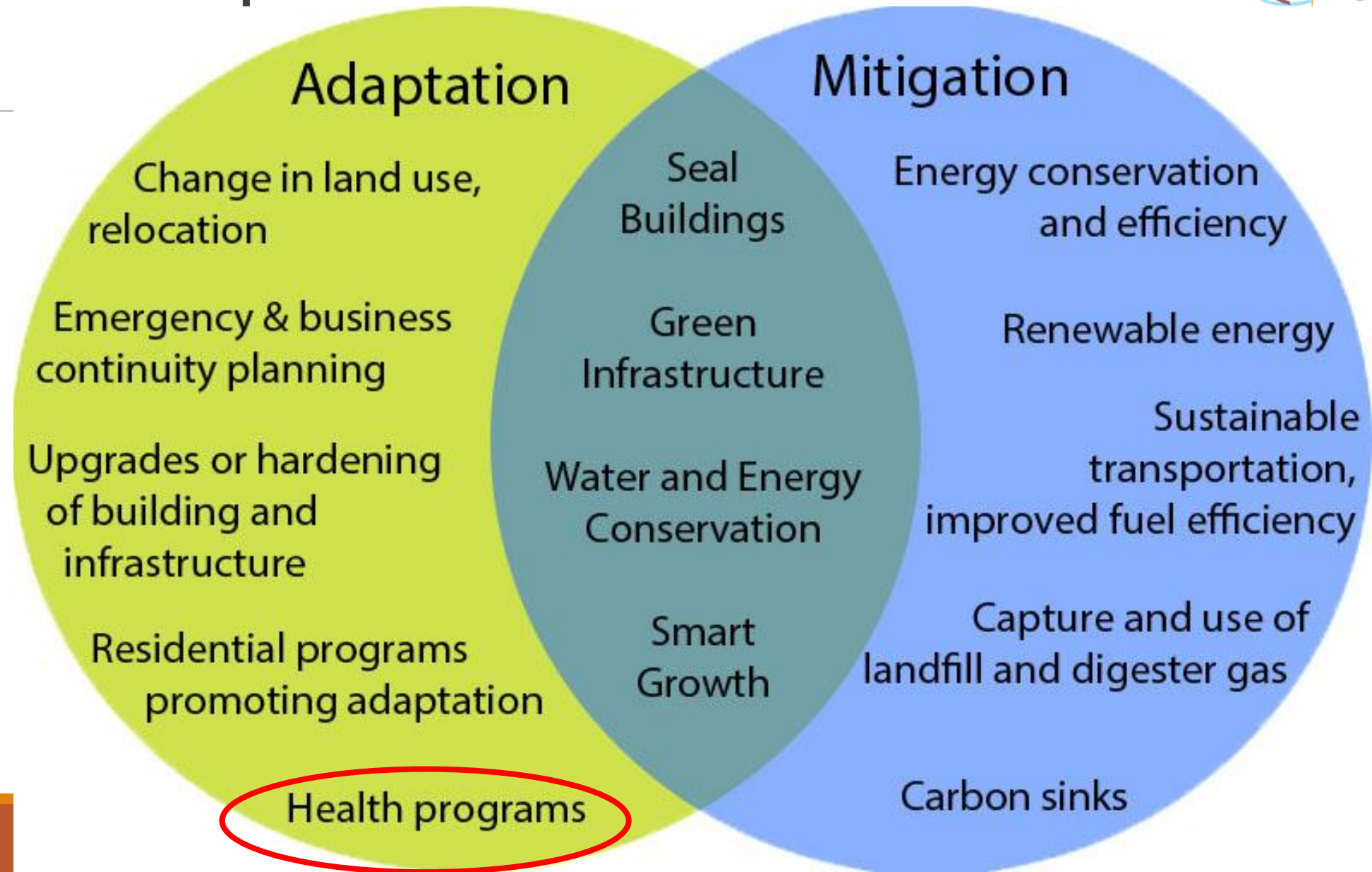
Mental Health can be impacted as follows:

- Anxiety and depression
- Post traumatic stress disorder
- Insecurity
- Grief
- Stress, self harm and possible suicide
- Drug and alcohol misuse
- Impacts on individuals, communities
- Loss of social cohesion
- Dislocation
- Specific impacts on children, women and elderly.

# Climate change impacts on vulnerable populations

Climate Change Impacts	Examples of Populations Vulnerable to Climate Change
Extreme Heat	Elderly; children; diabetics, poor, urban residents; people with respiratory diseases; agricultural workers; those active outdoors
Poor Air Quality/ Air Pollution	Elderly; children; poor, urban residents; people with respiratory diseases; agricultural workers; those active outdoors; people with allergies
Wildfires	People with respiratory diseases; transit-dependent
Severe weather, extreme rainfall, floods, water issues	Coastal residents and those living in flood-prone areas; elderly, children, low income
Increased average temperature	Elderly; children; poor, urban residents; people with respiratory diseases; agricultural workers; those active outdoors; people with allergies
Agricultural changes	agricultural workers; rural communities, low income, elderly; children
Drought	Low income, elderly, children, agricultural workers, rural communities.

# Addressing Climate Change Impacts



# Health systems strengthening: Definition of an essential public health package

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Comprehensive  
assessments of climate  
risks to health and health  
systems

Integrated environment  
and health surveillance

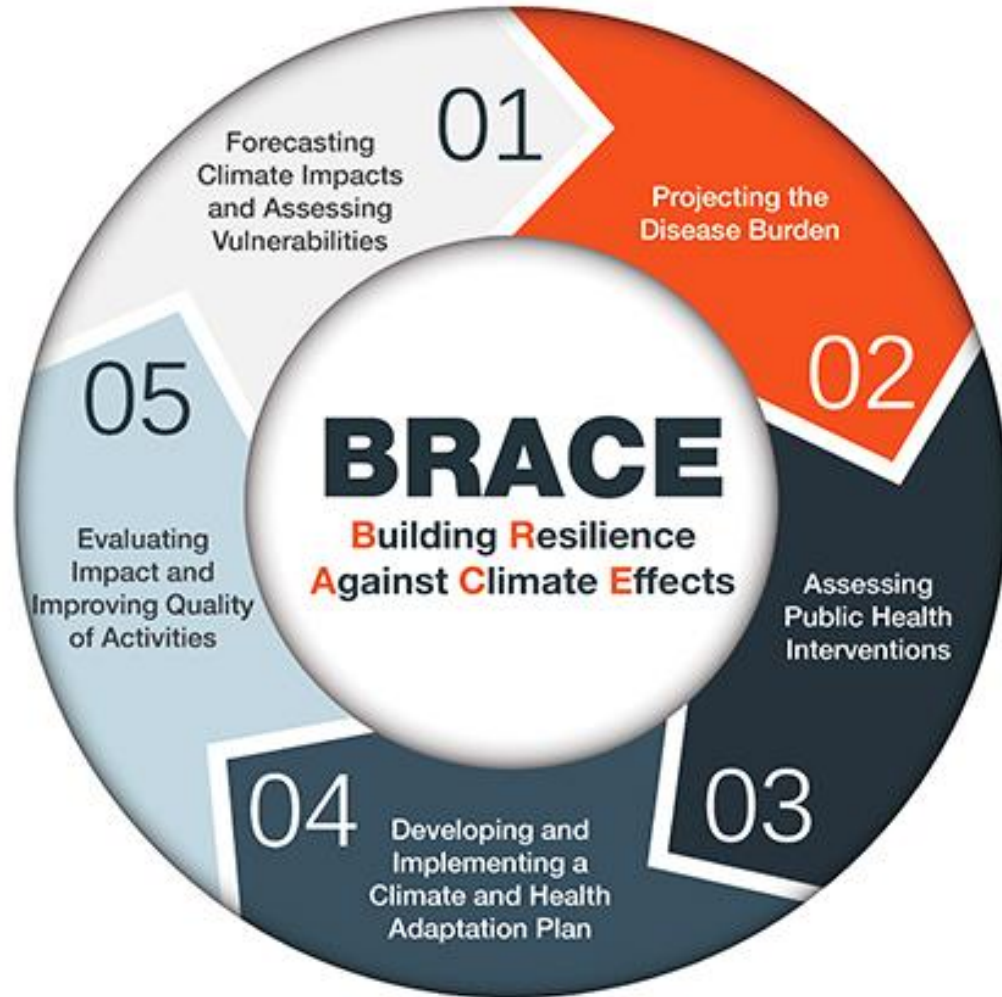
Delivery of preventive  
and curative  
interventions for  
identified climate-  
sensitive public health  
concerns

Preparedness and  
response to the public  
health consequences of  
extreme weather events

Strengthening of human  
and institutional  
capacities and inter-  
sectoral coordination



## Building Resilience Against Climate Effects



BRACE  
model



# Health Impact Assessment (HIA)

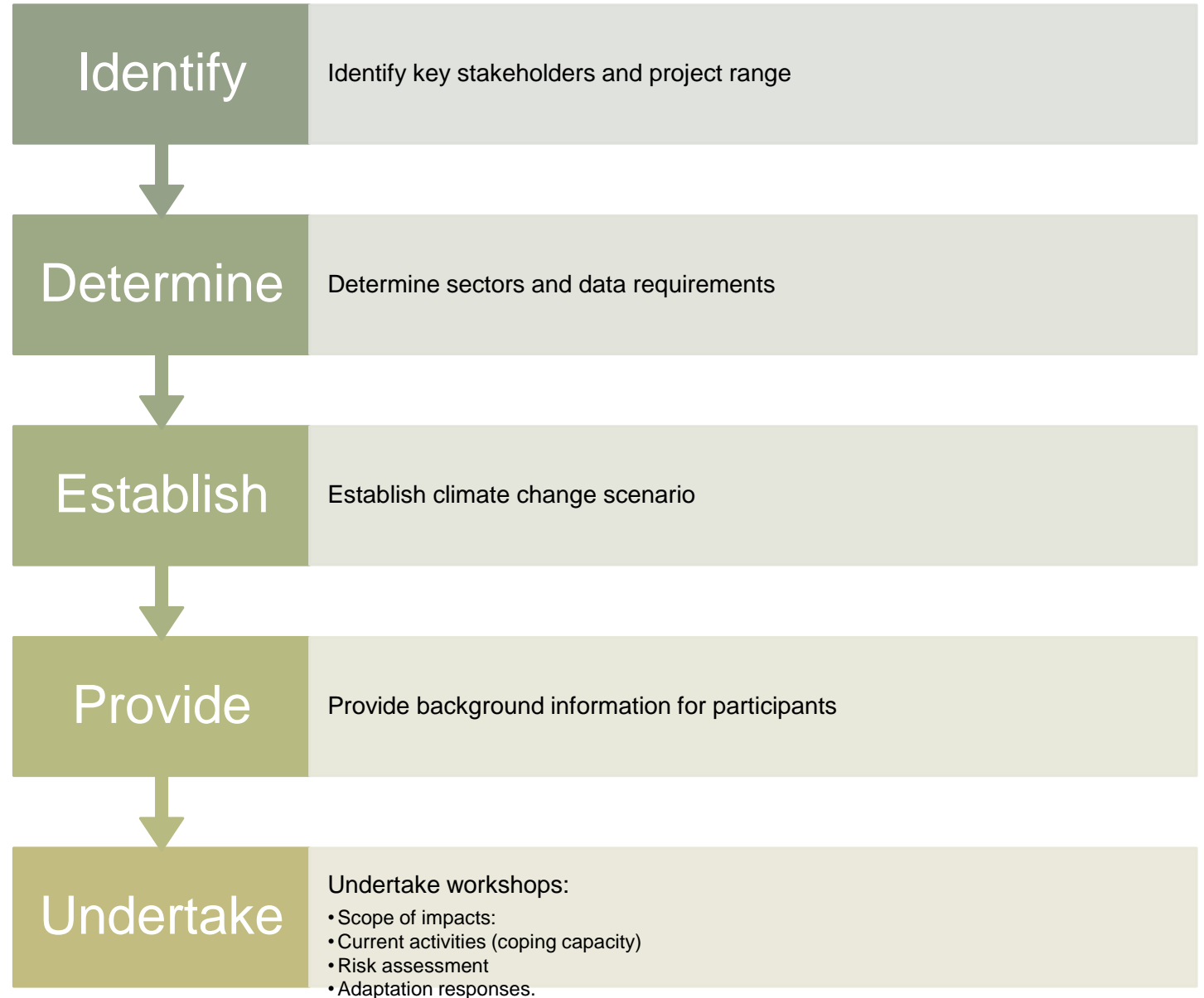
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The World Health Organization (WHO) defines a Health Impact Assessment (HIA) as:

*“A combination of procedures or methods by which a policy, programme or project may be judged as to the effects it may have on the health of a population.”*

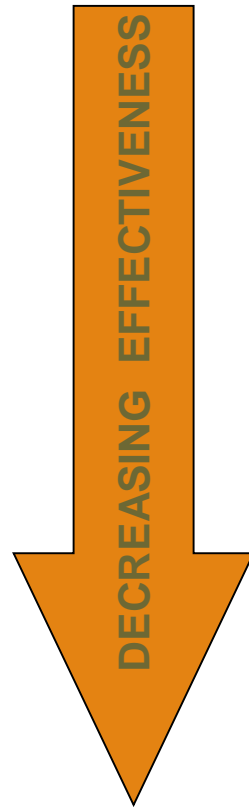
- The HIA was initiated worldwide to facilitate the assessment of health issues in new proposals

# Climate Change and Health Vulnerability & Adaptation Components



# Stages of Adaptation

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Primary – prevent onset of health impact

Secondary – preventative measures taken in response to early evidence of impact

Tertiary – actions to lessen the health effects



# Health Impact Pathway

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**Extreme rainfall and flooding**



Prevent/reduce flooding

**Overflow of waste from septic tanks into flood waters**



Prevent/reduce overflow of waste

**Human contact with flood water**



Avoid human contact with water

**Gastro intestinal diseases**

Correct medical treatment

# Health Impact Pathway

Each link in the chain  
is:

- A potential for vulnerability
- An opportunity for adaptation.

In terms of adaptation:

- The higher up the chain the better
- The more links we weaken the better.

## Types of Adaptation

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Adaptation responses may be of the form:

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Legislative or regulatory

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Public education or communication

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Surveillance and monitoring

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Ecosystem intervention

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Infrastructure development

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Technological/engineering

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Health intervention

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Research/ further information

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# Increased need for climate services for health in the Caribbean

Need for strong, integrated approach to management of climate risks to human health

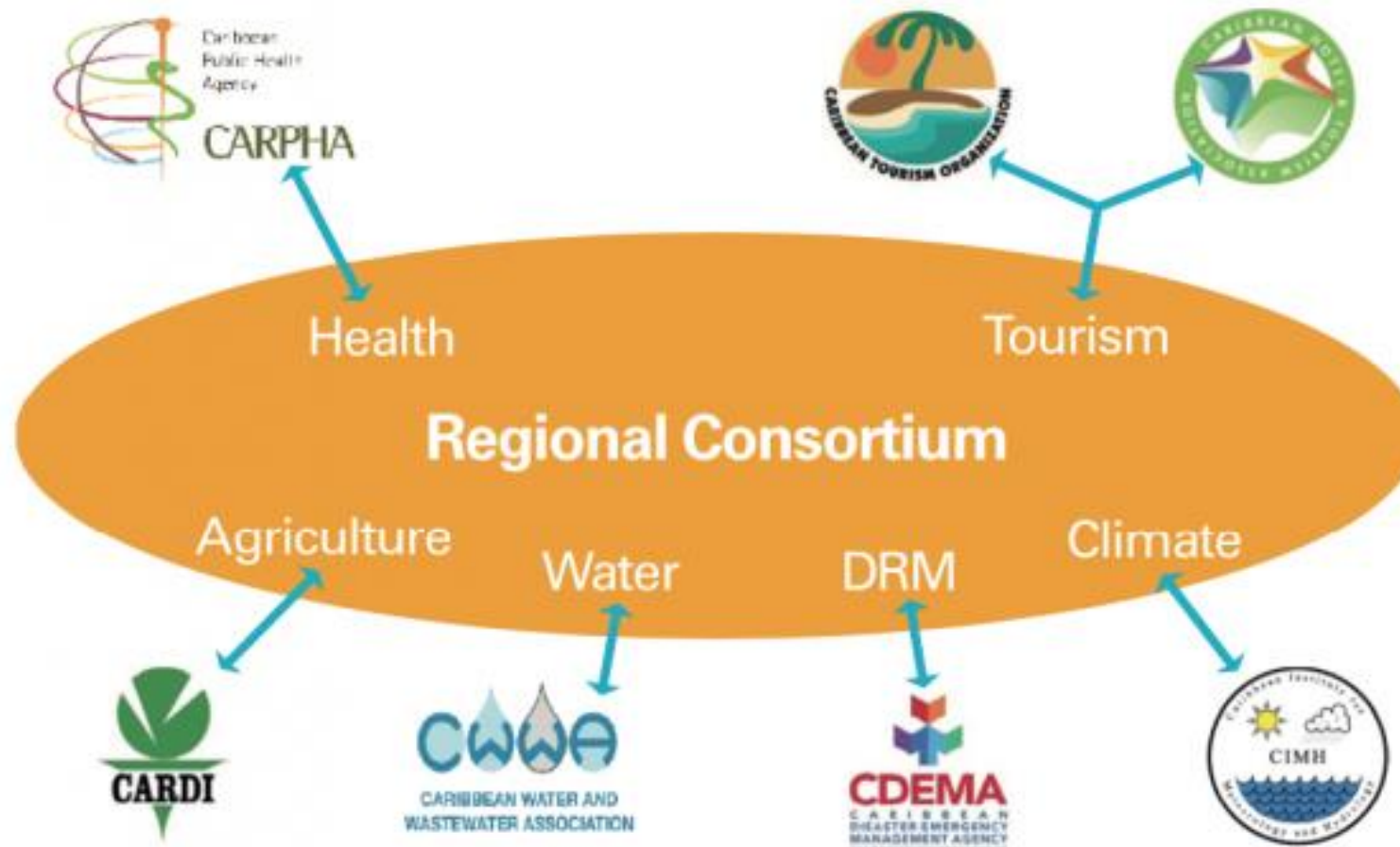
Global Framework for Climate Services (GFCS) Health Exemplar (WMO, 2014), which calls for:

- Strengthened communication and partnerships among climate and health actors at all levels
- Increased capacity of the health sector to effectively access, understand and use climate and weather information for health decisions
- Improved health and climate research and evidence of the linkage of climate and health
- Climate and weather data effectively mainstreamed into health operations



# Caribbean Climate and Health Context cont'd

- Strong links demonstrated between climate variables and infectious disease transmission and spread
- Incipient work in the region over the past few years – country collaborations with CIMH, CARPHA, CCCCC, UWI/PPCR, Red Cross, PAHO.
- Seeking to strengthen interactions between multisectoral professionals for creation and implementation of early warning systems for health.
- Output: Climate integrated, health tools and services that generate information to support public health decision making and resource allocation.



Co-design, co-develop and co-deliver Products & Services

# EU/CARIFORUM Climate Change and Health Project

## Strengthening Climate Resilient Health Systems in the Caribbean



Funded by  
the European Union



**PAHO**



CARICOM



Caribbean Community  
Climate Change Centre



THE UNIVERSITY  
OF THE  
WEST INDIES  
ST. ANNE'S CAMPUS  
TRINIDAD & TOBAGO  
WEST INDIES



**3** GOOD HEALTH AND WELL-BEING

**6** CLEAN WATER AND SANITATION

**11** SUSTAINABLE CITIES AND COMMUNITIES

**13** CLIMATE ACTION

**COMPREHENSIVE AND ACTION-ORIENTED HEALTH NATIONAL ADAPTATION PLANS**  
LEAD: PAHO/CCCCC  
SUPPORT: ALL

**NOVEL EARLY WARNING SYSTEMS AND ENVIRONMENTAL DETERMINANTS OF HEALTH**  
LEAD: CARPHA/CIMH  
SUPPORT: ALL

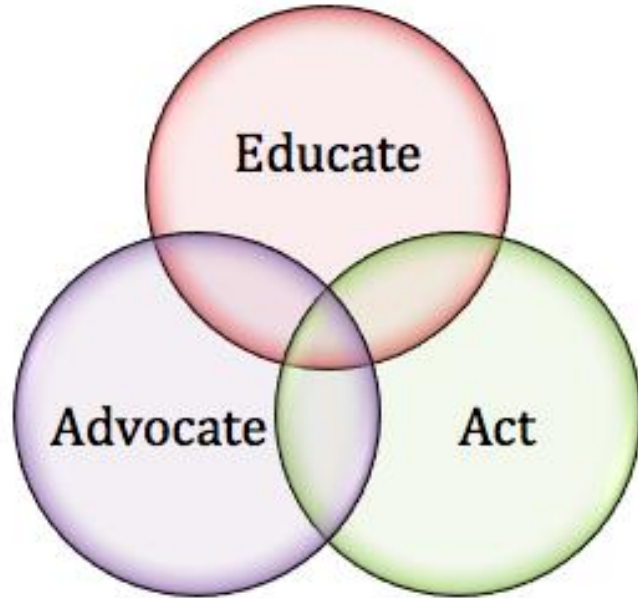
**ONE HEALTH APPROACH TO DEVELOPING CLIMATE CHANGE AND HEALTH LEADERSHIP**  
LEAD: UWI  
SUPPORT: ALL

**PROMOTE AWARENESS AROUND CLIMATE CHANGE AND HEALTH**  
LEAD: PAHO/CCCCC/CARICOM  
SUPPORT: ALL

**TOOLS TO ESTIMATE THE HEALTH CO-BENEFITS OF CLIMATE MITIGATION**  
LEAD: PAHO  
SUPPORT: ALL



# Education and Advocacy



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Policy makers and general public need to recognize health as a practical and positive argument for climate policy

**Requires:** More effective engagement of major health actors and messages for the climate policy debate

- Production of targeted awareness-raising products for specific audiences.
- Mobilization of health networks on evidence-based advocacy messages.

# Relevant evidence accessible to decision-makers

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**Requires:** Greater emphasis on applied research, and on knowledge management for practical application.

- Systematic review and guidance of research output to match the needs of decision-makers.
- Specific evidence products, on the benefits and costs of health adaptation interventions, and on health promoting mitigation.
- Translation of research into practical guidance for health protection from climate change, and health-enhancing mitigation policy.

**Research and application**

Thank You!

