

Housing and Urban Development

Human Health and Safety

1. Potential Stakeholders:

a. Mean sea level rise:

Residents who live on coasts;
squatters who live on coasts;
fisher folk; tourism industry;
developers; health planners;
water users outside of coastal
areas who rely on aquifers;
business people; public sector
services such as drainage, water
suppliers; policy makers and
legislators.

- b. **Global mean temperature rise:** Power companies; health care professionals; people whose health is vulnerable to heat (old people, babies, people with respiratory problems); farmers; water providers; policy makers and legislators.
- c. **Caribbean precipitation:** Power companies; industry that relies on water; health care professionals; tourism industry; residents; policy makers and legislators.
- d. **Hurricanes:** People who live in poorly constructed dwellings in high risk areas; power providers; developers; physical infrastructure managers; hospitals and other

health providers; tourism sector; city planners; farmers; fisher folk; businesses including those that provide services and materials for rebuilding; security forces; policy makers and legislators.

- e. **Heavy convective rainfall events:** Same as precipitation, plus: businesses and homes near rivers; users of water and sewer services; road users (including goods and passenger movement); developers and land use planners.
- f. **ENSO:** Same as precipitation, plus: consumers, fisher folk affected by public health problems due to contamination of fish.

2. Define problems and risk issues:

- a. **Sea level:** Flooding; inundation of structures; contamination of septic tanks and water supplies and related health issues; loss of vital infrastructure such as roads, bridges; loss of structures; loss of value; increased vectors (increased stagnant breeding sites); need to relocate housing.
- b. **Temperature:** Vector increase; increased food spoilage and exposure to micro organisms; heat prostration; threat to aged people and people with compromised immune systems; blood

pressure increase; increased psychological stress.

- c. **Precipitation:** Reduced access to water; water contamination through salination; sanitation and liquid waste disposal problems.
- d. **Hurricanes:** Destruction of housing; landslides; destruction of dams; destruction of airport, port, communications infrastructure; direct injuries; death; outbreak of water and vector borne diseases in the aftermath of the hurricane; rotting carcasses and other unsanitary conditions; transportation interruptions for emergency vehicles; destruction of health facilities.

- e. **Heavy rainfall:** Flooding; erosion; structural damage; washouts of roads and other infrastructure; injury; death; sanitary sewer overflows; possible health threats due to water contamination, standing water, increased turbidity, etc.
- f. **ENSO:** See precipitation.

3. **Identify hazards using risk scenarios**

- a. **Sea level:** Residents are displaced, their livelihood is affected; developers will lose their investment; legislators have to review urban planning, provide emergency funding and services; health care professionals and facilities

must deal with increased demands due to increased morbidity and mortality.

b. **Temperature:** Houses will have to be built or retrofitted to take advantage of natural cooling, landscaping, and more appropriate materials; power companies will come up with alternative power sources; health care professionals and facilities must deal with increased demands due to increased morbidity and mortality.

c. **Precipitation:** Cost of living will increase; health care professionals and facilities will deal with increased demands.

- d. **Hurricanes:** Total emergency situation: emergency, mitigation, and rehabilitation phases. Vulnerable sectors are health, emergency response, and security forces. Economic disaster.
- e. **Heavy rainfall:** Debris will have to be dealt with, siltation will have to be dealt with; roads will have to be rebuilt; structures will have to be rebuilt or reinforced; services and structures will have to be relocated, increased in sizing and/or strength; response planning must be changed and improved; lifestyles will change.

4. Risk Estimation

In all categories, the cost of living will increase, and lifestyles will change. The benefits will include an improved quality of life over what would have happened if the adaptation measures hadn't taken place.

5. Risk Evaluation

- a. **Sea level:** High in some countries due to topography; medium in others because there is time and space to deal with it.
- b. **Temperature:** High.
- c. **Precipitation:** Medium to high.
- d. **Hurricanes:** High.
- e. **Heavy rainfall:** Medium.

6. Risk Control- identifying priorities for risk control measures

- a. **Sea level:** Move or modify housing; enact appropriate zoning and setback regulations **that are enforced**; engineer and build dykes or seawalls where possible to secure current structures; upgrade infrastructure; build alternative provision for water storage to replace brackish drinking water supplies.
- b. **Temperature:** Plan landscaping and structures to alleviate heating problems; design housing to use natural cooling; gear health facilities to deal with heat related health

impacts; ensure public education regarding proper preparation and storage of foods.

c. **Precipitation:** Gear health facilities to deal with air quality related health impacts; design liquid waste disposal infrastructure to work in drier situations; encourage conservation of water, recycling; design structures to separate and reuse grey water; reverse deforestation.

d. **Hurricanes:** Emergency response systems are working; design and location of structures;

e. **Heavy Rainfall:**
Appropriately site and design

settlements and infrastructure; engineering solutions for watercourses that are prone to flash flooding.

7. Risk Control – Communications and Outreach: Needs and methods

In all cases, communicate simply and repeatedly. Involve all stakeholders and public through local consultations. Include NGOs. Use a variety of media and communicate to the full range of stakeholders and otherwise affected people and groups. Include government elected people and staff as communications and outreach targets.

8. Action/Monitoring (who should act?): Minister of Health, communities (including local authorities, city governments, NGOs), health providers, financial community, insurance providers, volunteer organizations, emergency services, protective services, infrastructure providers.

Group members:

Suelin Low Chew Tung, Grenada

Reginald Burke, St. Lucia

Harry Philippeaux, Haiti

**Renald Murray, St. Vincent & the
Grenadines**

Leonard Francis, Jamaica

Beth Johnson, Canada