Renewable Energy Implementation in the Land and Building Sector for Trinidad and Tobago

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Abstract. The adoption of Renewable Energy (RE) technologies is a key approach required for transitioning towards a renewable energy future and sustainable urban planning and development in Small Island Developing States (SIDS) like Trinidad and Tobago (TT). RE sources come from naturally replenishing resources that will never run out. This research aimed to identify the critical success factors (CSFs) for RE implementation in the Land and Building Development Sector (LBDS) in TT. To address this issue, a study was conducted using a survey instrument and Likert type scale approach which were validated by peer reviewers, subject matter experts and industry stakeholders. The CSFs identified were: the availability of financial incentives and access to investors for RE projects; training and availability of skilled professionals in RE technologies; administrative hurdles and lack of local building policies for land and building development; limited public information available/accessible on RE technologies which affects awareness of benefits and savings that can be gained; incentives for property owners and tenants for RE and technology designed developments in the form of building certification, retrofitting building allowances and policies facilitating the increase in property value. The study showed that practitioners are willing to adopt RE technologies within their projects if business models are revised to include RE technologies to aid lower income customers. Practitioners have also indicated their willingness to participate in current or future RE based workshops for LBDS projects as well as workshops on marketability and business model designs. Implementation of these CSFs in TT will facilitate the adoption of RE in this sector, aiding in the reduction of GHG emissions and the heavy reliance on fossil fuels for power generation - thus promoting sustainable development in TT.

Key words: renewable energy, critical success factors, greenhouse gas, sustainable development, urban planning.

Introduction

Trinidad and Tobago is characterized by its small size, geographical remoteness, dependency on fossil fuels, limited financial and technical capacity for sustainable development as well as high vulnerability to climate change effects, such as extreme weather events, among others Leal et al. (2022). Based on population size, SIDS have been responsible for relatively insignificant levels of greenhouse gases, however, TT is ranked fourth based on annual CO_2 emissions per capita Yoro and Daramola (2015). The provision of energy for economic, industrial and sustainable development in SIDS is critical Leal et al. (2022) and currently approximately 82% of energy is obtained from fossil fuels and the remaining 12% obtained from RE sources UNEP (2022). As these countries develop and their energy demands increase, the reliance on fossil fuels especially for power generation and transportation will increase, resulting in GHG emissions escalating from as high as 25% in 2000 to 90% by 2030 Rogner et al. (2007). TT being an oil and

gas-based economy is faced with the additional issue of steadily decreasing supply of petroleum hydrocarbons (Solaun et al., 2015).

Data for 2021 shows that the operation of buildings accounted for 30% of global final energy consumption and 27% of total emissions from the energy sector. Research has shown that by the year 2040, annual CO_2 emissions will increase from the 2010 level of 31.2 to 45.5 billion metric tonnes. This is due to the energy intensive processes relating to the build environment inclusive of construction of buildings and other infrastructure Rahbari et al. (2017). In addition to the performance standards and building energy codes, there is a need for more efficient and renewable energy technology in buildings in order to complement efforts to decarbonize the power generation sector to achieve Net Zero Emissions IEA (2022). Sustainable building policies can be implemented at both the micro-scale (building level) or macro-scale energy infrastructure, Vandevyvere and Stremke (2012).

According to Levine (2014), Cheraghi et al. (2019), and Mouzughi et al. (2014), developing countries demonstrate a low adoption of RE technologies. Both Levine (2004) and Cheraghi et al. (2019) identified several barriers that include: the lack of support during the implementation of sustainable practices with little or no management expertise to address the transition from traditional to sustainable practices as well as inadequate access to financial institutions and investors; a lack of cultural appreciation of entrepreneurship in RE; inadequate infrastructure to accommodate RE technology; transport and grid connection; high-cost technology; a shortage of skilled workers, and lack of access to education to start a business in RE.

Studies conducted by Gabriel et al. (2016) and Engelken et al. (2015) identified drivers such as climate change, emission reduction targets, grid connection of renewables, the rising demand for energy, framework development, and air pollution as it pertains to health issues from conventional energy sources. Engelken et al. (2015) also identified the general barriers in industrialized countries to be the high cost of battery storage, renewable technology competition with existing technologies, corruption and the shortcomings in legal frameworks (Güney, 2019).

A survey conducted by Zhang et al. (2011) identified the two major barriers as follows: technical difficulties during the construction and building process (29.3%) and insufficient policy implementation (11%). Other challenges identified were the lack of knowledge and awareness of the application of RE technologies, long planning and approvals for RE technology and difficulties encountered with preparation of recycled materials before use. Additionally, respondents indicated that delays in construction were due to lack of motivation of future end user/customer and unfamiliarity with RE technologies as well as lack of building regulations and byelaws within the RE framework. Pueyo (2018) also highlighted that in the developing countries such as Ghana and Kenya, the key constraints for RE technology entrepreneurship were poor building code regulations, delays in building approvals by governing bodies, pressure to keep prices low, macroeconomic inequalities among different groups in society and uncertainty of policies governing the specific industry. Table 1 shows a summary of the barriers to RE implementation in the LBDS from the literature review and which were classified under the six categories outlined by Gabriel et al. (2016).

Hoye (2013), highlights the challenges for RE utilization in building developments. However, there are opportunities that may in turn stimulate the demand to produce RE influential projects. A study by Oguntona et al. (2019) demonstrated that the use of RE for green building technologies gradually minimizes negative impacts on the urban

construction industry. According to Boons and Lüdeke-Freund (2013) and Engelken et al. (2016) opportunities in RE will be realized if support and financial incentives are offered to new businesses. Chan et al. (2009) suggests that increased building value due to RET adoption acts as a financial asset and helps to market RET. Qadir et al. (2021) suggest that initiatives such as the provision of allowances in the residential home sector for RET implementation will serve as an incentive to residents to equip their homes with more energy-efficient options. They further suggest that the use of existing building rooftops and vacant land spaces should be leased to entrepreneurs and that virtual net metering be implemented.

Research by Falkenbach et al. (2010) revealed that countries are seeking to provide financial relief through taxes and bond formation as well as legislative initiatives for RET adoption. Eicholts et al. (2015), An and Pivo (2018) indicate that building sustainability through construction, retrofitting with RE technologies and renovation can be achieved through low-interest rate mortgages. Empirical findings from their study revealed that respondents in Europe are willing to pay a 2-17 % increase in property rental for sustainable building space. Table 2 shows a summary of the possible opportunities due to RE implementation in the LBDS from literature review.

Table 1. Summary of barriers to the adoption in the field of renewable energy

Category	Barriers	Key References
Economics / Institutional	• No Financial institutions support or investors • Lack financing programmes and incentives • Unwilling to add additional cost to RE technology within buildings • Expensive storage for battery in renewable energy	Cheraghi et al. (2019) Levine and Inam (2004)
Infrastructure	• Inadequate infrastructure to accommodate RE technology in build designs. • Unfamiliarity with green technologies makes delays on construction • Lack of integrated efficiency for building regulations and bylaws within the renewable framework • Poor building code regulations	Chan et al. (2009) Zhang et al. (2011)
Governmental Support and Policy	• Virtual net metering applicability can facilitate the energy transition (Corruption)	Sasidharan (2018)
Socio-Cultural	• Lack of cultural value of entrepreneurship in renewable energy • No motivation from the future end user/customer • Poor management to keep prices low, macroeconomic inequalities among different groups in society	Cheraghi et al. (2019)
Technology	• Challenges to maintain prices on imported technologies • High cost of storage and transition to grid-connection	Levine and Inam (2004)

Table 2. Possible opportunities due to the adoption in the field of renewable energy

Category	Opportunities	Key References
Economics / Institutional	-RE fund and Financial bonds -Revised business models designed for customers with lower income -Tax incentives on solar and wind energy technologies -Energy efficiency incentives -Mortgage discounts for RE building development	Falkenbach et al. (2010) An and Pivo (2018) Eicholts et al. (2015)
Knowledge / Awareness	-Education drive to enhance individual capabilities and entrepreneurial confidence -Bottom-up market infrastructure for LEED building certification for contractors through training and developers/builders -Enhance marketability	Falkenbach et al. (2010) Newell (2008)
Infrastructure	-Energy retrofit incentive and high building value -Electrical allowances, designed to equip homes with more energy efficiency -Quality management for remodeling existing infrastructure	Chan et al. (2009) Qadir et al. (2021)
Governmental Support and Policy	-Virtual Net metering -Net metering -Implement RE energy building codes -Increase property value for RE developments through renewable -Energy building certificate	Sasidharan (2018) Pueyo (2018)

To identify the critical success factors (CSFs) required for adoption of RE in the LBDS of TT, the methodology of a non-experimental, descriptive designed survey instrument was utilized consistent with previous studies (Cheraghi et al., 2019; Chan et al., 2018; Maharaj and Maharaj, 2021). The survey was validated by peer reviewers, subject matter experts and industry stakeholders and administered to key participants in the LBDS of TT and the results analyzed and reported.

Methodology

The flow chart shown in Fig. 1 describes the research methodology used in this study. The methodology adopted in this paper is consistent with other similar research Cheraghi et al. (2019) and Chan et al. (2018), Maharaj and Maharaj (2021).

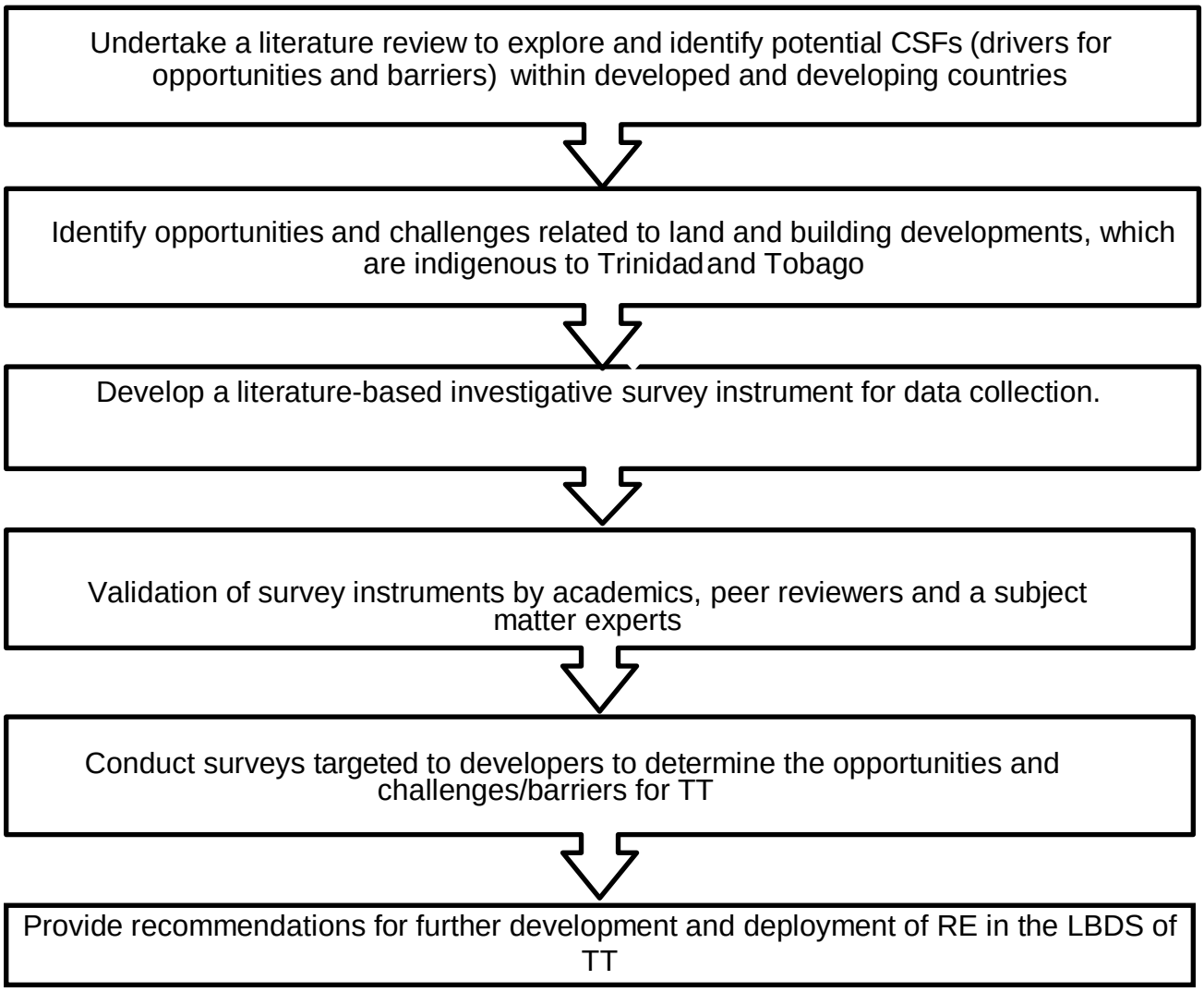


Fig. 1. Methodology flow of research

Based on the literature review, the CSFs for RE implementation in other jurisdictions were compiled and shown in Table 1 and Table 2. This provided the basis for the development of the survey instrument (see Appendix A) to determine the relevant CSFs for RE implementation in the LBDS in TT. Questions were formulated based on a neutral statement to minimize the possibility of biased answers.

The final questionnaire was administered to 32 stakeholders in the LBDS sector for data collection. The survey was conducted over a period of three (3) months and targeted contractors, engineers, planners, architects and draughts men. The questionnaire was divided into four sections. Section 1 was designed to gather demographic data, Section II focused on RE awareness and Sections III and IV for data collection on challenges and opportunities for RE implementation respectively.

Results and Discussion

To determine the applicable CSFs for RE adoption in the LBDS of TT, a survey instrument was developed containing possible CSFs obtained from literature review. The questionnaire was validated and administered to key persons in the LBDS in TT in accordance with previous studies Cheraghi et al. (2019), Chan et al. (2018), Maharaj and

Maharaj (2021).

With regards to the demographics data obtained in Section I of the survey, the age distribution of the participants were 15% between the ages of 20 and 30 years, 65% from 31 to 50 years and 20% were above the age of 50. The data is depicted in Fig. 2.

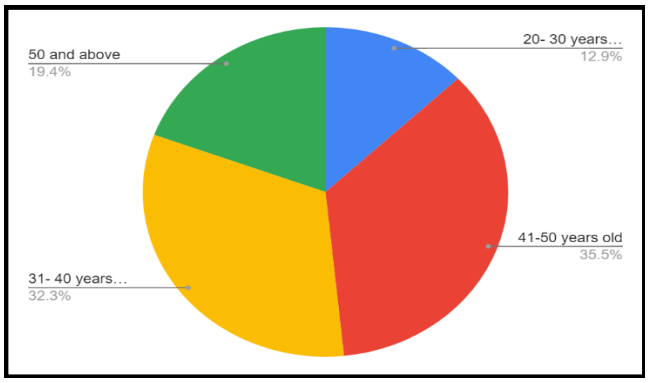


Fig. 2. Age Participants Distribution

Approximately 93% of the respondents were companies located in TT with approximately 7% from other Caribbean countries. As shown in Fig. 3, Over 80% of the respondents achieved tertiary level education and were employed as Contractors/Project Managers (34.4%), Developers (12.5%), Engineers (12.4%), Architects/Draughtsman (25%) and 40% in other roles. The private sector accounted for 50% of the respondents, 28.1% from the public sector, 21.9% participants were consultants and the remaining 3.1% allocated as others.

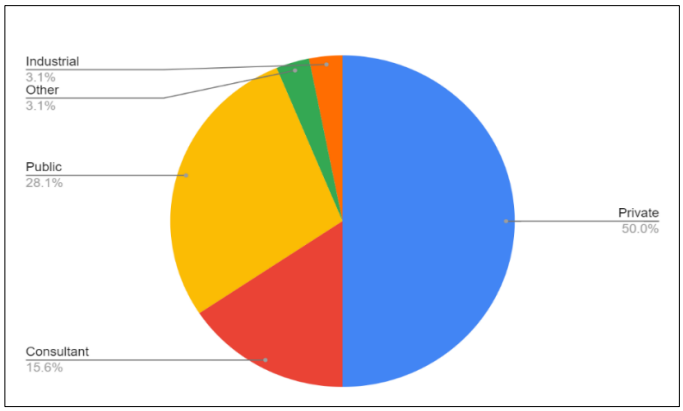


Fig. 3. Sectors of Employment of Participants

It was found that 65.6% of the organizations within the private and public sectors employed less than 20 persons, with 15.5% employing between 21 and 100 employees and 18.9% employing over 200 persons. With regards to project-types of the associated organizations, and as shown in Fig. 4, the distribution was as follows: commercial building (15%), housing/residential buildings (22%), developments/sub-division (16%), private projects (18%), recreational projects (10%), institutional developments (11%). Also, 65.6% of the organizations achieved 0-5 projects, 28.1 % achieved 6-11 projects and 21.9 % above 20 projects within a fiscal year.

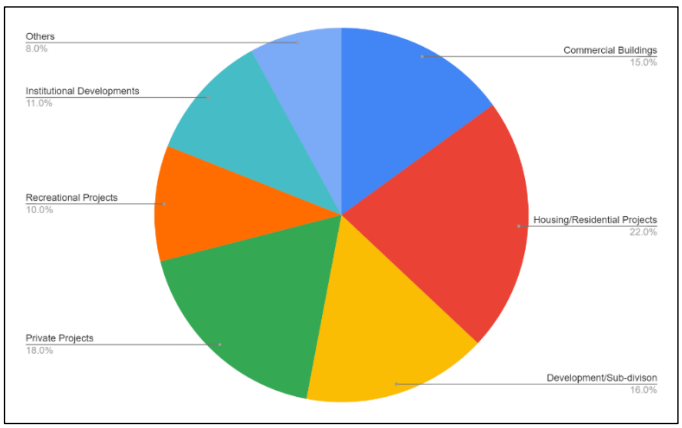


Fig. 4. Project Types of Organizations of Participants

In terms of RE awareness, the results obtained from the Section II of the survey demonstrated that all of the participants were aware of the issues involving climate change and global warming and over 90% of the participants were aware of RE and associated technologies including solar panels, wind turbines and solar water heaters. The study also showed that only 31.3% of the respondents currently include RE within their projects. In terms of awareness of the local policies and fiscal incentives to drive RE, only 34.4% of the respondents responded in the affirmative. However, 84.4% of the respondent indicated that they will be open to purchasing homes with RE technologies.

The questions in Sections III and IV were designed to gather data based on the respondents' perspective on CSFs for RE adoption in the LBDS in TT. Section III via questions 1 to 14, investigated the barriers/challenges whilst Section Ⅳvia questions 15 to 22, investigated the opportunities for RE implementation in this sector.

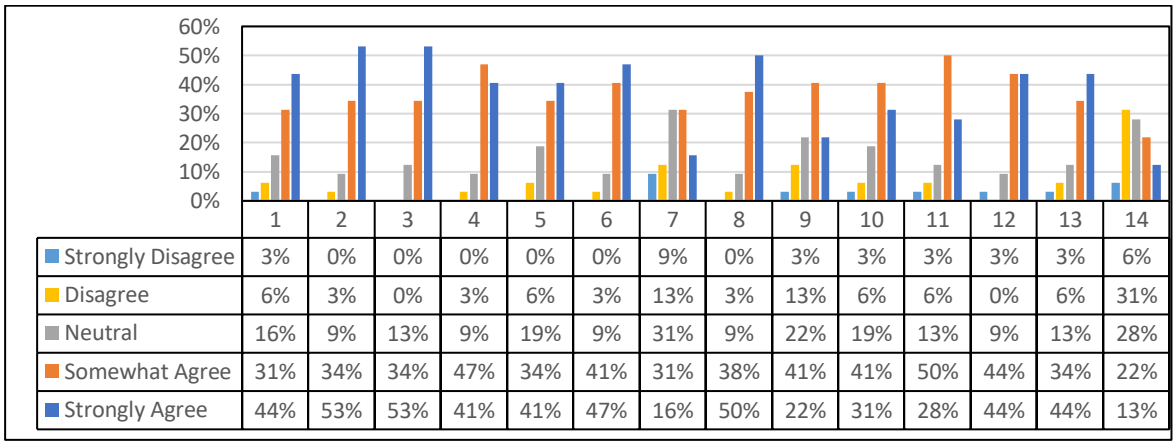
This were divided into the five categories based on Economic/Institutional, Knowledge/Awareness, Infrastructure, Governmental policy and Technology as suggested by Gabriel et al. (2016). Table 3 shows the results of responses to the survey questions presented in the study pertaining to Sections III and IV.

Table 3. The results of the responses to the survey questions on the opportunities and challenges/barriers of RE based on Sections III and IV.

Respondents	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Somewhat agree (%)	Strongly Agree (%)	Total (%)
Question 1	3	6	16	31	44	100
Question 2	0	3	9	34	53	100
Question 3	0	0	13	34	53	100
Question 4	0	3	9	47	41	100
Question 5	0	6	19	34	41	100
Question 6	0	3	9	41	47	100
Question 7	9	13	31	31	16	100
Question 8	0	3	9	38	50	100
Question 9	3	13	22	41	22	100
Question 10	3	6	19	41	31	100
Question 11	3	6	13	50	28	100
Question 12	3	0	9	44	44	100

Question 13	3	6	13	34	44	100
Question 14	6	31	28	22	13	100
Question 15	0	0	3	28	69	100
Question 16	0	3	3	16	78	100
Question 17	0	0	6	13	81	100
Question 18	3	0	3	19	75	100
Question 19	3	0	3	19	75	100
Question 20	3	0	0	28	69	100
Question 21	0	0	9	19	72	100
Question 22	0	0	6	22	72	100

In terms of CSFs as challenges and barriers for RE adoption in the LBDS in TT, the results of the survey obtained through Section III of the survey instrument are presented in Fig. 5.

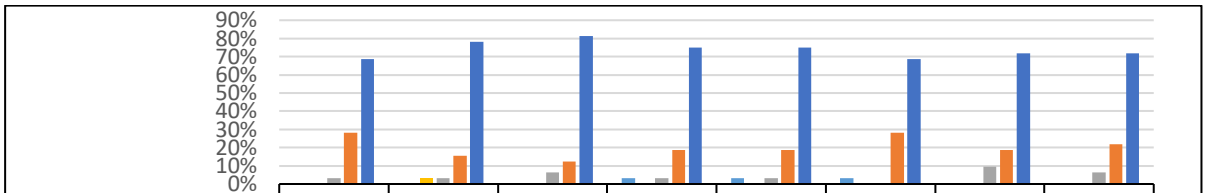


	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Strongly Disagree	3%	0%	0%	0%	0%	0%	9%	0%	3%	3%	3%	3%	3%	6%
Disagree	6%	3%	0%	3%	6%	3%	13%	3%	13%	6%	6%	0%	6%	31%
Neutral	16%	9%	13%	9%	19%	9%	31%	9%	22%	19%	13%	9%	13%	28%
Somewhat Agree	31%	34%	34%	47%	34%	41%	31%	38%	41%	41%	50%	44%	34%	22%
Strongly Agree	44%	53%	53%	41%	41%	47%	16%	50%	22%	31%	28%	44%	44%	13%

Fig. 5. CSFs as Challenges and Barriers for RE adoption in the LBDS in TT

As depicted in Fig. 5, the results indicated that that the availability of financial incentives and access to investors for RE projects (questions 1 and 2), training and availability of skilled professionals in RE (questions 3 and 4), too many administrative hurdles (question 6), lack of policies facilitating RE, limited public information available/accessible on RE technologies (questions 7 and 12) were the main challenges and critical success factors as 87-88% of the respondents strongly agreed/agreed to relevant questions. The lack of building incentives for property owners and tenants for RE and technology developments is also another CSF as over 75% of the respondents agreed to question 8. In terms of perceived affordability of RE, about 63% of respondents disagreed that RE technical maintenance was affordable. Despite the availability and affordability of subsidized grid power for power generation in TT, 87 % of respondents reveal that baring this fact, they are willing to adopt RE into their developments.

In terms of opportunities and CSFs that may drive the adoption of RE in LBDS in TT, the results of the survey obtained through Section IV of the survey instrument are presented in Fig. 6.



	Question 15	Question 16	Question 17	Question 18	Question 19	Question 20	Question 21	Question 22
Strongly Disagree (%)	0%	0%	0%	3%	3%	3%	0%	0%
Disagree (%)	0%	3%	0%	0%	0%	0%	0%	0%
Neutral (%)	3%	3%	6%	3%	3%	0%	9%	6%
Somewhat Agree (%)	28%	16%	13%	19%	19%	28%	19%	22%
Strongly Agree (%)	69%	78%	81%	75%	75%	69%	72%	72%

Fig. 6. CSFs as Opportunities for RE adoption in the LBDS in TT

Approximately 97% of respondents strongly agreed to question 15 demonstrating their willingness to incorporate RE in their current projects, once funding is provided. 81% of the respondents strongly agreed to questions 16 and 17, showing a willingness to participate in current or future RE land and building projects workshops as well as workshops on marketability and business model designs. Approximately 70% of respondents agreed to questions 19 and 20, indicating that if incentives were offered this will serve to motivate participants to implement RE in the LBDS of TT. Some of the incentives highlighted were: building certification, retrofitting building allowances and policies facilitating the increase in property values for implementing RET. The CSFs as barriers and challenges recorded in this study were consistent with those identified through literature review Chan et al. (2018) and Cheraghi et al. (2019).

Conclusion

The identification of CSFs for RE technology adoption in the LBDS of TT was achieved by developing a survey instrument based on CSFs identified from literature review, validating the survey instrument and administering the survey to key persons in the LBDS of TT.

The CSFs identified for the LBDS of TT were: the availability of financial incentives and access to investors for RE projects; training and availability of skilled professionals in RE technologies; administrative hurdles and lack of local building policies for land and building development; limited public information available/accessible of RE technologies which affects awareness of benefits and savings that can be gained; incentives for property owners and tenants for RE and technology designed developments in the form of building certification, retrofitting building allowances and policies facilitating the increase in property value.

The study showed that practitioners are willing to adopt RE technologies within their projects if business models are revised to include RE technologies to aid lower income customers. Practitioners have also indicated their willingness to participate in current or future RE based workshops for LBDS projects as well as workshops on marketability and business model designs.

Implementation of these CSFs in TT will facilitate the adoption of RE in this sector, aiding in the reduction of GHG emissions and the heavy reliance on fossil fuels for power generation – thus promoting sustainable development in TT.

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APPENDIX A

Survey for Academic Research
Emic Research

Introduction

Purpose: Survey aims to explore some of the entrepreneurial opportunities and challenges for renewable energy in Trinidad & Tobago (TT). The data gathered will be used exclusively for academic research purposes. The responses provided will allow further academic research into the entrepreneurial opportunities and challenges for renewable energy among developers.

Details: My name is Makaya Howard and I am at the Thesis stage of my MSc in Energy Engineering in Renewable energy at the University of Trinidad & Tobago. My research paper is on the topic Understanding the Developers Entrepreneurial Perspective on Renewable Energy for Land and Building Development in Trinidad and Tobago: Conceptual Analysis for Opportunities and Challenges. According to the literature review, it is clear that the entrepreneurial perspective of renewable energy is emerging in countries such. Within recent times, even pre-Covid-19 pandemic, TT has been experiencing a downturn in economic activity as it regards to oil and gas. The energy and petroleum sector have faced economic trials as oil production is steadily decreasing while international commodity prices are falling with increasing competition worldwide. This survey aims to unearth most challenging obstacles and possible options for renewable energy development within the said sector. With the numerous policies and incentives developed for renewable energy adoption, the growth has yet been capitalized within the land and building sector

The questionnaire is divided into four sections.

Section I: Gathers Demographic information on your field.

Section II: Explores the Awareness of Renewable Energy with open responses.

Section III: Investigates the Barriers Renewable Energy open responses.

Section IV: Investigates the Opportunities along with open responses.

Given the transformative strategies, TT has embarked on, through Vision 2030-National Development Strategy (NDS), to achieve sustainable and inclusive development. The research projects target Land and Building Developers in TT since the implementation of projects related to renewable energy can produce meaningful economic, environmental and social benefits to TT. It further gives insight to the factors that may drive the use of renewable energy and its technologies and the opinion of developers in land and building development. The survey should take 10-15 minutes to complete. Your information will be treated with the strictest confidentiality. I thank you in advance for your support in completing this survey academic research purposes. Assistance: For queries or assistance regarding this form, please contact: Makaya Howard: makaya.howard531@we.utt.edu.tt, makayahoward25@gmail.com; or telephone at (1868) 304-5419

Section I

Demographics

Directions: Kindly respond to the following questions from letters a-i. You are open to provide short answers in the blank spaces or ticking [√] the most appropriate response.

a. Age (years) ☐ <20 ☐ 20-30 ☐ 31-40 ☐ 41-50 ☐ <50

b. Function of your organization_____

c. Organization location: ☐ Trinidad ☐ Caribbean ☐ International

d. Highest level of education attained:

Primary ☐ Secondary ☐ Tertiary ☐ Vocational/Trade ☐ Other ☐

e. Profession: Developer ☐ Architects/ Draughtsman ☐

Contractor/Project Manager ☐ Land Surveyor ☐

Engineer/Structural ☐ Other ☐

f. Sector of Employment: Government ☐ Contractor/Private ☐

Consultant ☐ Other _____

g. Number of employees ☐ <20 ☐ 21-50 ☐ 51-100 ☐ >100

h. Projects involved in (per annum) : 0-5 ☐ 6-10 ☐ >10

i. Personal experience in the following fields (years):

No. of years	0-5	6-10	11-15	16-20	>20	N/A
Contractor/ Project Manager						
Developer/ Engineer						
Architect/ Draughtsman						
Land Surveyor						
Other						

Section II
Awareness of Renewable Energy and Technology

As a member in your Organization, please indicate if you agree with a (YES) or (NO) with following questions. Please also feel free to comment further, if so desire.

Directions: In the following statements, in your opinion, do you agree with the following question on Renewable Energy. Please tick [√] one response in each section and comment where necessary.	Scale		
	YES	NO	Comment (if applicable)
1. Are you aware of Renewable energy (RE) and RE technologies (example: solar panels, wind turbines, solar water heaters)?			
2. Do you incorporate Renewable energy (RE) and RE technology within your past or current land or building projects? (Residential or Commercial developments)			
3. Have you heard of “climate change/global warming”?			
4. Are you aware of the global policies or initiatives taken by various organizations to reduce climate change/global warming? For example, Paris Climate Change Agreement.			
5. Are you aware about the local policies and fiscal incentives for energy and climate initiatives Trinidad and Tobago has taken? For example The National Energy Policy, Vision 2030, Fiscal incentives and the Green Fund.			
6. Do you think prospective property owners are willing to purchase commercial or family dwellings fitting with RE technologies? For example Solar panels, Solar Water Heaters and energy efficient systems.			

Section III
Investigates the Barriers Renewable Energy (RE) Open Responses

Research has indicated that there are unique barriers that influence renewable energy and technology adoption by developers within land and building. They can be grouped into five categories; economic/institutional, political, knowledge/awareness, infrastructure, governmental policy and technology. The Literature has linked the following factors to renewable energy on construction sector; land and building.

As a member in your Organization, please indicate if you Strongly Agree (5 points); Somewhat agree (4 points), Neutral (3); Disagree (2) or Strongly Disagree (1) with the following questions. Please also feel free to comment further.

Directions: In the following statements, in your opinion, please rate the importance of the following barriers on Renewable Energy. Please tick [√] one response in each section.		SCALE				
		Strongly Disagree	Disagree	Neutral	Somewhat Agree	Strongly Agree
		1	2	3	4	5
Economics / Institutional	1. Do you there is a lack of financial access and incentives from local financial institutes or investors?					
	2. Are you willing to adopt RE technologies on built designs given the existing cost of electricity?					
Knowledge / Awareness	3. Is there a lack of training, skilled professional and entrepreneurs for RE and its technology for good and services?					
	4. Are there limited information and entrepreneurial training for RE and technology for developers?					
	5. Is there a lack of available information of the saving potential of solar, wind and energy efficient technology for land and building developments?					
Infrastructure	6. Do you agree that there are administrative hurdles for RE land and building developments?					
	7. Do you think the regulations on RE technology are sufficient for land and building developments					
	8. Is there a lack of building incentive for property owners and tenants for RE and technology designed developments?					
	9. Do you think regulatory bodies for are familiar with RE technologies as it pertains to land and building developments?					

Governmental Support and Policy	10. Do you think RE implementation on projects takes delays on land and building developments?					
	11. Do you think conventional resources prevent the willingness to adopt RE and its technologies?					
Cultural	12. Is there a lack of public information distribution and awareness of RE potential and technologies?					
	13. Do you think there is a lack motivation (local acceptance) from end user/customer that creates unsure preference regarding RE?					
Techno-logy	14. Do you think technical maintenance for RE is affordable when implementing in developments?					

Section IV

Investigates the Opportunities Along with Open Responses

Research has indicated that there are unique opportunities that influence Renewable energy and technology adoption by developers within land and building. They can be grouped into five categories; economic/institutional, political, knowledge/awareness, infrastructure, governmental policy and technology. The Literature has linked the following factors to Renewable energy on construction sector; land and building.

As a member in your Organization, please indicate on the Likert scale if you Strongly Agree (5 points); Somewhat agree (4 points), Neutral (3); Disagree (2) or Strongly Disagree (1) with the following questions. Please also feel free to comment further.

Directions: In the following statements, in your opinion, do you agree with the following question on renewable energy. Please tick [√] one response in each section and comment where necessary.		SCALE				
		Strongly Disagree	Disagree	Neutral	Somewhat Agree	Agree
Cate-gory		1	2	3	4	5
Economics/ Institutional	15. Would you incorporate RE in your built developments through the support of financial incentives?					
	16. Would you be interested in revised business models for RE to aid lower income customers?					
	17. Would you engage in lower RE interest mortgage loans for construction and renovation developments from financial institutes?					
Knowledge/ Awareness	18. Would you partake in educational workshops for current or future RE land and building projects?					
	19. Will you partake in RE entrepreneurial land and building marketability training for developments?					
Infrastructure	20. If Leadership in Energy and Environmental Design (LEED) and Energy STAR verification/certification is granted by local statutory bodies, will you incorporated RE within developments.					
	21. Would you include RE within developments if retrofitting building allowances were offered?					
Governmental Support and Policy	22. Would you incorporate RE technology within your development projects if there were policies implemented to increase property value?					