

# WHAT ARE THE ARGUMENTS FOR AND AGAINST THE USE OF BLUE CARBON TRADING IN THE BAHAMAS AS A TOOL FOR COMBATING CLIMATE CHANGE IMPACTS?

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## INTRODUCTION

While some countries have the luxury of debating whether climate change is real, The Bahamas is acknowledging the need for climate change to be addressed. Due to the devastation The Bahamas experienced from frequent, intense hurricanes, and its impact on valuable development on coastlines, among other vulnerabilities, the urgency to address climate change is amplified (Prevatt et al., 2010). For example, the effects of hurricanes like Dorian which made landfall in The Bahamas in 2019 are all too sobering. It resulted in an official death count of 74, with hundreds reportedly missing and an estimated \$US 3.4 billion in damage. This economic value represents around  $\frac{1}{4}$  of the gross domestic product of The Bahamas (Zegarra et al., 2020). Poverty and weak building code enforcement may also be contributing factors to the damage's impact.

To address the aggravating issues of climate change, The Government of The Bahamas is proposing to be the first country in the world to sell blue carbon credits on the voluntary market (Keuschnigg, 2022). Blue carbon may simply be described as carbon dioxide stored by vegetated habitats, such as tidal marshes, marine life, mangroves, and seagrass meadows (Wedding et al., 2020). More recently, blue carbon is increasingly becoming an essential aspect of climate change policy as many countries seek to achieve the obligations of the Paris Agreement (Wedding et al., 2020). This holds true for The Bahamas as it works to predict and mitigate the various climate change impacts inclusive of sea level rise, higher temperatures, and acidification that results in irreversible damage to these ecosystems, like coral bleaching. The government believes blue carbon credits would ameliorate two increasingly vexing issues: (1) the significant capital outlay required for rebuilding efforts post-event, and (2) mounting expenditure to establish robust infrastructure, sufficiently resilient to withstand multitudinous hurricanes, and the other broad impending impacts of climate change.

Proponents of the government's plan see blue carbon trading as advantageous for the country because it allows the nation to benefit by quantifying carbon stored (Wylie et al., 2016) in mangroves, seabeds, marshes and selling them on the voluntary market to companies and investors seeking carbon neutrality (Cao et al., 2022). Supporters appreciate that the government proposes to use blue carbon credit revenue for climate mitigation and adaptation and to protect coastal ecosystems (Robinson, 2018). Further, a significant goal is to assist the country in meeting the goals of the Paris Agreement (Keuschnigg, 2022).

Opponents warn that the estimated values placed on blue carbon reserves may not be accurate, as the science around it is not sufficiently precise to accurately predict the amount of sequestration

taking place (Gullström et al., 2017). Additionally, as this is a relatively novel market broader international adoption would aid in improving accuracy of measurements and outcomes. It is noted that China, a large entrant has struggled with introducing initiatives (Cao et al., 2022). Moreover, rather than solely looking outward, the government would be well served to examine the benefits of improving fiscal policy and pursuing domestic finance (Mohan, 2022). Institutional strengthening in the form of revising building codes to improve energy efficiency (Enker et al., 2020) and structural performance (Garsaball et al., 2017) in buildings could assist with climate mitigation. Efforts to boost building code enforcement while simultaneously improving inspection services may also be of benefit (Levitt et al., 2019). Further, there is a concern for negative impacts on the livelihood of local populations currently using these areas for economic benefit (Wylie et al., 2016), (Mycoo et al., 2020). This paper describes arguments for and against The Bahamas adopting blue carbon trading to address climate change and conducts a critical analysis of the proposing and opposing views.

## METHODOLOGY

The concept of blue carbon trading as a mechanism for climate finance in The Bahamas is relatively recent, therefore there is limited academic research on the subject. The research was conducted via a desktop study of peer-reviewed articles, grey literature, online blogs, and newspaper articles. Research information was initially identified with the use of Google Scholar and further refined by accessing iDiscover to source material specific to the subject under review. Keywords implemented included blue carbon, carbon trading, carbon sequestration, coastal ecosystems, small island developing states, adaptation, Bahamas + Hurricane Dorian, nationally determined contributions, Paris Climate Agreement, building codes, and enforcement.

## CONTEXT

The Bahamas being an archipelagic nation requires an extensive amount of infrastructure to offer provisionally fair and reasonable access to all citizens equally. There are 30 inhabited islands (Ghosh, 2021) with 20 international airports (BMOT, 2023), and 30 power stations at 25 locations (BPL, 2019) all for a population of approximately 350,000 persons (BNSI, 2010). This framework also supports the main industry, tourism which welcomed 7 million visitors in 2019 (BMOT, 2019).

As a result of The Bahamas expanding over 760 miles of water, from Florida to Haiti, it is impacted by hurricanes more frequently than any other country in the Caribbean (Prevatt et al., 2010), depicting an ominous trend, as, during the period from 2016 to 2019, five, Category 5 hurricanes

made landfall in The Bahamas (Shultz et al., 2020). It is worth noting that structures in The Bahamas are required to be designed to withstand wind ratings of 180 mph ultimate wind speed (MOW, 2003). Enforcement of these requirements is robust in New Providence and Grand Bahama Islands where the capital Nassau and the second city Freeport are located. Conversely, enforcement is increasingly challenging in many islands where there may be no permanent inspectorate services. This is compounded by local populations where limited economic activities exist, contributing to poverty, with home builders oftentimes electing to subvert building codes to construct the most cost-effective structure. This matter is further compounded by the construction of informal settlements developed on acres of land throughout the country, largely populated by poor migrant workers. These vast areas are unregulated and unsafe for occupancy. The result is herculean expenses which are often insurmountable and, unpredictable with the denouement being increased borrowing and government debt. Indeed, many years following hurricane events towns continue to struggle to recover if they ever do.

## ARGUMENTS IN FAVOUR

There are perceived advantages to using blue carbon trading in the Bahamas as a means of climate financing to mitigate and adapt to address climate change. The merits of blue carbon trading in the context of The Bahamas will be discussed in the subsequent paragraphs.

### Climate Financing

The Government of The Bahamas launched the blue carbon trading market by introducing legislation to facilitate the stated policy of the government. They enacted the Climate Change and Carbon Market Initiatives Act, of 2022, and the Carbon Credit Trading Bill, of 2022. They opted to utilize the less restrictive voluntary market and propose to sell blue carbon credits by capitalizing on coastal ecosystems functioning as carbon sinks (Keuschnigg, 2022). This initiative was cited as providing a new stream of revenue, as the government would now sell credits to sole investors, not-for-profits, companies, or other institutions aspiring for carbon neutrality. The Bahamas further stands to benefit from institutional knowledge of other significant entrants to the market like China which established a carbon trading scheme in 2021, namely the Zhanjiang Mangrove Afforestation Project in Zhanjiang, Guangdong Province (Lin et al, 2022).

## COMPLIANCE WITH PARIS AGREEMENT

Further, to be viewed as forward thinking on climate change, the blue carbon initiatives can potentially assist The Bahamas in complying with its obligations under the Paris Climate Agreement and demonstrate that it is tracking and reporting on its Nationally Determined Contributions, NDCs (Keuschnigg, 2022). The Bahamas has commenced establishing frameworks for evaluating, recording, surveilling, affirming, certifying, and implementing accounting principles to safeguard the quality of the offering and venture to guarantee price assurance (Keuschnigg, 2022). Moreover, the establishment of policies by the United Nations Framework Convention on Climate Change (UNFCCC) to facilitate funding instruments, and document carbon emissions on a national level has assisted in catalyzing blue carbon programs (Wylie et al., 2016).

## CARBON NEUTRALITY

The voluntary markets offer a unique opportunity to infiltrate the blue carbon trading market, expeditiously with reduced costs compared to the compliant market, and provide products to entities with goals of carbon neutrality (Cao et al., 2022). It is essential that the trading volumes approximate specified thresholds, to justify the initial capital outlay (Wylie et al., 2016). This approach is then perceived to facilitate a lower barrier of entry thus enabling a more expedient opportunity to realize a return on investments.

## MITIGATION AND ADAPTATION

Also, motivation to protect coastal ecosystems materialized owing to studies purporting that the annual sequestration rate may exceed the performance of forests on a unit basis by tenfold. Indeed, coastal ecosystems have been determined to be doubly more effective at storing carbon than terrestrial or forested areas (Wylie et al., 2016). Moreover, many small island developing states require innovative means to access financing to implement adaptation techniques along coastal areas that are adversely impacted by climate change such as sea level rise, increasingly intense storms, beach erosion, and rising sea temperatures that lead to coral bleaching (Robinson, 2018) and revenues from blue carbon trading could be a viable solution. Notably, mitigation has been highlighted as a co-benefit of the carbon trading initiative as well (Keuschnigg, 2022).

## ARGUMENTS AGAINST

There are dissenting viewpoints on whether blue carbon trading is a positive move for The Bahamas, with concerns around the ability to evaluate the carbon assets properly (Gullström et al., 2017) and avoid these implements being used by entities unwilling to make consequential changes (Finlayson,

2022). There is a view that The Bahamas has not exhausted internal mechanisms to improve fiscal policy and advance domestic finance opportunities (Mohan, 2022). Further, deficiencies in building codes (Garsaball et al., 2017), (Enker et al., 2020) and enforcement should be examined (Levitt et al., 2019) and the impact on the livelihood of persons benefitting from ecosystems ought to be considered (Wylie et al., 2016), (Mycoo et al., 2020). Finally, the country should pursue climate financing for Small Island Developing States, (SIDS) through the United Nations (Finlayson, 2022).

## VALUATIONS

The scientific community generally acknowledges the challenges associated with accurately quantifying blue carbon sequestration levels and this introduces a level of uncertainty to the prospect of carbon trading. Investors would understandably require confidence that the sequestration levels are legitimate, verifiable, and comparable. Furthermore, the science of evaluating carbon storage is immature and uncertain, with progress being made but more work is required in this area (Gullström et al., 2017). To effectively evaluate services provided by blue carbon ecosystems, industry experts recommend utilizing modeling systems such as the INVEST Coastal Blue Carbon Model (Wedding et al., 2020), (Sharp et al., 2018).

Other issues directly related to blue carbon rollouts are immature sequestration policies (Wedding et al., 2020). UNFCCC (United Nation Framework Convention on Climate Change) encompasses CDM (Clean Development Mechanism) and JI (Joint Implementation) both of which are intended to support the carbon market, but countries like The Bahamas prefer to trade using the voluntary market (Keuschnigg, 2022) that have a lower cost and fewer restrictions. However, in the absence of using the UN mechanisms, it may be difficult to verify climate mitigation (Kollmuss et al., 2008). For the foreseeable future, credits in the voluntary market have varying standards of quality and are not as easily transferrable to markets that conform to compliance standards and as such have a lower value (Kollmuss et al., 2008).

## INTERNATIONAL ADOPTION

For, The Bahamas or any country to be truly successful at blue carbon trading, it needs to be more widely adopted internationally, with well-resourced countries shouldering the responsibility for fundamental technical work and incorporating blue carbon markets as a tool for reducing greenhouse gas emissions (Cao et al., 2022). One of the most well-resourced and populous countries in the world, China, established a Blue Carbon Trading Market in 2020 (Cao et al., 2022), but it has struggled to realize its promised potential owing to numerous obstacles. Many of these have similarly been cited as future barriers to progress in The Bahamas, such as lack of prior experience,

unreliable pricing mechanisms, insufficiently rigorous procedures for accounting, huge capital inflows required for start-up and ambiguous ownership of carbon assets (Cao et al., 2022).

## IMPACT ON LIVELIHOODS

One of the criticisms of blue carbon projects is there is no mention of considering the livelihood of the community (Keushnigg, 2022). However, the importance of active involvement of the community served from concept to execution is invaluable. When expertly executed communities develop an understanding that they would benefit from the projects in a profound way. Projects that neglect to consider the livelihood of the affected communities, often result in restoration efforts that have been thwarted by short-term degradation to fulfill economic necessities. In short, a lack of stakeholder participation and a dearth of viable options to generate income will limit long-term protection efforts (Wylie et. al., 2016).

## CONCLUSION

The stark reality is that The Bahamas has numerous challenges ahead, sea level rise, elevated air and sea temperatures, coral bleaching, increasing numbers of fiercely intense hurricanes, and storms with the accompanying surge are guaranteed to impact these low-lying islands. Proponents of blue carbon trading view it to innovate around climate financing and gain access to new revenue streams. Therefore, it is considered a mechanism to provide funding to protect coastal ecosystems and other marine areas, thus optimizing mitigation and adaptation efforts. These are delineated as an integral component in limiting climate effects and minimizing devastation. It is proposed that investors would be attracted to this commodity owing to the potential to effectuate carbon neutrality. Additionally, compliance with the objectives outlined in the Paris Agreement may be considered attainable by virtue of the execution of blue carbon trading.

The diverse predicaments confronting The Bahamas related to climate change impacts provide grounds for comprehensive procedures to combat recurrent, rising challenges. As an alternative to a singular focus on blue carbon trading increased intentionality around improving access to domestic and international finance in conjunction with endeavouring to reform fiscal policy would be a fundamental procedure. Consequently, it ought to be acknowledged that summative catastrophic outcomes are affiliated with inaction by stakeholders. Additionally, limited participation by international entities restricts advancement in relevant technologies which would corroborate methodologies related to the validation and recording of carbon assets.



Generally, blue carbon trading implemented utilizing the benchmarked regimes for evaluating sequestration rates and incorporating international best practices could indeed prove to be a positive development for The Bahamas. It should be a component of a comprehensive collection of tools inclusive of stakeholder engagement, more rigorous fiscal policy, amended legislation and enhanced enforcement, and other elemental procedures to restrain cataclysmic events associated with the failure of stakeholder intervention.

Future research could involve stakeholders on opposing sides questioned to ascertain if they appreciate the ramifications of blue carbon trading. Additionally, their insights into to what extent buildings codes, qualified constructors, and enforcement might alleviate climate change impacts. In addition, the bias of the author also deserves acknowledgment owing to numerous years of participating in the construction industry. Further, newspaper articles and blogs used in the research were heavily biased on either side of the argument while academic papers were limited in their treatment of the subject.

Additionally, the area of blue carbon trading has not been extensively researched, however the collection of resources facilitated suitably comprehensive insights regarding the current status of the industry. A few of the academic papers reviewed specifically referenced The Bahamas, moreover, the information contained within them was synthesized to extract features relevant to the local situation.

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