

# **Globalisation, Climate Change and Rural Resilience: Envisioning Futures**

***“ Building Climate  
Resilient Communities in  
the Caribbean ”***

**May 9-11, 2012; Kingston, Jamaica**

**Caribbean Community Climate  
Change Centre**

# APPROACHING RESILIENCE BUILDING

- The approach to resilience building can be formulated through activities that promote: increased awareness of climate risks,
- policy interventions to decrease vulnerability, efficient resource use
- community capacity building to cope with climate risks
- full community participation in the entire process of responding to these risks i.e from vulnerability and impact assessments, through to fashioning, prioritising and implementing response measures.

# RESILIENCE

- *“Resilience refers to the capacity of an individual or community to cope with stress, overcome adversity or adapt positively to change.”<sup>1,2</sup>*

<sup>1</sup> Kaplan, H.B. (1999). Toward an understanding of resilience. A critical review of definitions and models. In M.D. Glantz & J.L. Johnston (Eds.). *Resilience and development: positive life adaptations*. New York, USA: Kluwer Academic/Plenum Publishers.

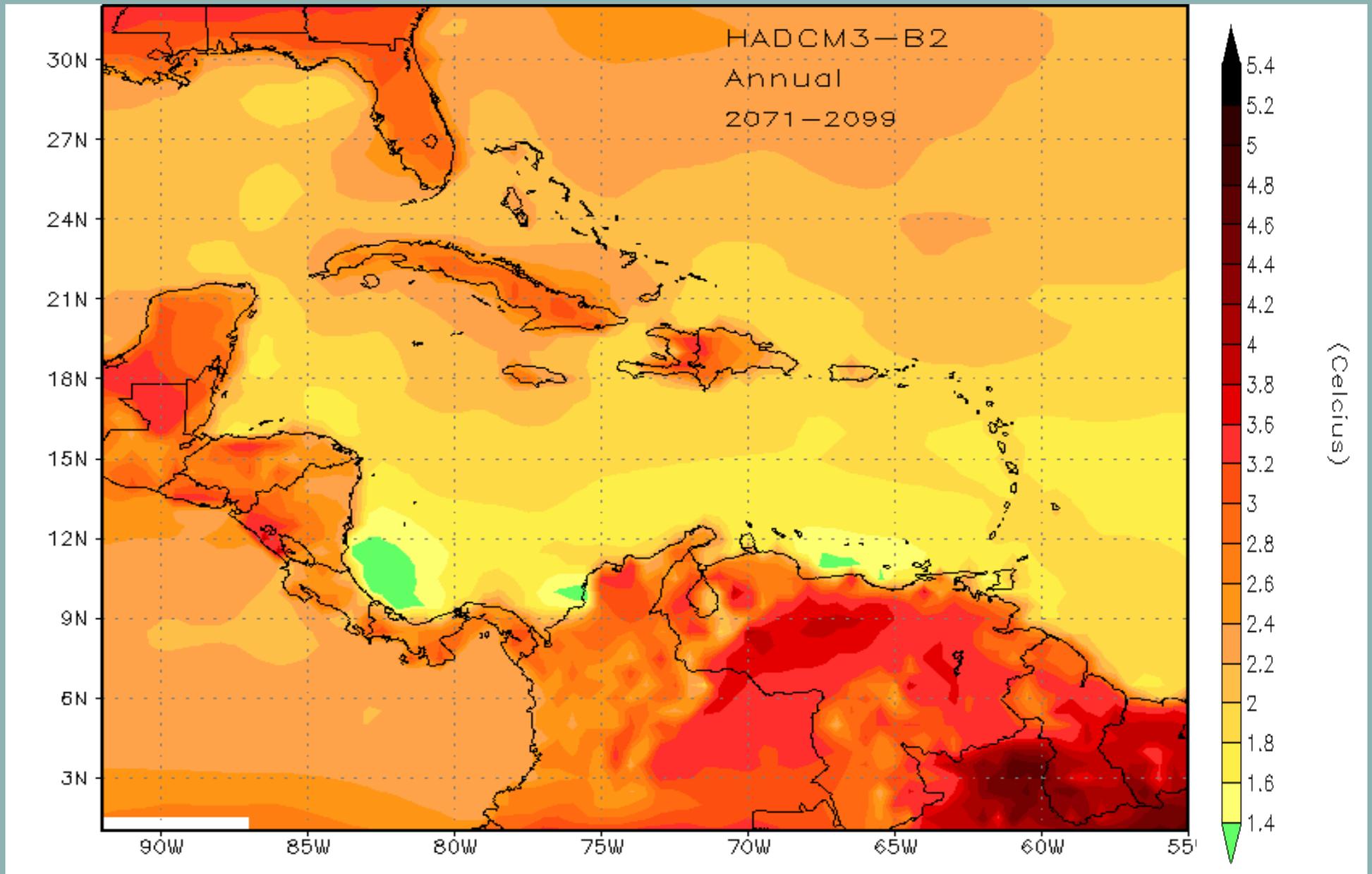
<sup>2</sup> Varghese, J., Krogman, N.T., Beckley, T.M., & Nadeau, S. (2006). Critical analysis of the relationship between local ownership and community resiliency. *Rural Sociology*, 71(3), 505–527.  
<sup>3</sup> Luthar, S. S. (2006). Resilience in

# APPROACHES TO BUILDING RURAL RESILIENCE

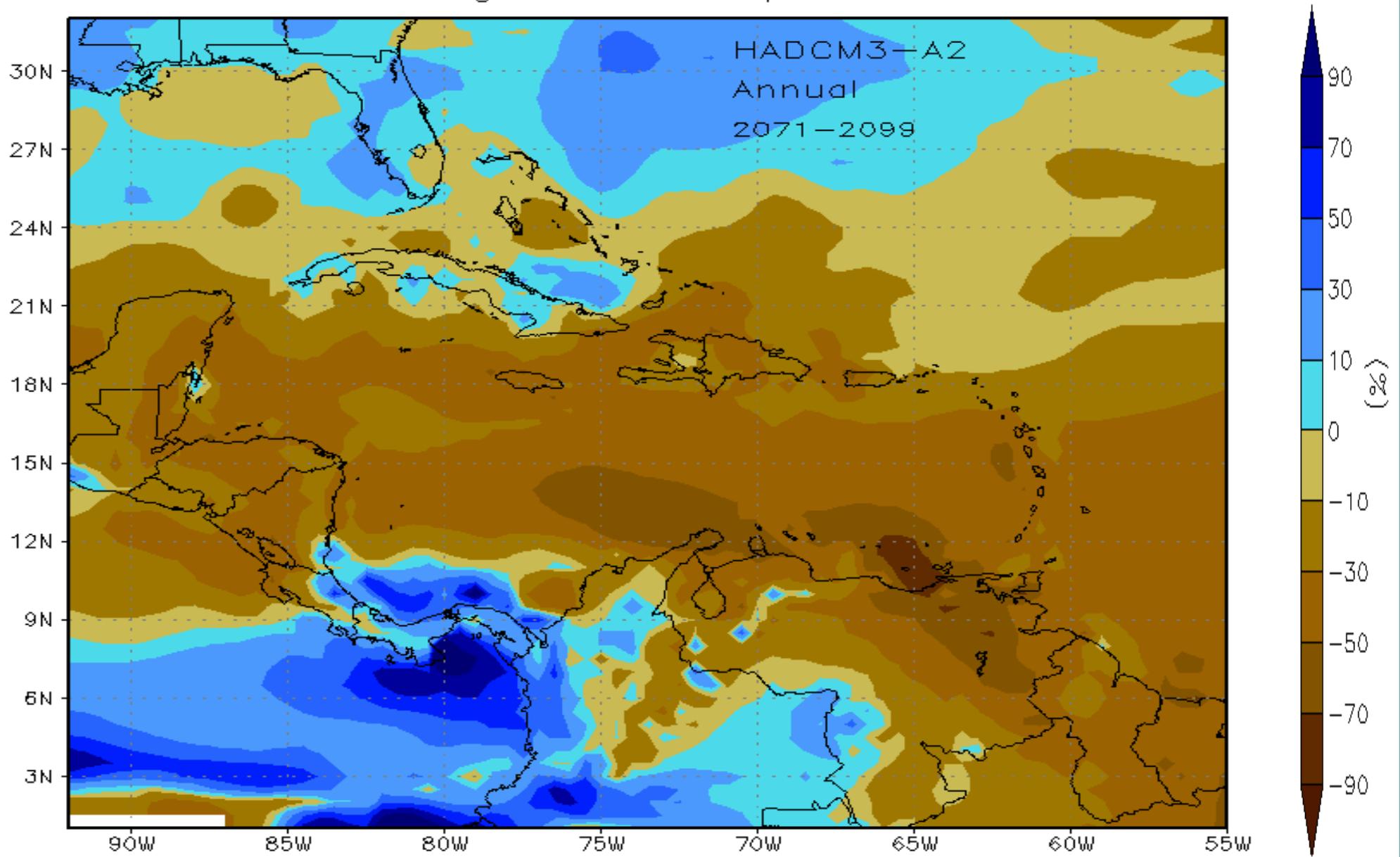
- “Putting a proper appreciation of risks and shocks at the centre of a new agenda for rural growth and development requires a multipronged approach.
  - On the one hand it involves strengthening the capacity of rural people to manage risk.... And develop new strategies.
  - On the other hand, it requires that the conditions that they face be made less risky...”

( IFAD Rural Poverty Report – 2011)

# FUTURE INCREASES IN REGIONAL TEMPERATURES



# FUTURE PROJECTED % CHANGES IN PRECIPITATION



# Caribbean Sea Temperature Much Warmer

- **Warmer sea temperatures support:**

- Development of stronger hurricanes at lower latitudes
- More rapid transition to category 4 and 5
- Increases the likelihood of coral bleaching



**April sea temperature near  
80°F/27°C**

# WARMER SEA TEMPERATURES RESULT IN CORAL BLEACHING AND MORTALITY

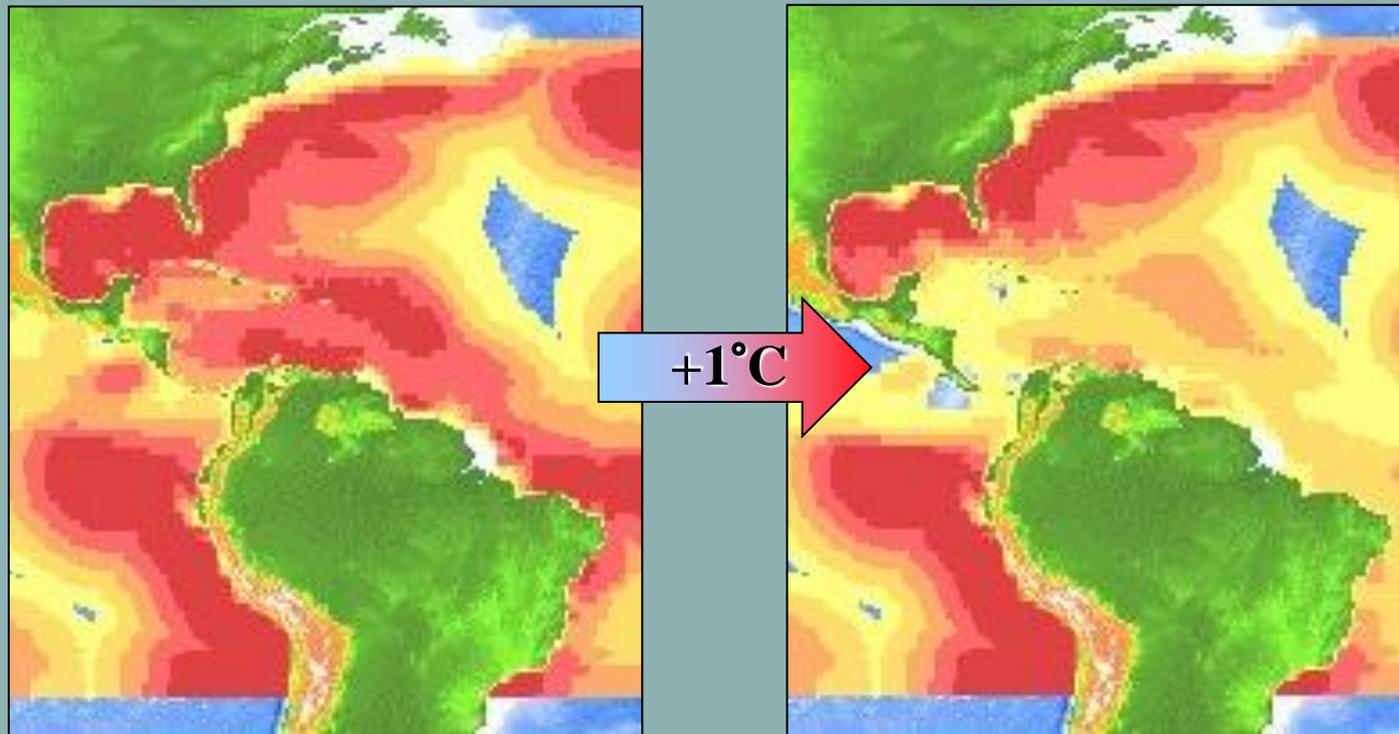


- In 1998 coral reefs around the world suffered the most extensive and severe bleaching and subsequent mortality in modern record.
- In the same year, tropical sea surface temperatures were the highest in modern record, topping off a fifty year trend for some tropical oceans.
- The repercussions of the 1998 mass bleaching and mortality events will continue to be far reaching in time and space.

# Impact of 1°C further rise in sea temperature on the Dolphin fish



Habitat becomes less favourable



# Likely Impact of a 2°C rise on Agriculture

Preliminary studies on the impact on the staples -corn, beans and rice for 2°C warmer and +/- 20% change in precipitation

| Crop            | Scenario Name | Season Length (days) | Temperature Change (°C) | % Change in precipitation | Yield (kg/ha) | % change in Yield |
|-----------------|---------------|----------------------|-------------------------|---------------------------|---------------|-------------------|
| Dry beans<br>C3 | Baseline      | 87                   | 0                       | 0                         | 1353.6        |                   |
|                 | Carib A       | 85                   | +2                      | +20                       | 1163.7        | -14%              |
|                 |               | 85                   | +2                      | -20                       | 1092.6        | -19%              |
| Rice<br>C3      | Baseline      | 124                  | 0                       | 0                         | 3355.5        |                   |
|                 | Carib A       | 113                  | +2                      | +20                       | 3014.4        | -10%              |
|                 |               | 113                  | +2                      | -20                       | 2887.5        | -14%              |
| Maize<br>C4     | Baseline      | 104                  | 0                       | 0                         | 4510.6        |                   |
|                 | Carib A       | 97                   | +2                      | +20                       | 3736.6        | -22%              |
|                 |               | 97                   | +2                      | -20                       | 3759.4        | -17%              |

# VULNERABLE COMMUNITIES

For rural population throughout the region dependence on climate sensitive natural resource base (e.g. agriculture, fisheries) for livelihoods translates into high vulnerability to climate shocks derived from changing weather patterns , more frequent and severe extreme weather events, sea level rise and elevation in sea water temperatures.

# IMPACTS ON AGRICULTURE

- Impacts on agricultural productivity as well as people who rely on it are expected to be particularly harmful
- The vulnerability of these countries is also especially likely to be acute in light of technological, resource & institutional constraints
- Move from agriculture to service based economy exposes region to vagaries of prices on international market (food imports).
- Leap in the price of food and as Haiti has shown the associated danger of social and political instability

# ADAPTATION

- Climate information for decision making
- Promotion of use of climate information in agriculture sector –EWS e.g. drought conditions from El Nino
- Capture & incorporation of traditional knowledge in adaptation responses
- **Promotion of diverse flexible livelihoods across sectors that reduce peoples dependence on climate sensitive resources.**
- **Insurance against weather related crop failure – weather based index insurance**

# OPPORTUNITIES TO ADDRESS LIVELIHOODS

- Cold Pressed coconut oil
- Mangrove honey.
- Organic produce – niche marketing
- Seaweed cultivation.
- Mari-culture
- Bio-fuels
- Fish Sanctuaries – community management & oversight.
- Linking produce to local assured markets esp. to tourism sector

# MITIGATIVE POTENTIAL OF AGRICULTURE

- *Conservation tillage practice*
  - having at least 30% or more crop residues covering the soil at planting (Lal *et al.*, 1998).
- *Improvements in slash and burn agriculture systems*
  - some of the carbon lost regained by leaving the land fallow for longer periods. Tinker *et al.* (1996)
- *Agro-forestry practices*
  - the protection of trees on the farm,
  - contour felling and
  - mound-based soil fertility management.

# CDM POTENTIAL OF AGRICULTURE(FAO)

- Creating awareness on the role of agriculture and forestry sectors in reducing GHG emissions
- Creating awareness of the importance of land management and alternative cropping practices in both reducing emissions,
- Systematic compilation of available information on land use and carbon sequestration potential
- the development of more specific methodology for accounting of carbon emissions and removals from agriculture lands under different agro-ecological and land management conditions;

# SOME REGIONAL RESPONSES

- Building capacity for CC adaptation(CCCCC)
- Implementation of Jagdeo initiative which aims to address regional food security.
- Locally Guyana embarking on implementation national strategy aimed at resuscitation of sector.
- Considering biofuel options (ethanol, biodiesel) – opportunity for the sugar industry??
- Maximising the energy potential of the sugar industry – cogeneration in Guyana& Belize

***THANK YOU***