ELABORATION OF A STRATEGY FOR THE REDUCTION OF CARBON EMISSIONS IN TRINIDAD AND TOBAGO

Disclaimer

The material provided is for general information and use only pending the official approval of the Carbon Reduction Strategy by Cabinet.

OUTLINE

Project background

- **Sponsors**
- **Major Emitting Sectors**
- **Objectives**
- **Outputs**

Output 1-Carbon Reduction Strategy

- **Work plan Concept/ Methodology**
- **Assumptions for Scenarios**
- **Projection Scenarios**
- **Mitigation and Intervention options for each sector**
- **Evaluation and Monitoring Indicators**
- **Institutional Coordination**
- **Possible Financing Sources**

Output 1I-Capacity Development

Output III- Implementation Framework

Government of the Republic of Trinidad and Tobago

Ministry of the Environment and Water Resources
Conserving Today, Securing Tomorrow

PROJECT SPONSORS

Ministry of the Environment and Water Resources

United Nations Development Programme (UNDP)

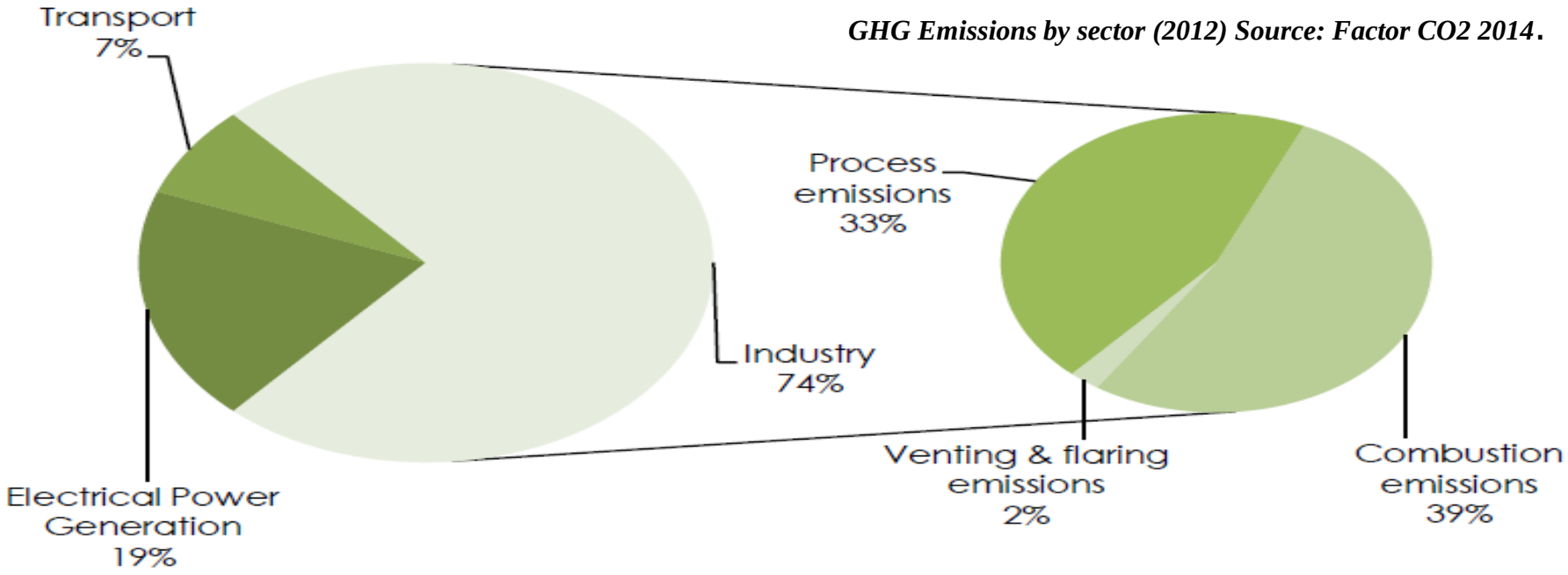
UNDP

Empowered lives.
Resilient nations.

BUSINESS BACKGROUND

T & T -highest economic growth rates and per capita incomes in the region.

- **Economy heavily dependent on oil and gas.**
- **Significant levels of industrialization & urbanization**
- **Relatively high-level of carbon emissions**



GHG Emissions by sector (2012) Source: Factor CO2 2014.

T&T MAJOR SECTORAL CARBON EMITTERS

***Source**: Second National Communication 2013*

Transportation

- **CO_2 emissions doubled from 1 313 Gg to 3 617 Gg from 1990-2005.**

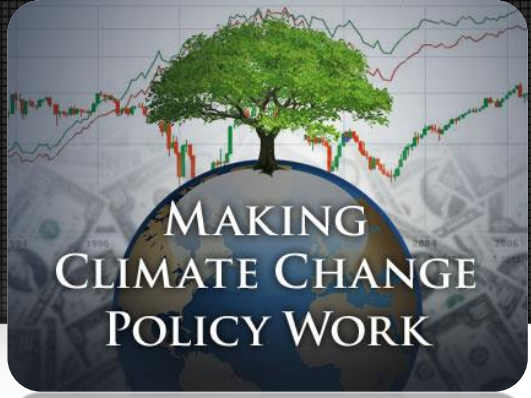
Industrial Processes

- **Industrial Processes – From 1990 to 2008, the total CO2 emissions increased by 111 %, however it was not a steady rise over the entire period. (1990-at approximately 5 500 Gg-to 10 785 Gg in 2008)**

Power Generation

- **CO_2 emissions have increased by 43.3 % between 1990-2006 from 1,736 Gg to 2,488 Gg.**

PROJECT OBJECTIVES



To develop a carbon reduction policy, strategy & implementation framework in keeping with the objectives of the National Climate Change Policy (NCCP) as well as developing capability to address evolving commitments under the United Nations Framework Convention on Climate Change (UNFCCC) negotiations.

PROJECT OUTPUTS

I To elaborate a strategic and policy framework for carbon reduction emissions elaborated.

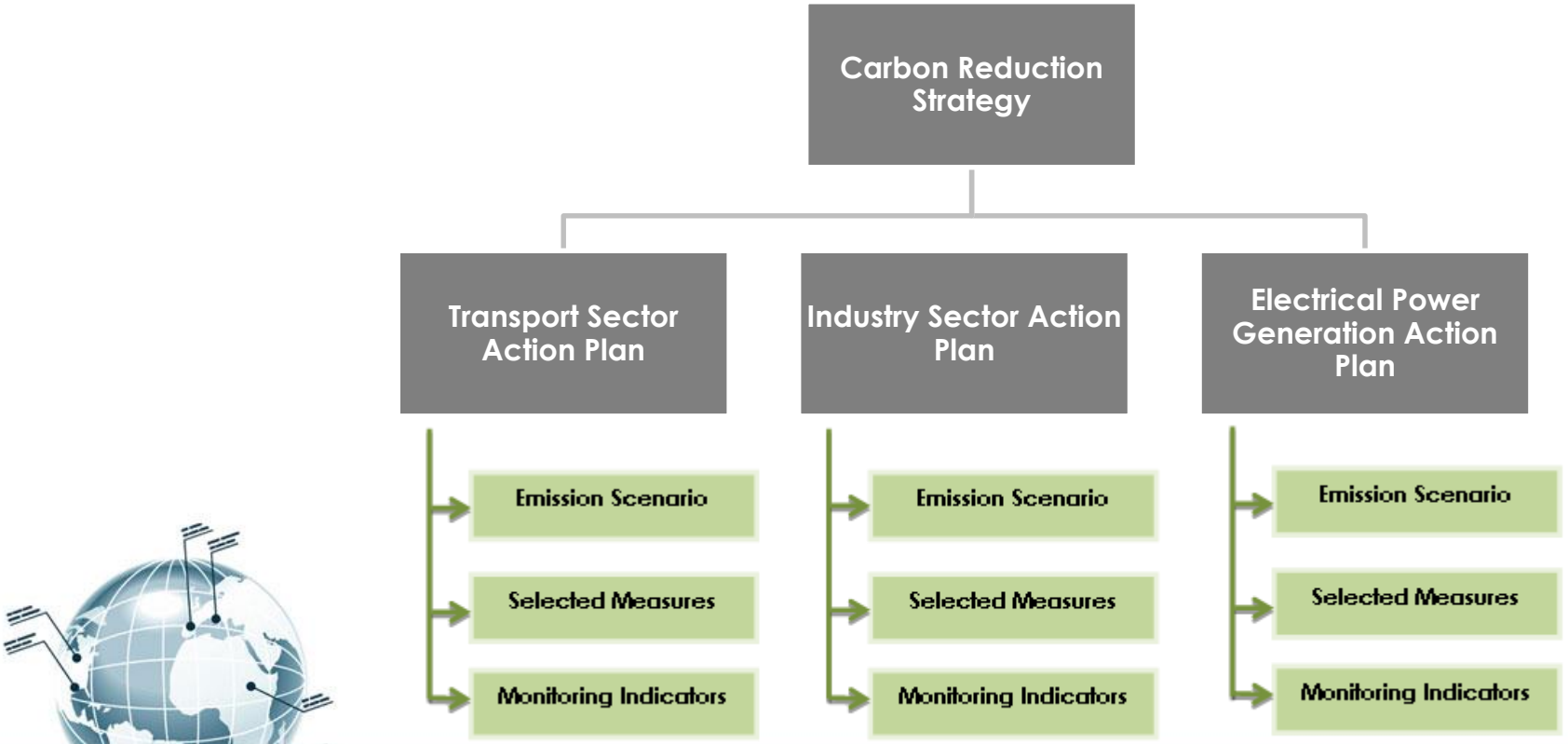
II To strengthen institutional capacity for the development of carbon reduction strategy.

III To develop a framework for strategy implementation.

WORK PLAN CONCEPT FOR STRATEGY DEVELOPMENT

OBJECTIVE:

TO DEVELOP AND ELABORATE CLEAR STRATEGIC ELEMENTS AND POLICIES TO REDUCE CARBON EMISSIONS FROM THE ELECTRICAL POWER GENERATION, TRANSPORT AND INDUSTRY SECTORS IN TRINIDAD AND TOBAGO.



WORK PLAN METHOD

ANALYSIS | SCENARIOS & MEASURES | PLANNING

1. GAP ANALYSIS

2. BaU SCENARIO

3. MITIGATION OPTIONS

4. COST-BENEFIT ANALYSIS

5. CONSULTATION

20th March 2014

6. LOW CARBON SCENARIOS

7. ACTION PLANS

8. CONSULTATION

11th November 2014

9. STRATEGY

6th March 2015

18 months

DEVELOPMENT OF SCENARIOS: ASSUMPTIONS

The development of the future scenarios is based on projections of the World Bank for Trinidad and Tobago and the Caribbean. For each sector the evolution of the economy was used as the base.

ELECTRICAL ENERGY GENERATION:

- **the projection of the energy consumption and the self-consumption was directly linked to the economic growth**
- **using the demand as the base, the total output was projected and then distributed among the different technologies considering the current plans for openings and closures of electricity generation plants.**
- **for the energy consumption per type of fuel, the historical evolution of the types of fuels consumed was considered and, for the losses, the assumption made linked their value to the evolution of the demand and the self-consumption.**

DEVELOPMENT OF SCENARIOS: ASSUMPTIONS

INDUSTRY:

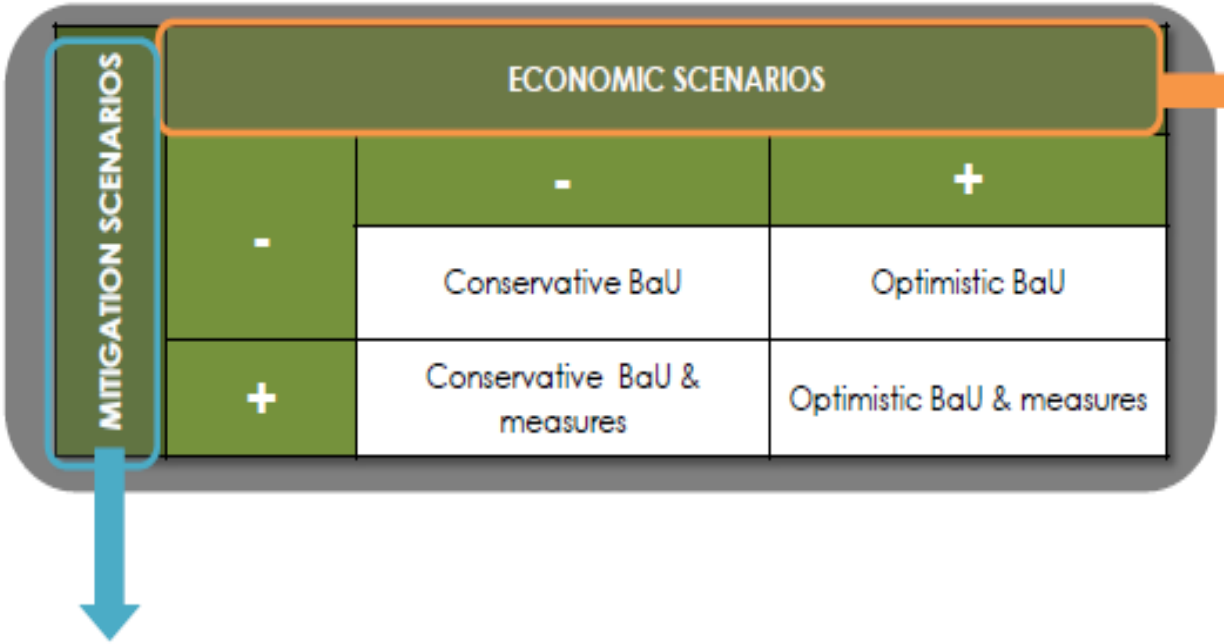
- **a multiple-regression scheme for the projection of the variables with the establishment of limits based on the maximum capacity of the industrial sites of Trinidad and Tobago**
- **a different approach was used for the process emissions and the combustion emissions**
- **for both the conservative and the optimistic scenarios, the production of the industrial processes was projected based on the evolution of the economy. A cap was established in both cases, considering that a growth of the capacity would take place during the projection period, but having the current maximum capacity as the baseline for the growth, which is lower than the expected economic growth**
- **plants which are being commissioned at the moment and those which are well defined projects were also included in the determination of the capacity in the scenarios for the sector.**

DEVELOPMENT OF SCENARIOS: ASSUMPTIONS

TRANSPORT:

- **the projections for both the conservative and optimistic scenarios were based on the projected evolution of the economy for Trinidad and Tobago, including the population growth rate, car import growth and car purchase for road transportation**
- **due to the lack of data and the complexity of the process, the scenarios are solely based on economic projections in terms of energy consumption by vehicles, not modeling the traffic situation of the country**
- **the link between the economic growth and the fuel served to service stations was defined and, using that projected fuel consumption as the baseline, the total fuel consumption was established**
- **the final assessment to specify the distribution of the energy consumption among the different fuels was based on the historical evolution of the fuels consumption for the transport sector of Trinidad and Tobago**

PROJECTION SCENARIOS

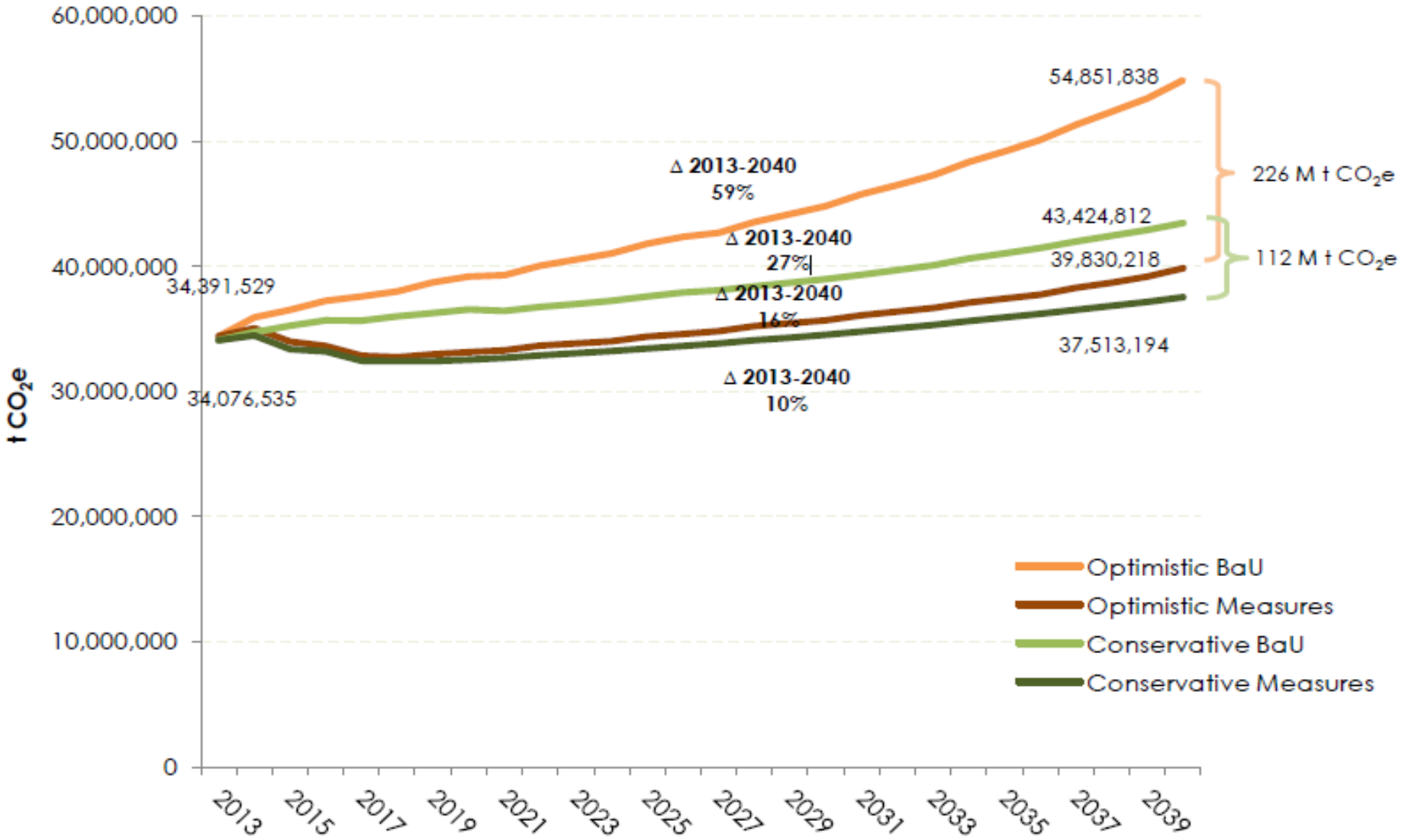


In the conservative scenarios, a conservative GDP growth projection is used, while, in the optimistic scenarios, a more optimistic growth is considered.

The Business as Usual scenarios are built to provide a future perspective of the GHG emissions of Trinidad and Tobago if no action in terms of climate change is carried out.

The measures scenarios will include the GHG mitigation actions idenfitied in the next stages of the project.

TOTAL RESULTS-COMPARISON OF SCENARIOS



MISSION AND VISION

The GORTT aims to reduce the GHG emissions of the three most emitting sectors of the country.

- **In the electricity generation sector-renewable energy and energy efficiency.**
- **In the industry sector- energy resources will be used wisely, minimized production of waste heat, implementation of energy efficiency actions, BAT**
- **In the transport sector-a reliable public transport system, responsible use of the car , use of alternative fuels**

MITIGATION STRATEGY- STRATEGIC AXES

GHG EMISSIONS REDUCTIONS: ELECTRICITY GENERATION

KNOWLEDGE	ACTION
EKn1. Wind and solar atlases. EKn2. Energy audits.	EAc1. Electrical energy generation technology. EAc2. Efficiency improvements in generation. EAc3. Waste to energy. EAc4. Energy conservation and efficiency measures.
AWARENESS	**POLICY**
EAw1. Smart grids. EAw2. Promotion of energy conservation.	EPo1. Renewable energy systems. EPo2. Decentralization of Renewable Energy Generation. EPo3. Review energy pricing.

GHG EMISSIONS REDUCTIONS: INDUSTRY

KNOWLEDGE

IKn1. Energy audits.

IKn2. Characterization, diagnosis and BAT implementation.

IKn3. CCS studies.

IKn4. Data Registry Tool.

IKn5. EOR studies.

ACTION

IAc1. Improved use of energy and heat in industrial processes.

IAc2. Complementary renewable energy sources.

IAc3. Thermal desalination.

IAc4. Reducing venting and flaring.

IAc5. Efficient technologies in the oil and natural gas sectors.

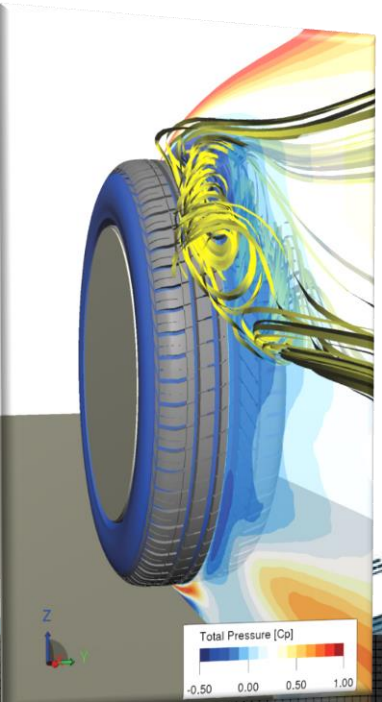
AWARENESS

IAw1. Promotion of energy conservation and lower waste generation.

POLICY

IPo1. Review fuel subsidies for the industry sector.

GHG EMISSIONS REDUCTIONS: TRANSPORT



KNOWLEDGE

TKn1. Biofuel studies.

ACTION

TAc1. Ridesharing.

TAc2. Vehicle energy efficiency and fuel switching.

TAc3. Parking management.

TAc4. Upgrade and replacement of aircrafts.

TAc5. Alternative fuels in aviation.

TAc6. Efficiency in water transport.

TAc7. Alternative fuels in Marine Navigation.

AWARENESS

TAw1. ICT technologies.

TAw2. Low emissions driving practices and standars.

TAw3. Awareness raising campaigns to reduce the use of private vehicles.

TAw4. Traffic management systems.

TAw5. Best practices to reduce fuel consumption.

POLICY

TPo1. Public transport systems.

TPo2. Review fuel subsidies for the transport sector.

TPo3. Vehicle registration fees and taxes.

EVALUATION AND MONITORING

ELECTRICITY GENERATION INDICATORS:

- **Renewable energy production/total electricity production**
- **CCGT production/total electricity production**
- **Thermal plants production/total electricity production**
- **Produced electricity/total consumed fuel**

EVALUATION AND MONITORING

INDUSTRY INDICATORS:

- **Cogeneration production/total electricity production**
- **Fossil fuel consumption/National GDP**
- **Process emissions/National GDP**
- **Flaring & venting emissions/National GDP**

EVALUATION AND MONITORING

TRANSPORT INDICATORS:

- **Fuel consumption road transport / GDP**
- **CNG consumption (road transport)/ Total road fuel consumption**
- **Fuel consumption air transport / GDP**
- **Biofuel consumption (air transport)/ Total air fuel consumption**
- **Fuel consumption waterborne transport / GDP**
- **Biofuel consumption (waterborne transport)/ Total waterborne fuel consumption**

INSTITUTIONAL COORDINATION I

POSSIBLE FINANCING SOURCES FOR THE IMPLEMENTATION OF GHG MITIGATION ACTIONS

Financing Scheme	Origin of funding scheme
The Green Fund	National
Public Sector Investment Programme (PSIP)	National
Nationally Appropriate Mitigation Action (NAMA)	International
Clean Development Mechanism (CDM)	International
Global Environmental Facility	International
Global Environmental Facility Small Grants Programme	International
International Finance Corporation	International
Sustainable Energy and Climate Change Initiative (SECCI)	International
Green Climate Fund	International
Germany´s International Climate Initiative	International
Low Emissions Capacity Building Programme	International

OUTPUT II- TRAINING SESSIONS COMPLETED

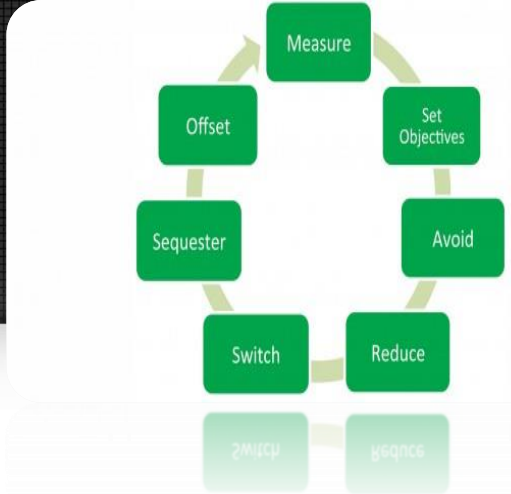
Training Module 1 – Climate change- The Physical Science Basis, its Effects and an Introduction to the International Action to Tackle it

Training Module 2-Policy Tools and Instruments to Tackle Climate Change

Training Module 3-Change Climate Mitigation: Establishing the Baseline and Analysing Emissions Reduction Options

Training Module 4-Climate Change Adaptation: Risk and Vulnerability Assessment and Selection of Adaptation Options

OUTPUT III- FRAMEWORK FOR STRATEGY IMPLEMENTATION



Institutional arrangements defined

Implementation plans and specific projects for CO2 reduction detailed

Consultations with national stakeholders

Elaboration of specific strategic, legislative and policy structure for CO2 reduction

WHERE WE ARE AT?

- ✓ **Output I- Strategy Developed**
- ✓ **Output II- Capacity Building Programme rolled out**
- ✓ **Output III- Implementation Framework is being developed**

FOOD FOR THOUGHT

“ Business as usual is risky business” ***– Christiana Figueres – Executive Secretary, United Nations Framework Convention on Climate Change (UNFCCC)***

International Energy Agency has reported that for the first time no net emissions increase was recorded globally in 2014, while at the same time world economic growth increased.

Bottom line: It is possible to achieve economic growth while at the same time reducing emissions or decoupling economic growth with GHG emissions.

The BIG QUESTION: Is T&T up to that challenge?