Determining the competitiveness of Caribbean firms in the Global Renewable Energy Industry (GREI)

Mr Kobina Wilson :PHD Candidate at the Institute of International Relations

Definitions

- Renewable Energy (RE) generated from natural resources. It refers to energies that are non-traditional and have low environmental impact. (The Pennsylvania State University, 2016).
- The Renewable Energy Industry (REI) is a classifications of organizations that operate within the environmental sector. It refers to public, private and international institutions that develop and/or disseminates renewable energy technologies, policies, laws, knowledge and training.

Relevant Concepts

- Competitiveness: Interdisciplinary concept, however Porter determines the extent to which a country can be globally competitive by the ability of locally owned firms to achieve economy wide prosperity which is determined by the extent to which economic agents achieve relative productivity in a global industry
- Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
- Clusters refer to economic spaces that are characterized by a number of interrelated businesses, organizations and institutions in a particular region or geographic location. (Ketels, 2003)

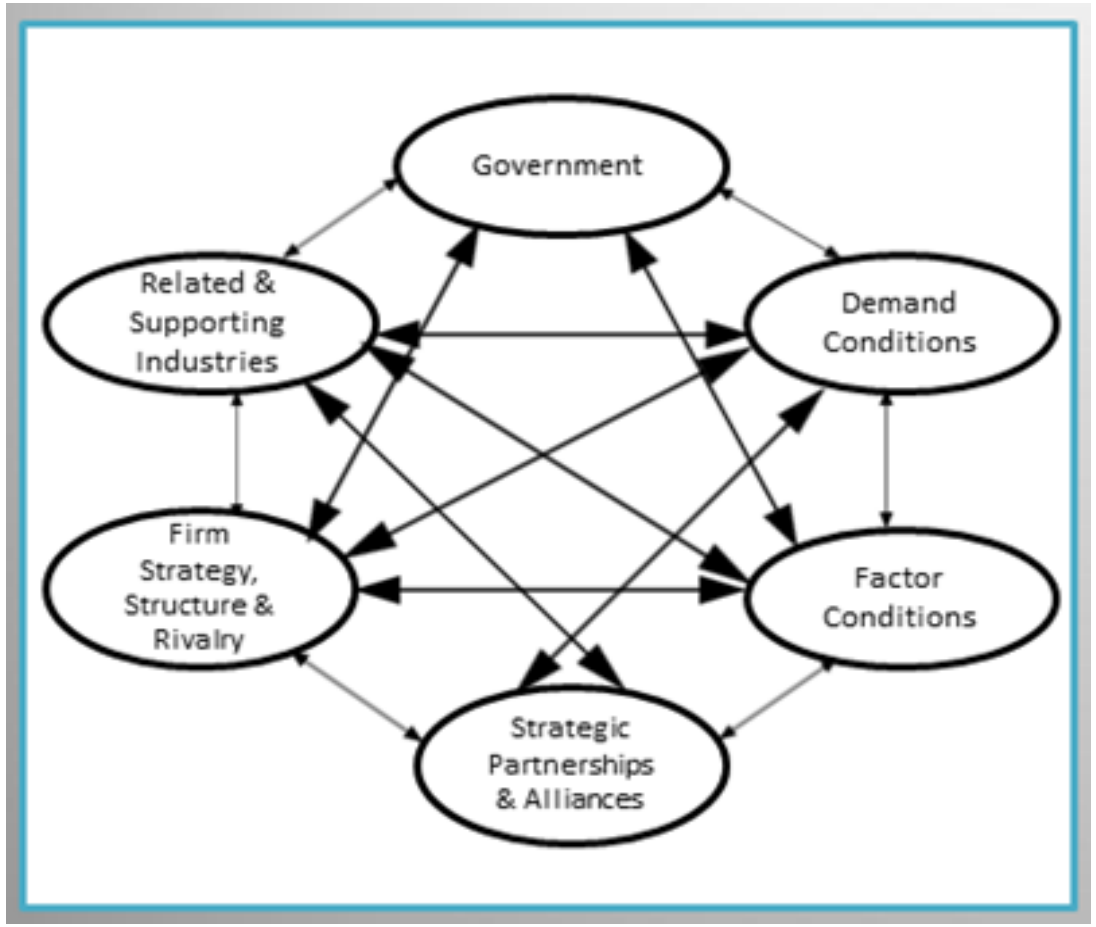
Background/ Justification; Why RE Now?

- Emergence of a Global Renewable Energy Industry creates opportunity for alternative pathways to sustainable Development
- Threat of Climate Change and Global Warming creates global support for RE development
- The Region is overly dependent on imported fossil fuels
- The Caribbean Region is naturally endowed with all sources of renewable energy giving the islands an inherent advantage to compete

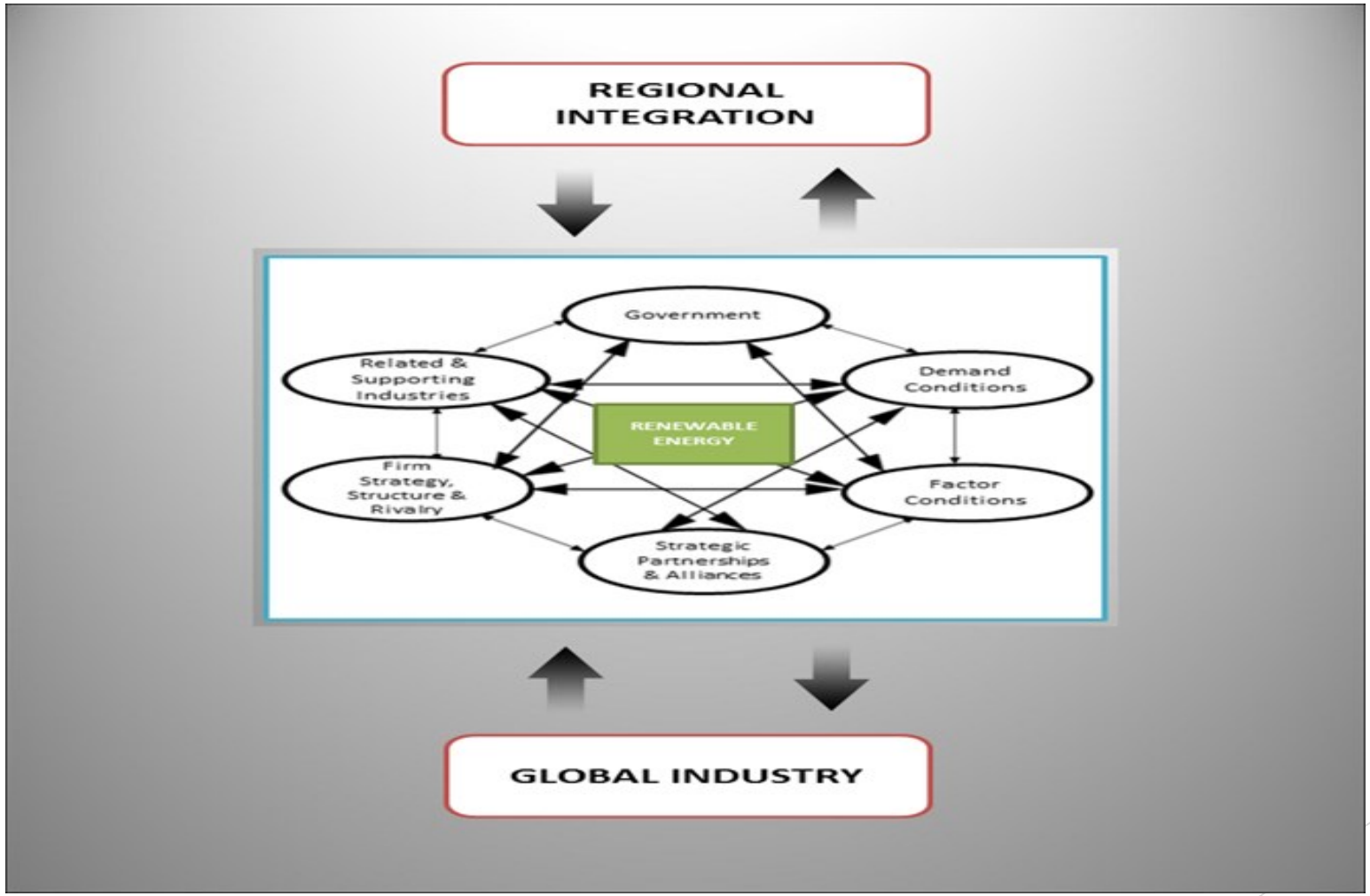
Purpose/Contribution

- to present a model of competitiveness that quantitatively examines the state of competitiveness of regional renewable firms in the global renewable energy industry.
- The model is based on the work of Porter, which is essentially modified to take into account unique challenges and factors that make the model relevant to small island developing states in a newly emerging renewable energy industry

Hexagon of Key Endogenous Determinants of Competitiveness



Regional Renewable Energy Model



Aggressive Innovation (AI): Road to Global Competitiveness

- Aggressive Innovation that occurs when the determinants of the Hexagon have been optimally enhanced
- AI is to be characterized by i) increased investment and innovation by Caribbean firms and domestic private sector as compared to the previous stages of competitiveness ii) Diffusion of RE to other competitive sectors iii) and a surge in innovative domestic firms with strong strategy and sound structure as a result of positive spill overs from the cluster.
- AI is not static; it is ongoing and is not limited to any particular sector or course of action. Rather it is meant to be consistent, robust and dynamic if the positive benefits of the developing cluster are to be realized.

Methodology: Measuring modified model

- Primary and secondary research
- Use of Questionnaires , close ended questions, use of Likert scale, One designed for firms the other designed non private sector
- Census Approach
- Use of emails, Phones, face to face Interviews
- Use of SPSS: Factor Analysis and Linear Regression
- Factor Analysis would be used as the statistical method to show strong correlation between the key determinants and the variables identified. The Linear regression method would also be utilized to show the effect of the independent variables of the RRES on the dependent variable. The dependent variables identified as the key determinants of the Hexagon

Table Showing Selected Variables

Determinants (dependent)	Corresponding Questions on the Questionnaire	Causal Variable	Proxy Variables
Factor Condition	8	Basic : Natural Resource	• Available potential megawatts
	9,10,11	Advanced: Infrastructure Higher education	• Quality of roads, air transport, Port, electricity supply • Quality of education system, Quality of Math and science • Availability of Research and Training services • Extent of staff training
Demand Condition		Market Volume: Market size Market Growth	• Currently installed capacity • Estimated growth in demand in the future for electricity
	12,13	Demand Sophistication: Education level Technology readiness Level of Employment	• % of population with Tertiary education • % of population with internet access • Unemployment rate
Strategic Alliances and Partnerships	14.15	Interaction with organisations outside the region in the Renewable Energy Industry	• % of total FDI in RE industry in the RE Industry • Volume of Grants and loans issued by key Institutions outside of the Region

			• Monetary value of renewable energy technology imports
Firm Strategy, Structure and Rivalry	16,17	Strategy & Structure: -M&A Innovative Drive	• # of Corporate M&A by country • Capacity of innovation
	18,19	Rivalry: -Competition in Domestic Market	• # of RE firms in regional market • Size of RE firms
Related & Supporting Industries	20,22,23,24	Related Companies	• % medium and high tech value added in the country's total manufacturing
		Support	• Gross Domestic Expenditure on R&D
Government	25,26	Government Support	• % of GDP expenditure on RE development Sector • fiscal and non-fiscal incentives to support RE
Regional Integration	27	Depth of Integration Process: i) Narrow Integration ii) Deeper Integration iii) Functional Integration	• Level of intraregional tarffs • Adoption of common rules on investment • Presence of regional development finance institutions
Global Industry	28	Size and Trends in the Global Renewable Energy Industry	• Aggregate and Projected Global investment in RE • Present and Projected electricity capacity installation of RE sources • Countries that are members of International Organisations (indicates commitments to environmental obligations)

Conclusion/Recommendation

- The Modified Model is pioneering work because it is the first model designed to measure i) the competitiveness of renewable energy firms, ii) in Small Island developing islands, iii) on a regional scope.
- REGIONAL RENEWABLE ENERGY CLUSTER based on functional cooperation is the best way forward
- Clusters impact on competitiveness of the region in a global market in three key ways. i) clusters tend to boost productivity of operating firms, ii) clusters encourage competition which gives direction and pace of innovation (Porter, 1998), iii) clusters tend to encourage firm and entrepreneurial activity which increases the size and influence of the existing cluster (Delgado et al, 2010)

QUESTIONS?COMMENTS