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What Are Countries Doing to Combat the Effects of Fossil Fuels?

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Abstract
The global imperative to reduce emissions from fossil fuels, driven by the profound impact of climate change, underscores the critical need for sustainable energy solutions. Fossil fuels, comprising coal, natural gas, and oil, contribute to approximately 80% of the world's energy consumption. This reliance has escalated carbon dioxide and greenhouse gas emissions, intensifying global warming and climate change. This study delves into Trinidad and Tobago's challenges and explores potential solutions, emphasizing the urgency of transitioning to renewables. The consequences of inaction are dire, ranging from changes in weather patterns to increased vulnerability of smaller nations to extreme weather events. A comprehensive understanding of these challenges is crucial for the country to navigate the complexities of achieving a greener and sustainable future. China, on the other hand, has emerged as a global leader in renewable energy, investing heavily in international projects and allocating significant funds to support clean energy initiatives. The country's commitment to reducing pollution levels, decreasing fossil fuel usage, and enhancing energy efficiency positions it as a key player in fostering an ecological civilization.

Keywords: Fossil fuels, Climate change, Sustainability, Greenhouse gases, Renewable energy.

I. Introduction and background information

Reducing emissions from fossil fuels has become a global priority. Fossil fuels are energy sources found in the earth's crust, such as coal, natural gas, and oil. They contain carbon and hydrogen, which can be burned for energy. "Fossil fuels supply about 80% of the world's energy." (Christina Nunez 2019, April 2) We use fossil fuels for electricity, heating, and transportation, by using these we have released carbon dioxide and other greenhouse gases which have trapped heat into the atmosphere contributing to global warming and climate change (Christina Nunez 2019, April 2) “The use of fossil fuels has already increased our average global temperature by 1C if our temperature is above 1.5°C.” We risk further sea-level rise, extreme weather, biodiversity loss, species extinction, food scarcity, worsening health and poverty for millions worldwide. (November 2021 Client Earth) With this in mind, the question arises: what are countries doing to combat the effects of fossil fuels? In this study, I plan to focus mainly on Trinidad and Tobago with comparisons to China. My initial aim and motivation for this exploration is to understand and identify the local progress made in my country.

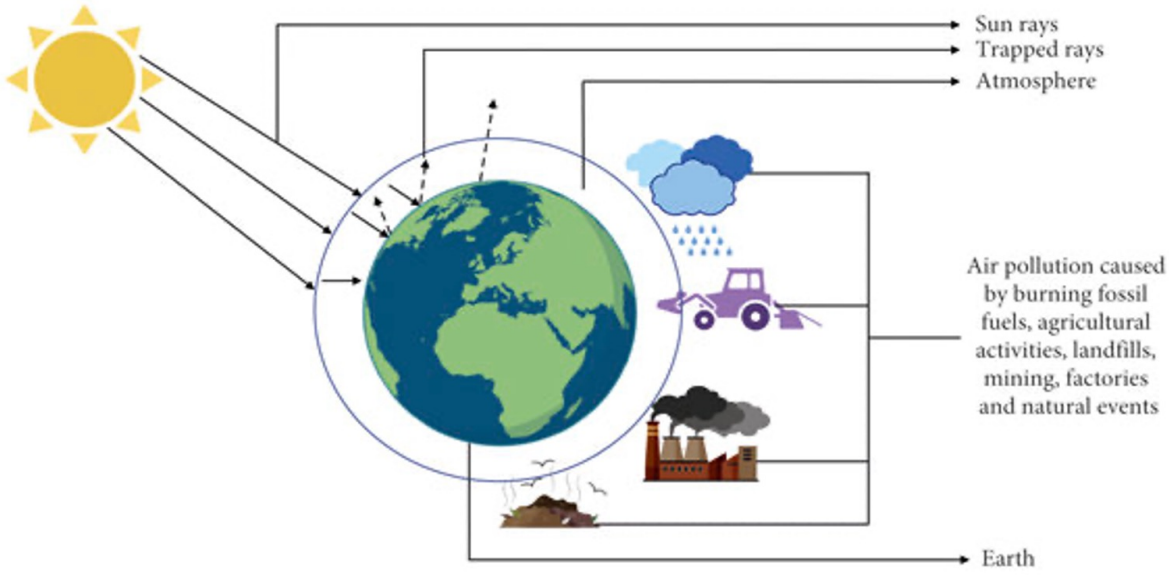

Figure 1: *The Effect of Fossil Fuels on the Earth*

2. China and Trinidad and Tobago's relationship with fossil fuels

2.1 China's relationship with fossil fuels

Fossil fuel usage is a global crisis and affects all countries. China's energy needs have expanded as a result of prioritizing economic growth. Its large manufacturing-based economy has made its industrial sector the world's largest consumer of coal, surpassing the rest of the world combined. As a result, China is now the world's largest consumer of energy, the largest producer and consumer of coal and the largest emitter of carbon dioxide. (2021 Center for strategic and international studies)

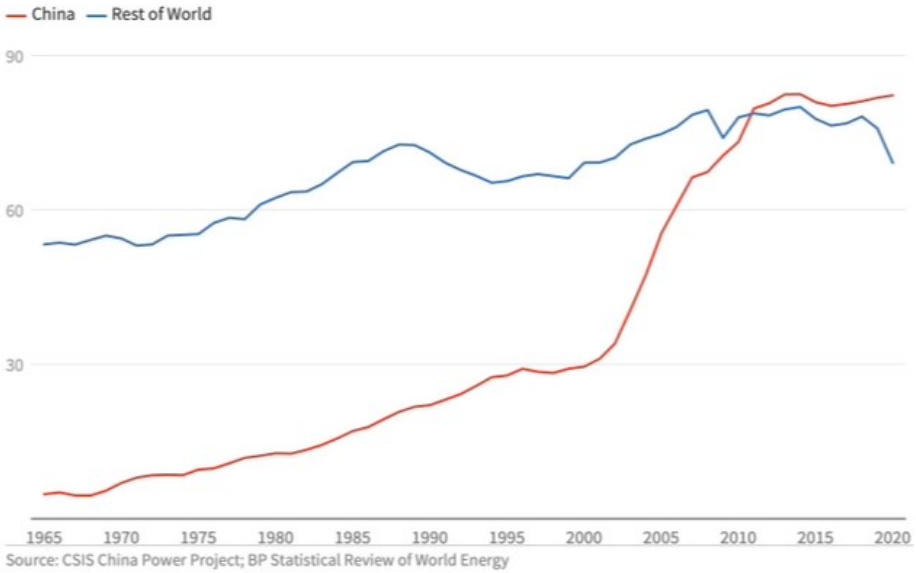

Figure 2: *Global Coal Consumption*

2.2 Trinidad and Tobago's relationship with fossil fuels

Trinidad and Tobago, a Caribbean Island located in the Caribbean Sea, heavily relies on fossil fuels for electricity generation (Martin Vogt 2019). The country has an abundant domestic fossil fuel resource, making it the world's largest exporter of both ammonia and methanol and the seventh-largest liquefied natural gas exporter (2015 energy transition imitative). However, this high dependence on oil and gas has led the country to rank comparatively high in global greenhouse gas emissions (Oxford Business Group 2021). Interestingly, Trinidad and Tobago stand out as the only Caribbean economy not entirely dependent on diesel fuel or natural gas.

3. Trinidad and Tobago's failed attempt to move towards renewables

3.1.1 Trinidad and Tobago's past attempt to move towards renewables

At a budget debate on October 5th, 2015, the minister of finance stated that renewable energy is high on the agenda. "Trinidad and Tobago set an ambitious target in 2015 to generate 150MW of renewable power by 2021, with approximately 150GW currently in use." Additionally, "Colm Imbert, the minister of finance, outlined further objectives in the October 2015 budget speech, aiming for the country to generate at least 10% of its electricity from renewable sources by 2021 (Oxford Business Group 2021).

3.1.2 Trinidad and Tobago's latest commitment towards renewables

However, Trinidad and Tobago have fallen short of meeting its renewable energy goals. At the Trinidad and Tobago conference in January 2023, industry and senior government leaders all said "that while we were on the right pathways to secure the future of the sector we simply needed to be moving faster." (Dr. Thackwray 'Dax' Driver 2023) It is concerning that, despite Minister Young's commitment, the renewable energy project has not progressed seven months later (Dr. Thackwray 'Dax' Driver 2023).

3.1.3 The potential resources that can be used in Trinidad and Tobago

Leveraging the abundant sun and wind resources in the Caribbean could pave the way for a more sustainable energy future and reduce dependency on fossil fuels and imports. The Caribbean is an excellent resource for solar energy, with about "217 days (about 7 months) of sunshine a year, enabling solar PV plants to generate electricity at a similar or even less expensive cost than conventional power plants do" (Martin Vogt 2019). Including hybrid systems and battery storage offers a promising avenue for addressing both cost and reliability concerns (Martin Vogt 2019).

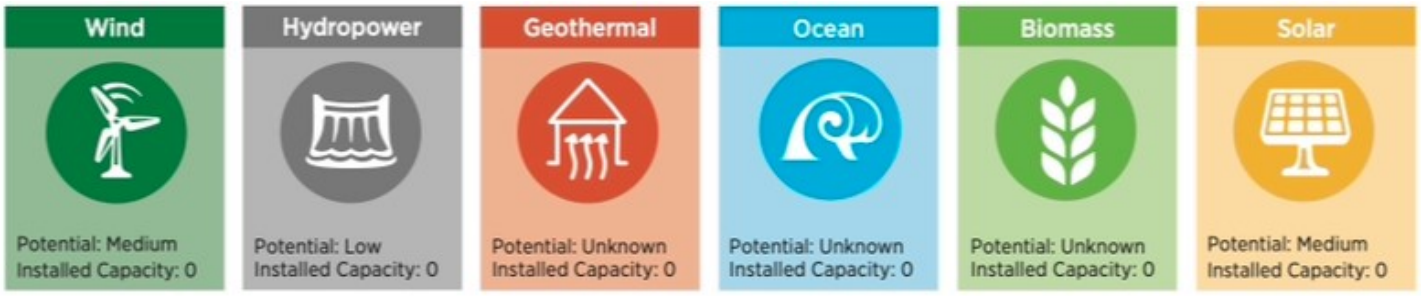

Figure 3: *Renewable Energy Status and Potential*

3.2 Chins transition towards renewable energy

In contrast, "China is taking a lead in renewable energy by investing in an increasing number of international projects, such as the BRICS New Development Bank. China has allocated the first round of green loans worth $811 million to fund clean energy projects for its members" (2021 Center for Strategic and International Studies). "According to the International

Energy Agency, China is expected to contribute 36% and 40% of the world's growth in solar and wind energy over the next 5 years. This positions China as a key player in developing an ecological civilization, employing a cross-sectional industrial approach to reduce pollution levels, decrease fossil fuel usage, address climate change, and enhance energy efficiency" (2021 Center for Strategic and International Studies).

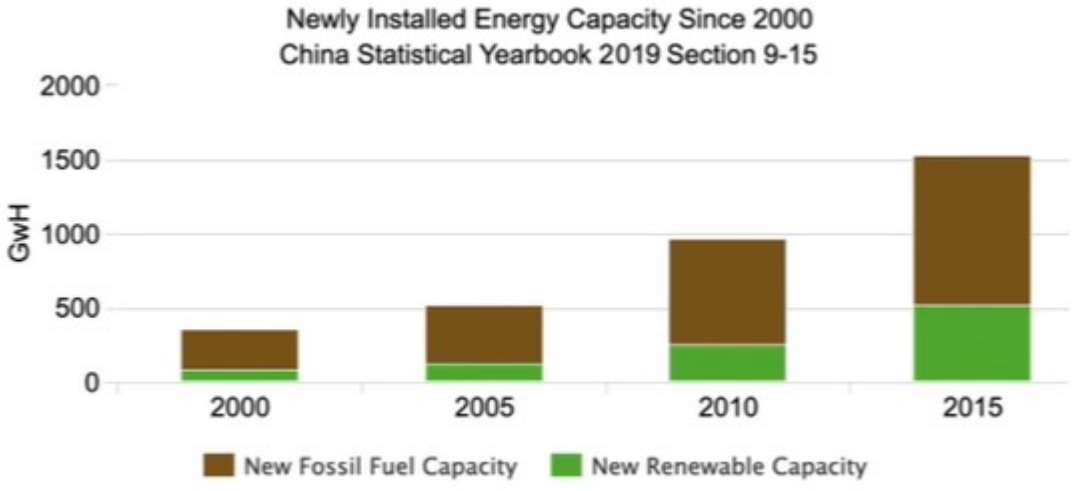

Figure 4: *China's Investment in the Development and Adoption of Clean Energy and Green Technology*

4. Issues Trinidad and Tobago need to prioritize

4.1.1 Issues Trinidad and Tobago need to prioritize to start moving towards renewables

Dr. Thackwray 'Dax' Driver highlighted four things he believes the country needs to address to start moving towards renewables: "firstly, fixing the business-as-usual mindset that protects the status quo; secondly, breaking siloed decision-making in the public service; thirdly, ruthlessly streamlining the approvals process; and finally, ensuring that key regulatory agencies can hire the brightest and best, and accessing the skills required" (Dr. Thackwray 'Dax' Driver 2023).

4.1.2 The problem and importance of addressing these issues

The key challenge lies in the lack of awareness and understanding among citizens and leaders regarding the ongoing crisis facing Trinidad and Tobago. Despite the issue being gradual compared to immediate concerns like crime or the pandemic, the decline in natural gas production poses a significant threat to the country's economy. Without securing new investments in green energy production and decarbonization, there is a looming risk of a substantial economic contraction, adversely affecting the standard of living for the entire population. Despite global initiatives toward net zero and declining oil and gas production, the response to the Regulated Industries Commission's electricity rate review shows a reluctance to confront the crisis (Dr. Thackwray 'Dax' Driver 2023).

A significant challenge is the slow and cumbersome approval processes for major projects. A comprehensive review in 2019 revealed that thirty-three major approvals from eight different Ministries or statutory agencies were necessary to progress from a bid round to first gas in upstream gas projects. Most of these approvals occurred sequentially rather than concurrently. Shockingly, in 2023, many decisions still rely on paper files and physical signatures, contributing to delays and, in some cases, crucial files going missing. Streamlining decision-making and approval processes is essential, especially for attracting substantial investments in renewable energy crucial for realizing green hydrogen plans. Resolving this issue

requires meticulous effort, a commitment to streamline processes, and a ruthless elimination of unnecessary steps and decisions that do not enhance the overall approval process (Dr. Thackwray 'Dax' Driver 2023).

5. The consequences Trinidad and Tobago faces

5.1 The urgency of prioritizing the transition to renewables

Emphasizing urgency, Dr. Thackwray 'Dax' Driver, states, "We have no time to waste, and collectively Trinidad & Tobago is going to have to find a way to implement changes faster" (Dr. Thackwray 'Dax' Driver 2023). A study done by a scientist from the University of Oxford and Utrecht warns that if governments do not transition from fossil fuels to renewables, we risk passing the point of no return for dealing with global warming. The study suggests that renewables need to increase their total power share by at 2 percent per year. Failing to act now could lead to devasting consequences such as changes in rainy seasons and longer droughts (Martin Vogt 2019). Already, the increasing intensity of hurricanes has started to negatively impact global economies, particularly smaller countries vulnerable to weather changes. In some cases, this threatens the very existence of the country (Martin Vogt 2019).

6. Conclusion

To conclude, Trinidad and Tobago face many challenges in transitioning to renewable energy. Despite ambitious goals, the country fails to make progress. Recognizing the importance and commitment to the shift is indeed crucial for initiating meaningful change. A comprehensive understanding of these reasons is essential for the country's successful transition to a greener future. Despite a long-standing relationship with fossil fuels, China has demonstrated a shift towards renewable energy sources, even with its large manufacturing sector. While not fully immersed in green energy, the country has made significant investments toward a greener future.

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