THE DETERMINANTS OF RENEWABLE ENERGY POLICIES IN THE CARIBBEAN – A CASE STUDY OF TRINIDAD AND TOBAGO

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OUTLINE

- Introduction, Motivation, Research Question, Objectives
- Literature Review
- Renewable Energy
- Initial Look at Potential Factors affecting RE Policy Adoption in T&T
- The Way forward

INTRODUCTION

- Energy is integral to Sustainable Development
- Energy: one of the basic human needs for development
- Current Rate of Energy Consumption = Unsustainable Energy Use + Divergence in SD
- Dincer and Rosen (2007) recognized that the finite nature of fossil fuel energy sources lack the key characteristic of sustainability while, renewable energy sources are sustainable over time

MOTIVATION

- Caribbean Countries are face with energy challenges: Import majority of fuels
- Environmental impacts such as climate change that are associated with the use of hydrocarbon based fuels.
- Lack of Renewable Energy Policies and Implementation

PROBLÉMATIQUE/RESEARCH QUESTION

- What are the major factors that influences renewable energy policy adoption in Trinidad and Tobago?

OBJECTIVES

- Survey Literature
- Identify factors impacting on Renewable energy policy adoption
- Identify what factors can be applied to T&T
- Execute necessary analysis

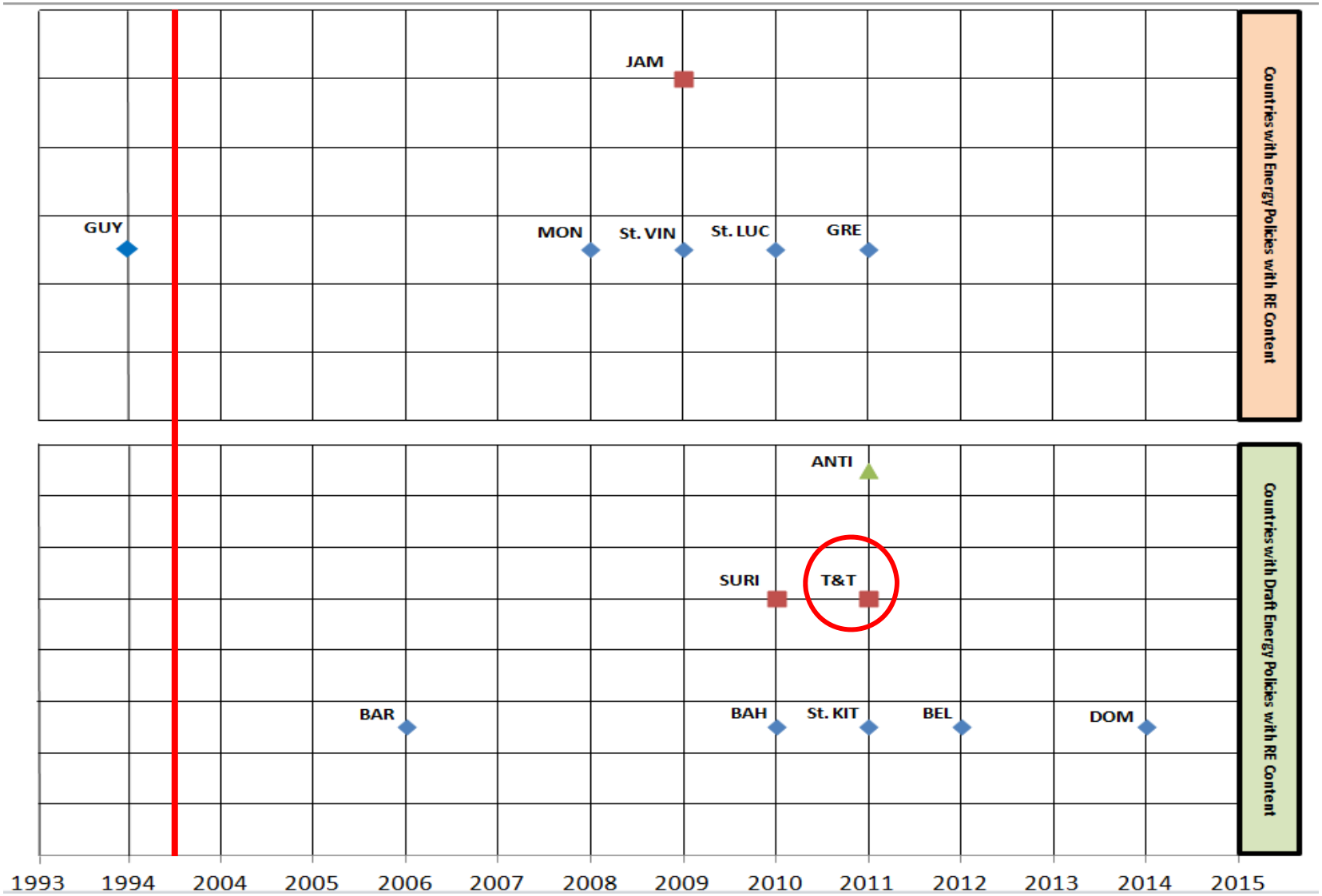
LITERATURE REVIEW

Table 1: Summary of Literature

Literature	Subject
Schaffer and Bernauer (2014)	Factors driving RE policy adoption in EU
Fischer and Preonas (2014)	Effectiveness of RE sources for electricity generation and interaction among them
Qi et al (2014)	Renewable energy and low carbon development
Lyon and Yin (2010)	Factors influencing states to adopt RE policy
Cannemi et al (2014)	Factors influencing RE investment
Winfield and Dolter (2014)	Impact of RE policy on energy and economic development strategies
Jenner et al. (2012)	Factors influencing states to adopt RE policy
van der Akker (2011)	RE in the Caribbean
Auth et al. (2013)	RE in the Caribbean
Wilson (2009)	RE in the Caribbean
Altomonte el al 2003	RE in Latin America and the Caribbean

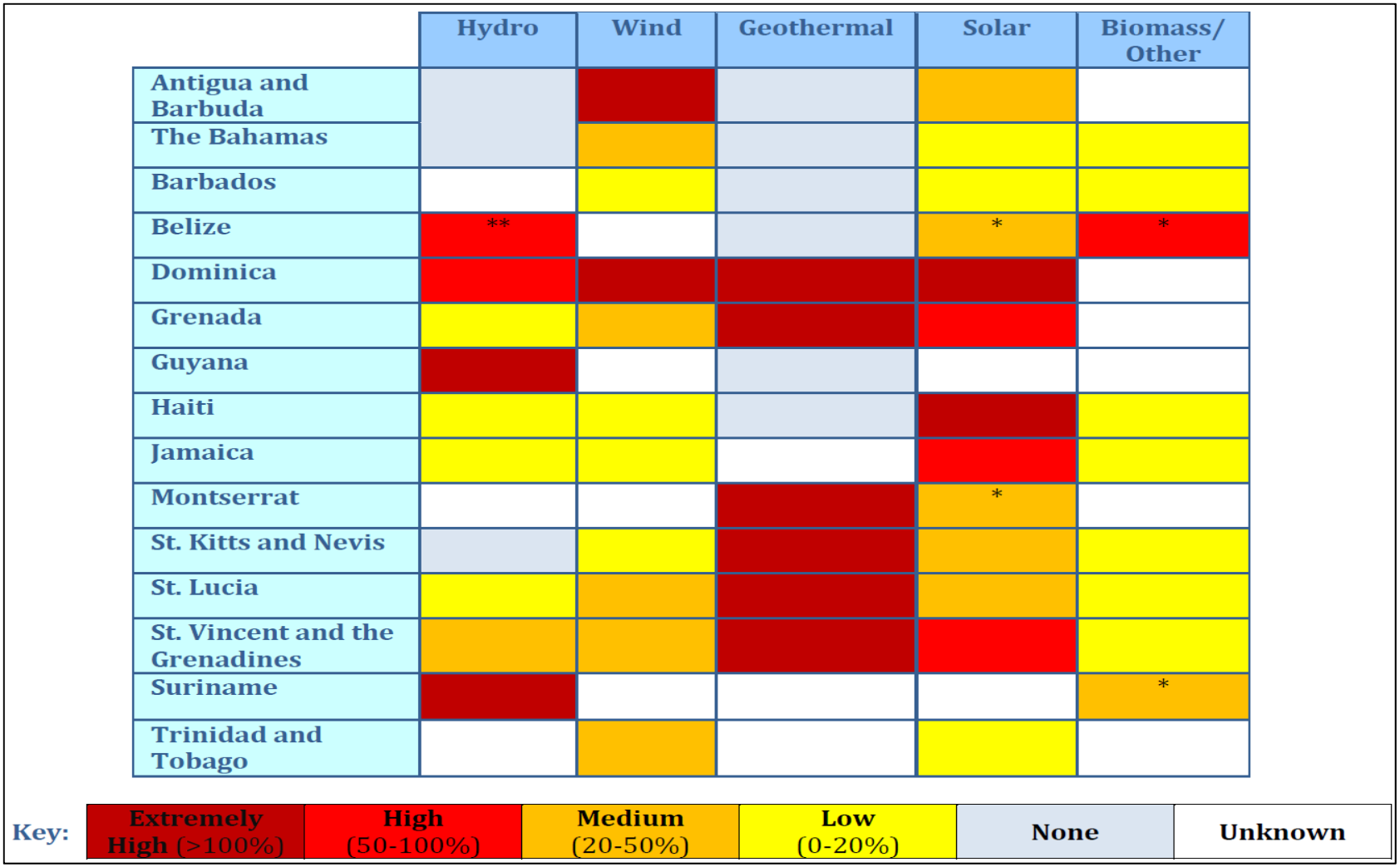
NATIONAL ENERGY POLICIES OF THE CARIBBEAN

Diagram 1: Countries who have adopted policies with RE content versus countries who have not adopted policies with RE content



RENEWABLE ENERGY PROFILE OF THE CARIBBEAN

Diagram 2: Renewable Energy Resource potential among CARICOM member states as a share of current peak demand.



Source: Auth et al. 2013: 14.

RENEWABLE ENERGY PROFILE OF THE CARIBBEAN

Table 2: Caribbean Renewable Energy Development Program Pipeline Projects as of 2010

Country	Budget (US$)	Project Title
Barbados	101,034	Cane Industry Restructuring Project – Sustainable Renewable Energy Component
Belize	242,000	Hydropower Feasibility Studies of the Central River
Dominica	122,250	Feasibility Study of the Newtown Hydropower Plant (DOWASCO)
Dominica	22,000	Stream Flow Gauging at Selected Rivers (5 stations)
Guyana	132,892	Grid Stability and Soil Test Studies for the Hope Beach Wind Farm, Guyana
Guyana	199,918	Hydropower Feasibility Study of the Chiung River
Jamaica	10,579	A Feasibility Study for an Alternative Energy biomass Fueled Cogeneration (CHP) System
Jamaica	105,000	Back Rio Grande Hydro Project Review
St. Vincent & the Grenadines	44,000	Inspection, Topographical Survey &Stream Flow Gauging for the St. Vincent Electricity Services Limited
St. Vincent & the Grenadines	463,859	Feasibility Study, Tender Design & Tender Documents for the Hydropower Stations of St. Vincent Electricity Services Ltd. (VINLEC)
Suriname	45,387	Wind Speed Measurement in Suriname at Nickerie and Galibi
CARICOM	20,000	Consultant for CRETAF

Source: van der Akker (2011, 17).

BENEFITS AND BARRIERS TO RENEWABLE ENERGY

- Benefits:
  1. Improvement of balance of payments
  2. Reduced impact of price volatility
  3. Energy security and energy Independence
  4. Domestic job creation
  5. Revenue generation
  6. Improvement of air quality
  7. Reduction in greenhouse gas emissions

- Barriers:
  1. Subsidies
  2. **Legal Framework**
  3. Finance and Market
  4. Education and Awareness
  5. Local data
  6. Environmental concerns
  7. Competing land use issues

RENEWABLE ENERGY IN TRINIDAD AND TOBAGO – WHAT THERE IS?

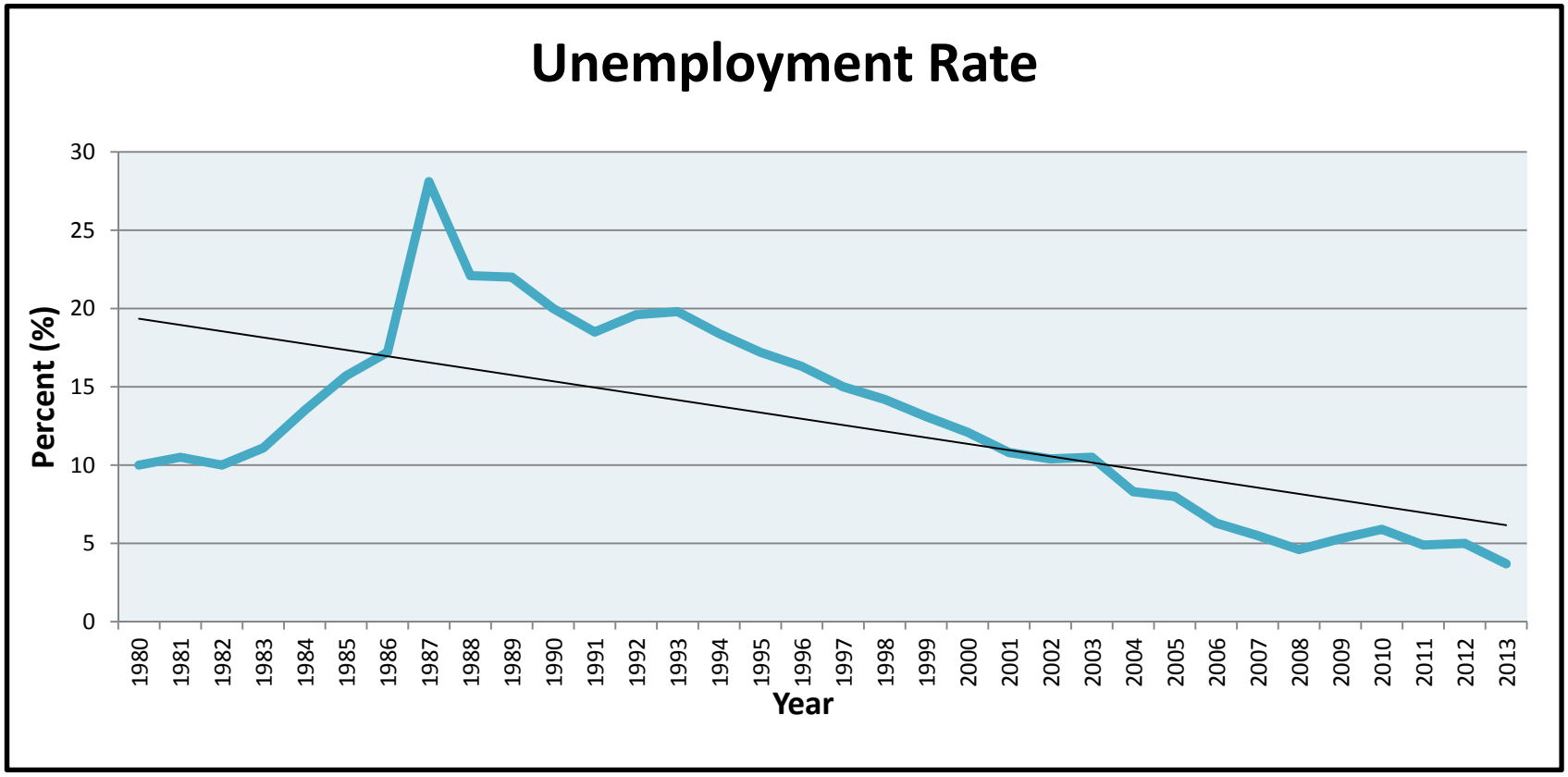
- Framework for Development of a Renewable Energy Policy for Trinidad and Tobago (Draft Renewable Energy Policy 2011).
  - Primary objective is to introduce renewable energy in the local energy mix
  - Targets various sectors (e.g. transportation, electricity generation, Industry)
  - Identifies wind energy, solar energy and biomass as potential renewable energy applications
  - Looks at Carbon reduction strategies
  - Target of 60 MW of power generation by 2020 where majority of generation will come from wind energy.

SURVEY OF POTENTIAL FACTORS INFLUENCING RE IN TRINIDAD AND TOBAGO

- Surveyed literature and Identified factors influencing renewable policy adoption.
- Conduct initial analysis on the selected factors based on the availability of data.
- Looked at Unemployment Rate, GDP Per Capita, Economic Growth, Electricity Production from Fossil Fuels; and Carbon Dioxide Intensity.

SURVEY OF POTENTIAL FACTORS INFLUENCING RE IN TRINIDAD AND TOBAGO

Diagram 3: Unemployment Rate of Trinidad and Tobago (1980-2013)

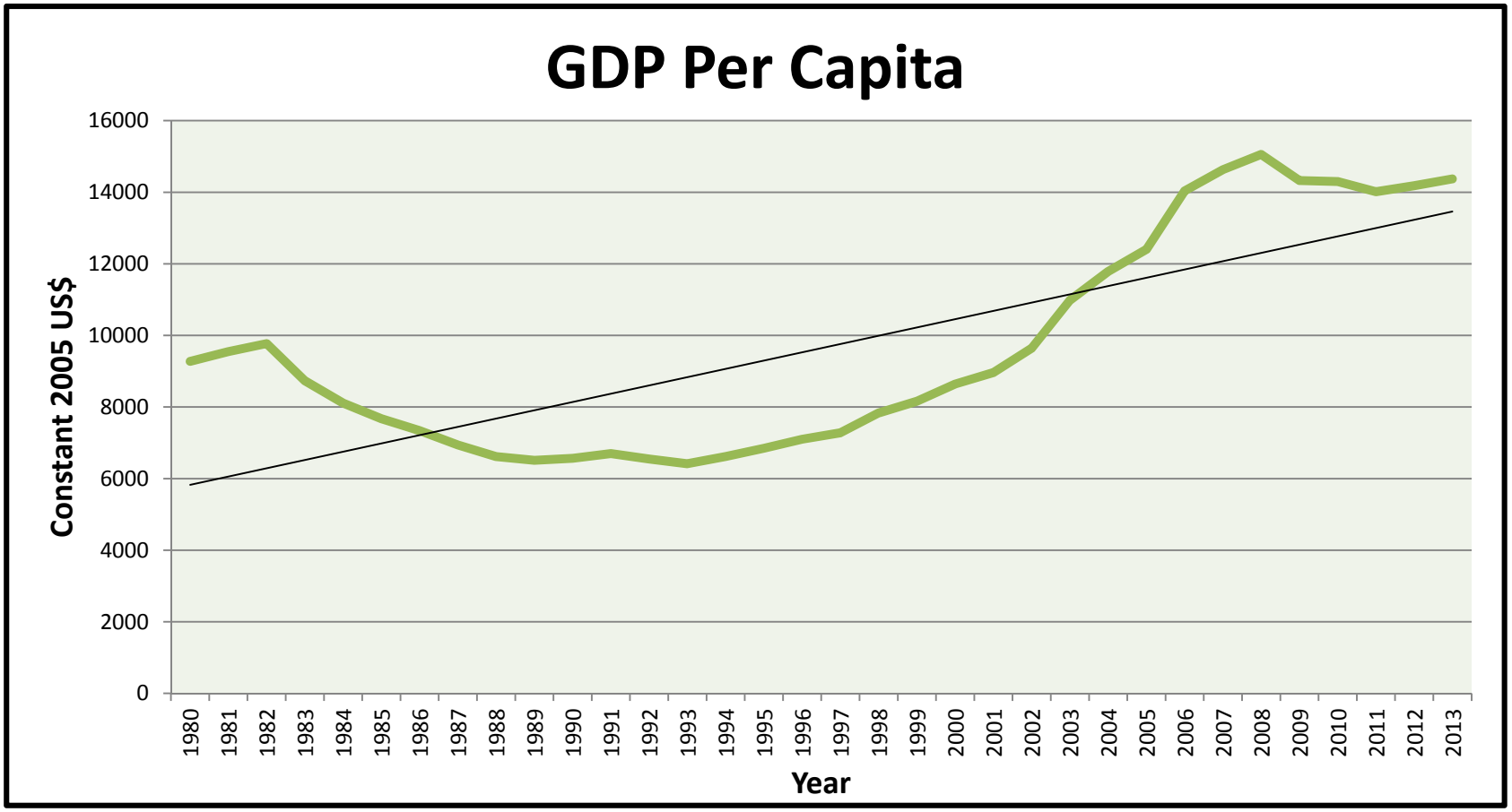


Source: World Bank: World Development Indicators

*Estimate for unemployment rate for 2013 is from January to March 2013.

SURVEY OF POTENTIAL FACTORS INFLUENCING RE IN TRINIDAD AND TOBAGO

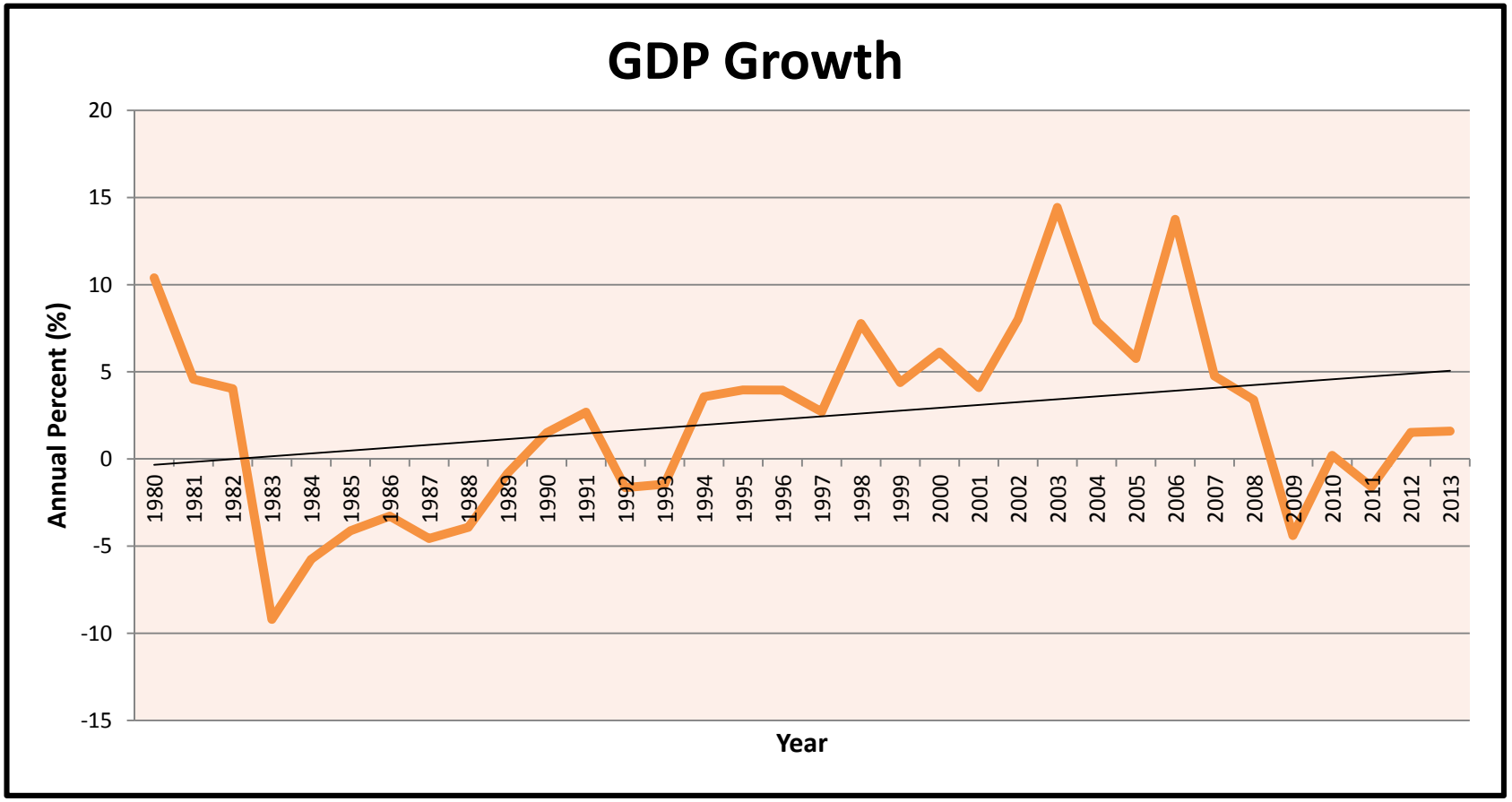
Diagram 4: GDP per capita of Trinidad and Tobago 1980-2013



Source: World Bank: World Development Indicators

SURVEY OF POTENTIAL FACTORS INFLUENCING RE IN TRINIDAD AND TOBAGO

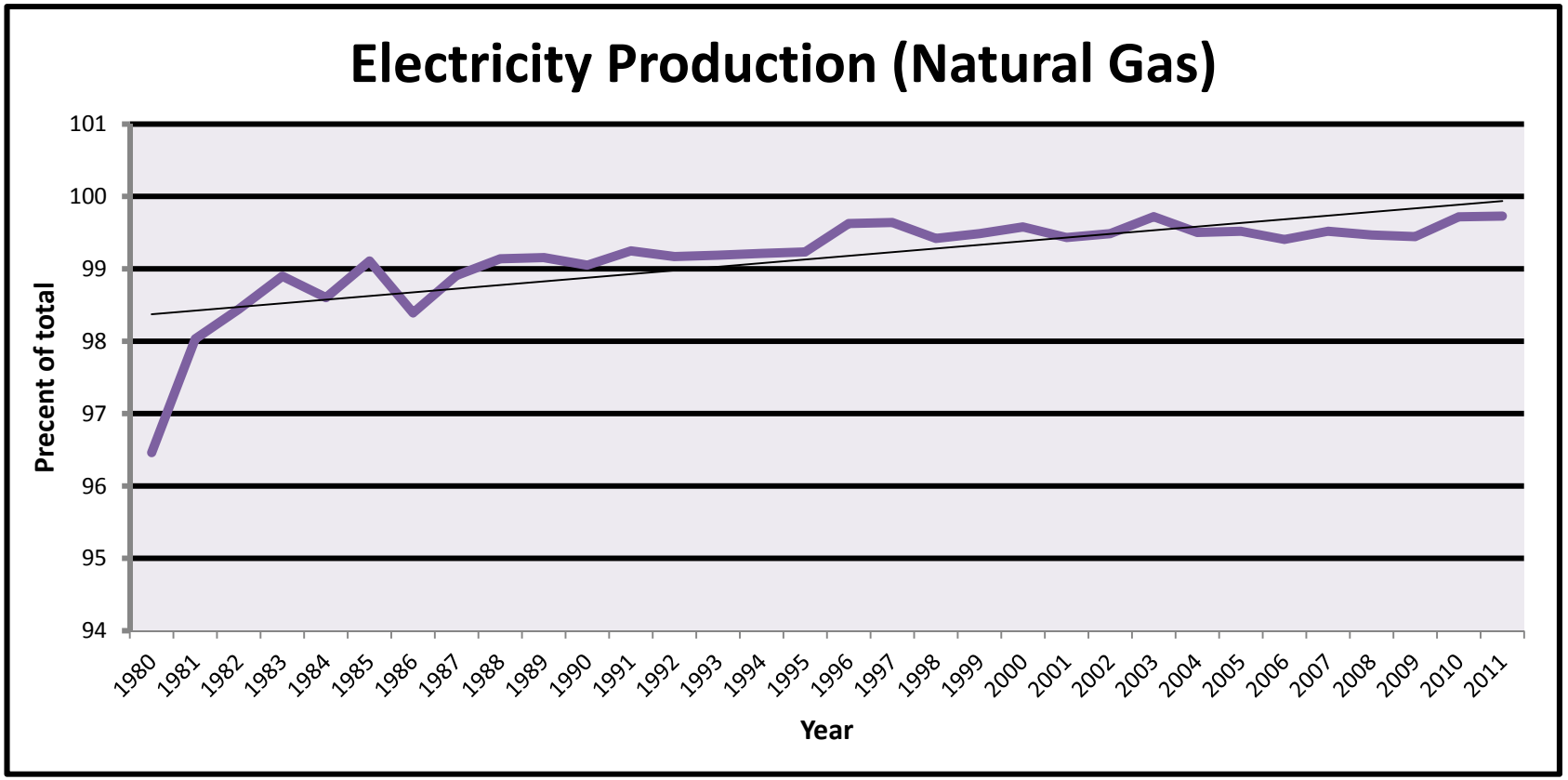
Diagram 5: Trinidad and Tobago Economic Growth [GDP Growth] (1980-2013)



Source: World Bank: World Development Indicators

SURVEY OF POTENTIAL FACTORS INFLUENCING RE IN TRINIDAD AND TOBAGO

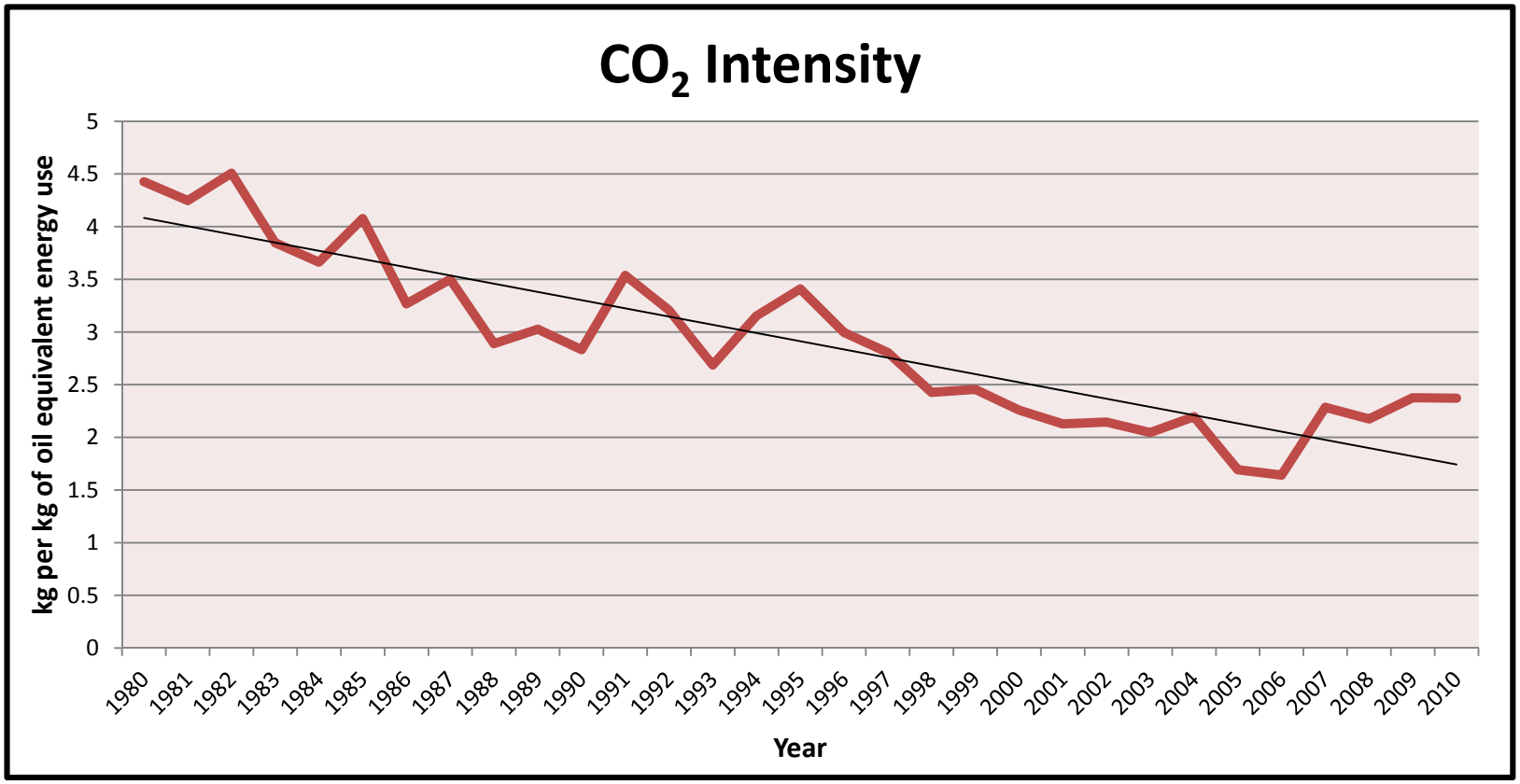
Diagram 6: Trinidad and Tobago Electricity Production from Natural Gas (1980-2011)



Source: World Bank: World Development Indicators

SURVEY OF POTENTIAL FACTORS INFLUENCING RE IN TRINIDAD AND TOBAGO

Diagram 7: Trinidad and Tobago Carbon Dioxide Intensity (1980-2010)



Source: World Bank: World Development Indicators

THE WAY FORWARD…

- Need to carryout further analysis to determine the effect of factor on RE policy adoption in T&T.

- Possible Model = Probit Model