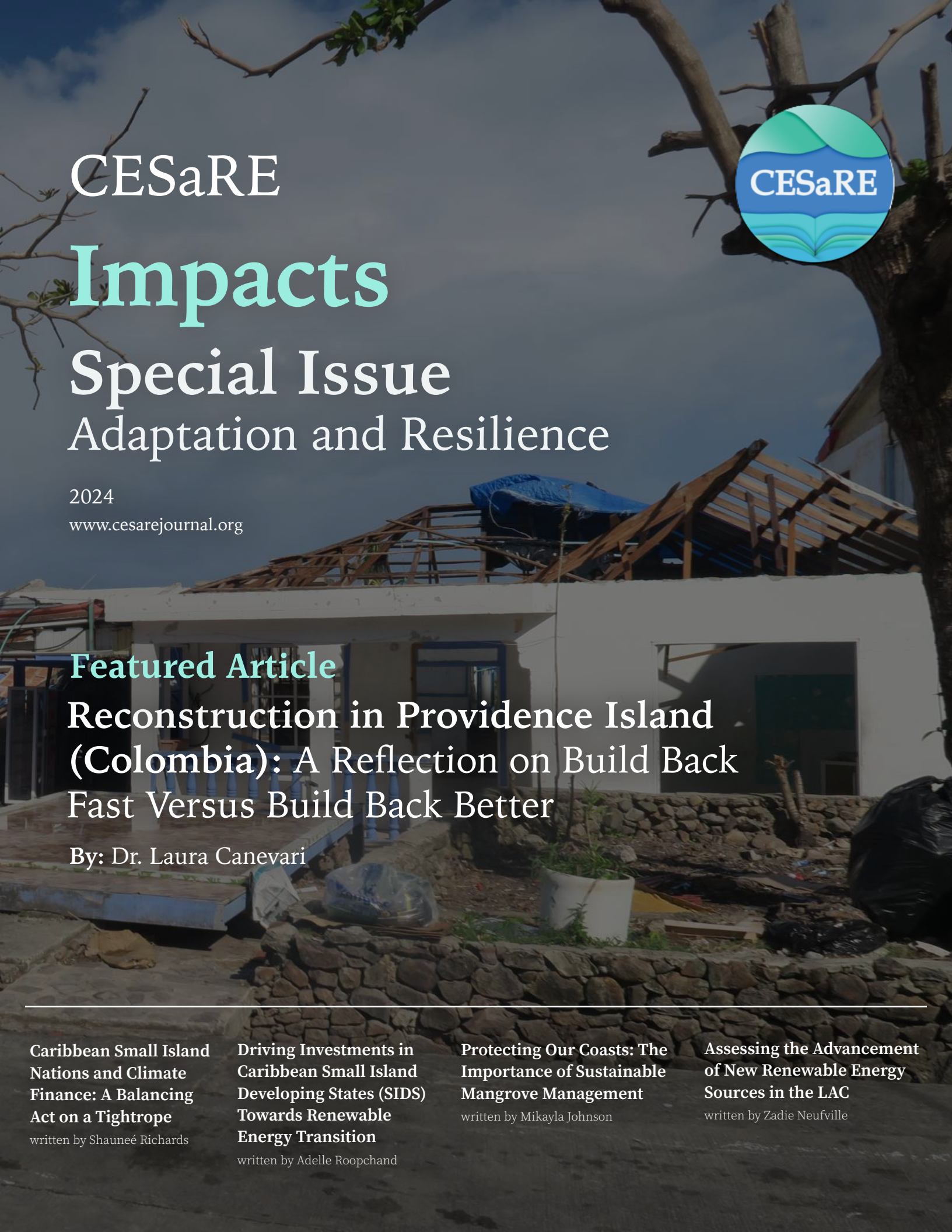

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Featured Article

Reconstruction in Providence Island (Colombia): A Reflection on Build Back Fast Versus Build Back Better

By: Dr. Laura Canevari

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Editor's Note

In this issue, our first of 2024, we turn our attention to the multiple facets of climate change adaptation, mitigation, resilience building and impacts on the Wider Caribbean region. Having recently returned myself from the UNFCCC Conference of Parties (COP28) held in Dubai, (in my capacity as National Adaptation Plan advisor to the Pacific's Republic of the Marshall Islands), much of what I heard weighs heavily on me as I think about our region's future. Still, I also came away with several reasons for cautious optimism:

- The first-ever Global Stocktake under the Paris Agreement took place, assessing progress and mobilising stronger climate action.
- A historic agreement to transition away from fossil fuels, marking the first time the term appeared in a COP outcome.
- Commitments to triple renewable energy capacity and double energy efficiency by 2030.
- Recognition of different national circumstances in the energy transition.
- Establishment and operationalisation of the Loss and Damage Fund to assist vulnerable countries with over US$700 million initially pledged.
- Framework for the Global Goal on Adaptation established but lacking detailed targets and financial support.
- Additional fund pledges to the Green Climate Fund.
- Countries called to submit new, more ambitious NDCs by COP30 in 2025.
- No decision on global carbon markets yet.
- Significant attention on sustainable food systems, with 159 countries committing to integrate these into their NDCs by 2025.
- Recognition of the critical role of cities in climate action and new financing for urban infrastructure and climate projects.
- Over $1 billion in grants announced for projects to cut methane emissions with additional countries joining the Global Methane Pledge.
- New financing mechanisms announced for forest protection and restoration.
- Support for carbon capture technology and natural gas as transitional fuels raised concerns of some countries.
- Still very unclear how the massive clean energy transition will be funded given the need for more substantial pledges and innovative funding sources.

As I reviewed the articles we present here in Impacts, it reinforces my optimism that we still have potential sustainable future pathways ahead. I encourage all our dear readers to keep this in mind as you peruse the works of our valiant contributors.

Well befitting this issue, our feature article by Canevari shares insights from the experiences of Providence Island (Colombia) and critical lessons learned about how to make the now oft used adage of 'build back better' a reality for people and planet. Moreso, we are challenged to consider how the experience presented can enrich efforts across other Caribbean islands and communities.

On the climate adaptation front, Johnson digs into the 2021 study by Soanes et al., considering how the application of sustainable mangrove management techniques can help reduce the overall vulnerability of coastal communities to flooding events, sea level rise, and storm surge. On the climate mitigation front, Neufville provides us with a summary of the Nuno Silva et al. (2021) assessment of new renewable energy sources across 19 Latin American and Caribbean countries. It is particularly interesting in the focus across policy and regulation, finance, and technology comparisons. Of course, our implementation of climate measures still falls short due to lack of financing, so Richards provides us with a view of Mohan's (2022) work on the difficulties faced in aligning domestic financial policies and incentives with their climate and development objectives while harmonising policies with international climate finance goals.

Lastly, I'm pleased that we continue providing our readers with summary coverage of important regional conference discussions. In this issue Roopchand graciously reports on deliberations at the "IRENA-Caribbean Cooperation for Fostering Energy Transition Investments and Finance", where public and private sector stakeholders emphasised the urgent need to create or enhance an enabling environment for aligning private sector investment with public interest. Experts from the worlds of climate finance, technical cooperation, civil society and academia (including your humble Editor-In-Chief!), gave their recommendations on fast-pacing regional progress towards a clean energy future.

Please enjoy this issue of CESaRE Impacts, feel free to submit your thoughts and comments, and on behalf of our Editorial Team, I wish you a productive 2024!

Kalim Shah, Ph.D.
Editor-In-Chief
CESaRE Impacts

Caribbean Small Island Nations and Climate Finance: A Balancing Act on a Tightrope

Written by: **Shauneé Richards**

Caribbean Small Island Developing States (SIDS) find themselves in a delicate balancing act on a tightrope when it comes to addressing climate change. On one hand, their heavy dependence on international climate finance resembles a precarious reliance on a safety net held by wealthier nations. With limited financial resources of their own, they must look abroad for support to fund vital climate adaptation and mitigation efforts. On the other hand, is the reality that domestic policies must also contribute to their goals to enhance resilience and sustainable development. In 2020, Caribbean countries, along with the rest of the world, made a significant commitment to combat climate change by submitting updated Nationally Determined Contributions (NDCs) to the United Nations Framework Convention on Climate Change (UNFCCC). This paper will explore Mohan's (2022) outline of the difficulties faced in aligning domestic financial policies and incentives with their climate and development objectives while harmonising policies with international climate finance goals. The heavy reliance on international climate finance poses a significant challenge to the climate ambitions of Caribbean SIDS. Without exploring innovative and diversified approaches, achieving climate goals will be challenging.

As of 2022, 16 Caribbean SIDS have set ambitious targets in their NDCs to promote both mitigation and adaptation goals, ranging from renewable energy goals to maintaining forest cover. NDCs outline countries' emissions reduction goals as part of the Paris Agreement process. These goals can be conditional or unconditional. Conditional targets rely

on international finance, while unconditional ones are supported by domestic funding. However, their dependence on conditional finance highlights the unique challenges these nations face, where their commitment to climate action is intricately linked to their ability to secure financial support from the international community. Caribbean SIDS know the importance of climate adaptation and mitigation for their survival but are caught between a rock and a hard place. There simply are not enough resources to meet the immediate needs of their population and focus on sustainability.

Eight Caribbean countries have provided clear cost estimates for mitigation and adaptation actions, totalling US$51.3 billion from 2020 to 2030. This figure indicates significant financial requirements for climate actions as it accounts for 40% of the region's GDP in 2021, or US$1,983 per capita (Mohan, 2022). This statistic underscores the significant economic investments necessary to combat the adverse effects of climate change in the Caribbean. In a NDC Survey done by the UNFCCC, Caribbean countries listed their mitigation needs as technology transfer, support for Measurement, Reporting, and Verification (MRV), capacity building, and technical and financial support for public transport systems. Their adaptation needs include flood risk management plans/programs, education and training of locals, capacity building, water resource management as well as technical support for vulnerability assessments (UNFCCC, 2020). There are existing domestic plans and strategies to support NDC implementation (See Table 1). Mainstreaming NDC objectives into existing development plans is essential to achieve desired outcomes which many Caribbean states have already done.

Table 1: Existing plans/strategies to support NDC implementation in the Caribbean

Country	Existing plans and strategies to support NDC implementation
Antigua & Barbuda	National Adaptation Plan (NAP) Energy policies Environmental management and protection Act
Bahamas	National Climate Change Plan Energy policies
Belize	National Climate Change Plan Energy policies
Dominica	Low Carbon Climate Resilience Development Strategy National Resilience Development Strategy (NDRS) Sustainable and Resilience Energy Plan (SREP) Climate Resilience and Recovery Plan (CRRP)
Dominican Republic	National Climate Change Plan NAP Energy policies LT-LEDS
Grenada	National Climate Change Plan Energy policies
Guyana	A draft national Climate Change Policy Forest Policy and Action Plan Draft Energy Policy
Haiti	National Climate Change Plan NAP Energy policies
Jamaica	Energy policies
St. Kitts & Nevis	National Climate Change Plan Energy Policy
St. Lucia	NAP
St. Vincent & the Grenadines	National Climate Change Policy NAP Energy Policy
Suriname	NAP
Trinidad &Tobago	The National Climate Change Policy

Source: UNFCCC NDC Survey Report 2020

However, there is hardly any mention of fiscal policy reforms or efforts to review subsidies that may hinder NDC goals, such as fossil fuel subsidies. Balancing fiscal policy and subsidy reforms is vital. This entails shifting subsidies from fossil fuels to clean energy, incentivising low-carbon economies while freeing resources for climate goals. On the other hand, Caribbean nations face economic and financial realities that necessitate caution in implementing sudden and drastic fiscal reforms. These subsidies can play a crucial role in keeping certain industries afloat, and their abrupt removal can have socio-economic implications, including potential job losses and economic disruptions. As a result, Caribbean governments must navigate a fine line between their environmental commitments and their economic stability. This delicate balancing act requires thoughtful planning without overreliance on any one strategy.

Caribbean SIDS generally rely on international climate funds like the Green Climate Fund (GCF), the Climate Investment Funds (CIF), and the Global Environmental Facility (GEF) to finance their NDCs. Market mechanisms, like the Clean Development Mechanism (CDM), are seen as complementary options to reduce costs. While these sources are vital, there is growing concern about the declining allocation share to SIDS, despite their high vulnerability to climate change. In addition, the accreditation and access model disadvantages SIDS with lower capacity to access climate finance directly. Given the limitations of international climate finance, particularly for higher-income countries like some Caribbean SIDS, the need for innovative financing solutions becomes apparent.

One must, however, admit that conditional financing and international support is a necessary strategy to achieve the region's climate goals. Anyone with an interest in international relations knows Mia Mottley, the Prime Minister of Barbados, as a champion of climate finance who has drawn attention to the challenges faced by middle-income countries in accessing climate finance. She introduced the Bridgetown Initiative to simplify access to climate funding, focusing on the region's unique needs. Mottley also advocated for a loss and damage fund, addressing non-recoverable losses from climate-related disasters. These efforts enjoy global support and signify progress in climate finance restructuring. In fact, Ofori-Atta and Trotenburg (2023) noted that "Despite the massive challenges ahead, establishing a new climate-ready global financial architecture remains feasible. By working together and ensuring that all countries pay their fair share, the international community could bridge political divides and achieve tangible progress toward ensuring a habitable world." After tough negotiations, the UNFCCC Transition Committee successfully reached an agreement on the Climate Loss and Damage Fund to present at COP28. This is a win for Caribbean SIDS.

Nevertheless, the region is not void of domestic innovative solutions. Several Caribbean SIDS have initiated innovative financing approaches and monitoring strategies in collaboration with international sources and institutions. Examples include Guyana's Low Carbon Development Strategy and Antigua and Barbuda's Sustainable Island Resource Framework (SIRF) Fund. This proves that a way forward using a variety of financial sources is possible. This is the key to maintaining our footing amidst all the challenges.

Caribbean SIDS face substantial challenges in dealing with climate change and the associated costs. It is clear that governments must strike a balance between international climate finance, fiscal policy reform, and private sector involvement to achieve their NDC goals. While international support remains critical, innovative financing solutions and reforms are imperative, given the limited fiscal space and insufficient domestic resources in the region. This balancing act, though risky, presents an opportunity to not only confront the perils of climate change but also chart a course toward sustainable development, self-reliance, and a more secure future for their people.

Shauneé Richards is a writer from Trinidad and Tobago. She has a BSc in Political Science from the University of the West Indies, Cave Hill Campus and an MSc in Development Studies with a concentration in Governance and Public Policy from UWI, Mona. She is passionate about social justice issues and Caribbean integration & development.

Driving Investments in Caribbean Small Island Developing States (SIDS) Towards Renewable Energy Transition

Written by: **Adelle Roopchand**

Cutting global emissions by 43% to 'keep 1.5°C alive' require governments to accelerate plans to attract investment and implement the projects to become 60% reliant on renewable energy, “tripling renewables power and doubling energy efficiency by 2030" (Conference of the Parties (COP) 28, International Energy Renewable Agency (IRENA) and Global Research Alliance (G.R.A.) 2023), a mere seven years away!

According to Dr. Sultan Al Jaber, COP28 President-Designate, "The world has already made great strides by expanding global renewable energy capacity and becoming more energy efficient, but progress so far has been too slow" (COP28, IRENA, and G.R.A. 2023). IRENA indicates the global renewable energy generation growth in 2021 increased by 5.4% or 402 TWh (Terawatt-hours) higher than in 2020, with 80% growth in Asia, which came from wind energy generation that accounts for half of the global renewable increase.

According to IRENA Director-General, Francesco La Camera, opportunities are available in the Caribbean and Latin America (Central America) to utilise alternative sources to generate energy. However, the generation of renewables in 2021 was 56 TWh, with 32 TWh generated from Hydropower, Bioenergy 8 TWh, Wind and Solar 6 TWh each, Geothermal 5 TWh, and Marine unaccounted for (IRENA, 2021). Across the Caribbean Community (CARICOM) member states, between 2013 and 2021, there has been slight growth in renewables generation. However, it is far from meeting the 2030 target even though SIDS is the most minor contributor to global warming.

Table 1: Production of renewable energy (GWh) across the Caribbean Community

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Antigua & Barbuda	1	1	5	5	6	10	14	17	20
Bahamas	2	3	4	4	4	4	5	5	8
Barbados	4	10	14	14	24	26	39	64	88
Belize	337	354	358	376	403	487	248	522	437
Cayman	-	-	-	2	9	15	17	19	22
Dominica	38	32	25	37	28	25	21	20	41
Grenada	1	1	2	3	3	4	4	4	5
Guyana	-	-	-	-	-	-	-	-	-
Haiti	143	93	86	74	131	202	205	205	205
Jamaica	274	294	295	364	512	540	538	557	551
Montserrat	-	-	-	-	-	-	-	0	2
St Kitts & Nevis	8	10	10	11	8	9	9	10	10
St Lucia	0	0	1	4	4	9	11	11	10
St Vincent & the Grenadines	23	12	18	17	21	25	23	25	22
Suriname	-	-	-	-	-	-	-	-	-
Trinidad & Tobago	6	6	6	6	6	6	6	6	6
TOTAL	837	816	824	917	1159	1362	1140	1465	1427
Average	76.09	74.18	68.67	70.54	89.15	104.77	87.69	112.69	101.93

Compiled from Renewable Energy Statistics 2023: Capacity and Production Total Renewable Energy (IRENA,2023).

Dr. Devon Gardener, Head of Technical Programmes, Caribbean Center for Renewable Energy and Energy Efficiency (CCREEE), outlined that from 2012 to 2023, based on CARICOM's Energy Policy and its Sustainable Energy Strategy, the progress for renewable energy (RE) has been "relatively organic, not accelerated," and that based on aggregated data the region has moved from 5-7% to “twelveish percent” and that the projection shows "we will move from 19 percent electrification of N.U. Services to where we are now 51 percent electrification by 2050."

At a recent high-level dialogue in the Caribbean on “IRENA-Caribbean Cooperation for Fostering Energy Transition Investments and Finance," public and private sector stakeholders emphasised the urgent need to create or enhance an enabling environment for aligning private sector investment with the public interest. Ambassador Dr. Christoph Eick, Germany's Special Envoy for Climate Issues in the Caribbean, urged Caribbean nations to reduce dependency on fossil fuels, citing Germany’s experience during the Russian-Ukraine conflict. He emphasised the importance of prioritising renewable energy and expressed Germany's commitment to assisting SIDS through IRENA.

Minister Kerrie Symonds, Ministry of Foreign Affairs and Foreign Trade, Barbados, said there is a greater need for a regulatory framework to include systems for transparency and justice in the private sector, which will provide the potential for investments.

A legal framework to attract investment is critical since existing frameworks do not guarantee de-risking capital and access to capital, investors' comfort as termination payments, and currency risks. According to Dr. Pepukaye Bardouille, senior operations officer, International Finance Corporation, W.B., SIDS governments need to aggregate to attract finance for RE development using a structured approach – informed decision-making, tendering out, and de-risking sites, including risk sharing to bring private sector investment. Professor Kalim Shah, Director of Island Policy Lab (I.P.L.) at the University of Delaware, added on the issue of aggregation, "Aggregating projects or an investment can be regional, horizontal, or vertical integration depending on what investors want." He said an upgrade to the

policy framework to include climate resilience principles and the 'just transition' principles should considered, which is a "low-carbon transition that is fair, inclusive, creates decent work opportunities - and leaves no one behind" (KPMG International, 2023) The Organisation of the Eastern Caribbean States (OECS) has been utilising aggregation for pharmaceuticals and other sectors, which proves successful in saving costs to the population, according to Mr Chamberlain Emanuel, Head of Environmental Sustainability at OECS.

Prof. Shah added that countries' first mistake is using Western administration templates to develop a regulatory framework "to realise it cannot work for their country and require corrections to those starting points." He outlined that academia could contribute technical assistance through scientific assessment and studies to assist development in countries significantly towards data-driven frameworks that propel governments' enabling environment for a stable and even playing field across the existing degrees of readiness across the region. He added that communication is critical among stakeholders since the public good can have various meanings: value proposition, high benefit and low risks, stability, and energy security. Resilient systems are also necessary for both government and private sector to have enabling conditions, "We need to address new threats of cyber security, which are present in the region, towards leveraging on conditions for economic prosperity."
Energy transformation is inevitable, but transition rates in the region will differ due to varying dependence on fossil fuels. For example, Guyana's recent discovery is propelling its economy. However, it has targeted RE generation of 47% by 2027 based on solid biomass (IRENA, 2015).

Mr Carlos Echeverria, Senior Energy Specialist at the International Development Bank, states that some governments will achieve their RE transition quickly. In contrast, others require more time due to the lack of access to human and financial resources.

Barbados has installed 85 MWh of RE grids since 2019, making up 12 and 15 percent of the country's electricity demand. However, access to additional battery storage has inhibited the growth of its RE generation. Prime Minister Mia Mottley warned that governance is jeopardised as nations struggle to provide the necessary tools for energy transition (Carrington, 2023). She emphasised the international nature of the problem and urged nations to align capacity to commitment, stressing that SIDS face significant challenges in accessing tools for achieving net zero by 2030.

The Grenada National Energy Policy (2011) targets a regulatory framework through the Energy Efficiency Act to regulate public and private investments. Minister of Climate Resistance, the Environment and Renewable Energy, Kerrylyn James, urges multilateral banks for technical assistance due to limited resources.

In Montserrat, Dr. Samuel Joseph, Minister of Communications, Works, Energy, and Labour, emphasised the need for legislation in micro and nano states, citing a geothermal resource, and enacted legislation in 2023 for investment processes that included royalties and concession grants.

Antigua and Barbuda transitioned Barbuda following Hurricane Irma to 100% solar reliant on 22 MWh, making Barbuda the first habitable Caribbean Island to achieve green energy. Belford Nicholas, Minister of Information and Communication Technology, Public Utilities and Energy, aims to attain 86% solar energy resilience by 2030 in Antigua but notes it continues to utilize L.N.G. towards a cleaner carbon footprint of 40%. However, the country also lacks capacities in finance and human resources.

O'Reilly Lewis, Division Chief of Economic Infrastructure, Caribbean Development Bank, acknowledges the lag in the energy transition plan for its 19 member countries, emphasising the need to accelerate RE investments to address climate change and energy security. He sees the Caribbean as well positioned to exploit opportunities as trial grounds for various RE sources but emphasises the importance of enabling policies for timely decision-making. Prof. Shah highlighted the role of international partnerships in providing intelligence to mitigate risks and uncertainties, especially regarding energy storage batteries, which can minimise future challenges in the region.

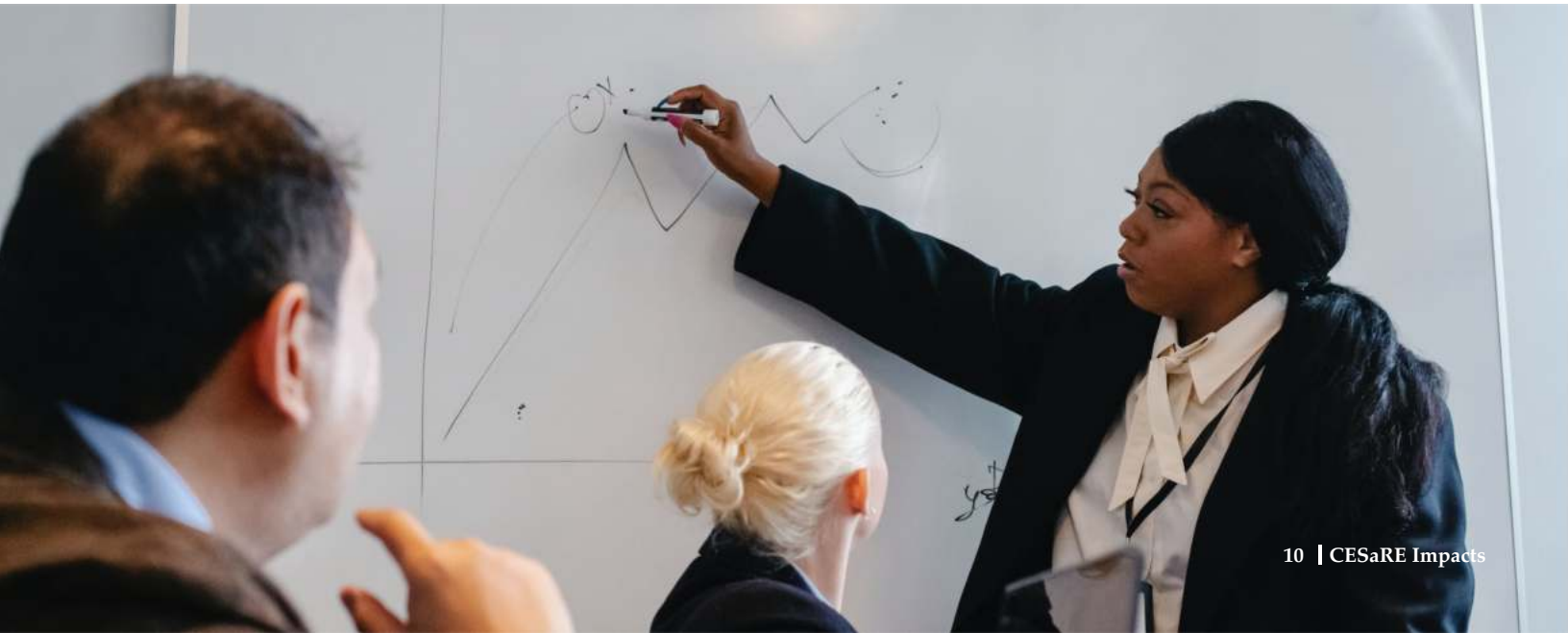
Private sector energy provider Ralph Williams suggested using Kilowatt-hour as a payment system to reassure banks and promote environmental responsibility by governments.

Aiden Rogers, Strategic Advisor, HDF Caribbean, Barbados, and Eastern Caribbean, suggested from a private sector perspective that governments consider enabling frameworks that do not match business models, particularly financing approaches within jurisdictions, to explore investments. Therefore, it is necessary to view site selection uses, permitting and licensing, the contractual and procurement process, and commissioning and operation in its enabling framework to navigate developing large-scale projects toward achieving economies of scale.

In conclusion, Dr. Gardener further outlined that electrification would allow governments to integrate energy systems and provide more efficient and effective energy services. Still, the enabling framework must provide for grid modernisation to enable the integration of utility-scale renewables and to integrate distributed energy resources to provide the flexibility needed for resiliency that allows for power to ex-conversion so that some countries with excess supply can utilise markets, thereby creating new sources of economies.

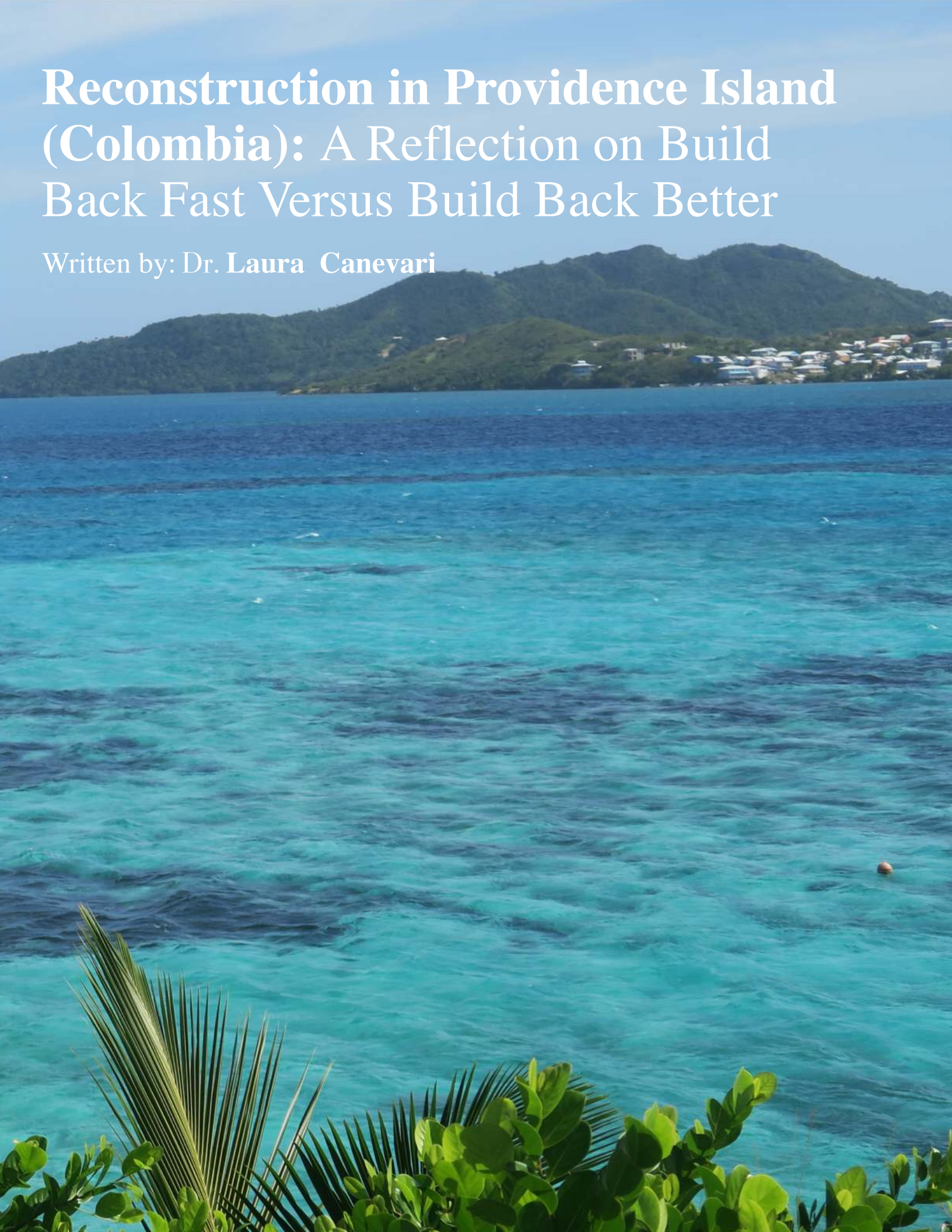
He added that while the regional barriers include but are not limited to slow and insufficient grid modernisation, uncertainties that affect the integration of renewables, misinformation on renewables effectiveness in the totality of the power sector architecture, lack of cohesion and agreements on possibilities and what is doable between stakeholders; and lack of financing, the region can make strides to accelerate grid modernisation with a minimum regulatory framework to ensure the creation of an electrification pathway that integrates information and intelligence to provide a knowledge framework that gives the right quality and quantity of information for making informed decisions.

Adelle Z. Roopchand is an independent Caribbean journalist and communications specialist in Climate Resilience and Agricultural Extension, the Blue Economy and the Environment for rural development. She has worked with CARICOM arms including: CRFM, CARICOM IMPACS and CARDI; and the ACP-EU Technical Centre for Agriculture and Rural Cooperation and is currently engaged at the University of the West Indies, St. Augustine. Adelle is also a PhD candidate in Agricultural Extension.



Reconstruction in Providence Island (Colombia): A Reflection on Build Back Fast Versus Build Back Better

Written by: Dr. **Laura Canevari**



Providence Island, situated in the Caribbean archipelago of San Andrés, Providencia, and Santa Catalina, is a Colombian territory with a population of approximately 5,000 people. The island is home to the Raizal community, descendants of African slaves and British Puritans, and has a unique culture deeply rooted in its Creole language and gastronomical heritage. Moreover, the island boasts a rich biodiversity hub, recognised as part of the UNESCO Seaflower Biosphere Reserve. The island's ecosystem includes the world's third-largest barrier reef and the unique black land crab *(Gecarcinus ruricola)*, which holds ecological and cultural significance.

The island's economy predominantly relies on tourism and fishing, both of which were severely impacted by the COVID-19 pandemic in 2020. As recovery appeared on the horizon with the revival of tourism and maritime activities, the island faced a new and more formidable adversary. On November 2nd (2020), Hurricane Eta, intensifying from Category 3 to 4, struck the southern and southwestern parts of both Providencia and Santa Catalina, leaving populations and infrastructure highly vulnerable. Only two weeks later, Hurricane Iota, a Category 5 storm, wreaked unprecedented havoc on Providence and Santa Catalina (also known as Ketlina). Local residents endured 13 hours of relentless devastation, taking shelter in concrete cisterns and bathrooms. Remarkably, only four lives were lost, but the damage was extensive, including the destruction of 1,900-2,000 houses and 95% of critical infrastructure, such as the hospital, schools, city hall, airport, and port. The electrical connections were severely damaged, communication was lost, agricultural fields were ruined, and the fishing fleet suffered significant damage. Furthermore, marine, coastal, and terrestrial ecosystems faced widespread degradation, with 90% of dry forests and mangroves affected.

Has the island been rebuilt since then? The answer is complex, depending on who you ask. However, it can be argued that the reconstruction efforts have not adhered to the "building back better" (BBB) agenda, a concept promoted by the United Nations General Assembly (2016) and embraced by the Sendai Framework for Disaster Risk Reduction.

What is the build back better agenda and why is it important for the Caribbean?

The build back better agenda refers to the use of the recovery, rehabilitation, and reconstruction phases after a disaster to increase the resilience of nations and communities through integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems, and into the revitalisation of livelihoods, economies, and the environment (UNGA 2016).

In the Caribbean, "Building Back Better" (BBB) is crucial for resilient recovery and climate adaptation, especially given the region's increasing exposure and vulnerability to climate-related disasters. The research collectively is showing that the Caribbean, a region historically prone to hurricanes, is facing an escalation in both the severity and frequency of these storms, driven by ongoing climatic changes. For example, according to a recent study by Hibbert et al. (2023), the Caribbean has witnessed a consistent increase in Sea Surface Temperatures (SSTs) and a decrease in Vertical Wind Shear (VWS) from 1982 to 2020. This combination of warmer SSTs and reduced wind shear is conducive to more frequent and intense tropical cyclones. Similarly, in an exploration of hurricane-induced wave heights in the Caribbean, Montoya et al. (2018) show a positive long-term trend of 30-years — from 1979 to 2012 — in the return values of extreme wave events, with the highest trends in the western basin of the Caribbean Sea towards the Gulf of Mexico. These findings illustrating what the future may bring highlight the urgent need for adaptive strategies to reduce the impacts of climate-related extreme weather events. Building climate resilience and learning to build back better in the aftermath of destructive hurricanes is thus imperative for this region.

Examples of missed opportunities to build back better in Providencia

In the aftermath of the hurricane, Central Government took the rails of reconstruction, in what became known as Plan 100: a plan crafted in Bogotá (the Capital city of Colombia) to rebuild the island and reactivate its economy in 100 days; a plan primarily focused on rebuilding houses, commerce, and tourism infrastructure. It became evident within a couple of weeks of the plan's implementation that the island was not going to be rebuilt in 100 days. But in the rush to build back fast, many opportunities to build back better were missed.

For example, families were not relocated from hazard risk prone areas, despite the availability of land to accommodate coastal retreat and clear indications of high exposure to coastal related climate hazards. While it can be politically unappealing and requires significant dialogue with the community, there is no better time to rebuild in safer zones than after major hurricane devastation. And yet, whilst the emergency response plan of the Colombian central government formulated relocation as part of the reconstruction of the island, in practice this measure was neither planned nor implemented.

The loss and damage of critical infrastructure such as the electricity grid is one of the most dangerous impacts that requires urgent climate proofing. In Providencia, the entire electricity grid was rebuilt using exposed electricity wires and through a system powered on diesel. This represents a missed opportunity to embrace solar powered public lighting and the installation of solar power as roofs were being installed.

But there is one aspect of Plan 100 that raises even greater concern: the plan did not put the local community at the centre of the reconstruction. Focusing on rebuilding the physical infrastructure, Plan 100 left in the hands of continental construction companies the task to rebuild the island. In doing so, a critical moment to build social cohesion, local capacity and local leadership was lost. In a rush to build back fast, the experiences and culture of the local community were put to the side.

Is it possible for an island to be rebuilt without the participation of its local inhabitants? Additionally, a deep-seated culture of assistencialism has become embedded in the local economic, political, and social fabric, which hinders the long-term development and resilience of a community.

Learning from other islands

In an effort to bolster community-based leadership, and as part of a project funded by Open Society Foundations and coordinated by ITACA, Gitec and Providence Foundation, community members from Providence island and Ketlina visited Trinidad, Tobago, Barbados, and Dominica earlier this year. These exchanges have proven pivotal in helping people from Providence and Ketlina to learn about community-based adaptation and disaster risk reduction practices in other Caribbean islands and to understand the role communities can play in building back better efforts. As noted by Lunazzi (2023), the promotion of knowledge exchanges with other Caribbean communities gives representatives from Providence and Ketlina an opportunity to learn about existing best practices and solutions implemented in other parts of the Region. This can motivate the community to take concrete actions and promotes self-sufficiency in risk management, whilst helping them to adapt and apply effective approaches to their own specific realities and challenges.

Lessons left from the reconstruction

There are a number of critical lessons stemming from recent events in Providence Island. First and foremost, pre-planning for resilience is key: never wait for a disaster to hit in order to start building the climate resilience agenda and ensure local councils allocate resources to co-design reconstruction plans with the support of the local community as part of their development plans. Second, recognise the importance of applying robust and context specific building codes, regulations, and disaster risk preparedness plans to climate proof communities, drawing on those already in existence within the region: there is no need to reinvent the wheel and much has been learnt in the Caribbean in terms of what approaches to take to build climate resilience in infrastructure. And finally, amidst the urgent humanitarian needs and emergency government responses, it's essential to seize opportunities to collaborate with and empower local communities in working towards building a better future together.

By ensuring and supporting community participation into the rebuilding process, emergency response strategies can nurture the seeds for transformative participative change.

Providence Island's future climate resilience rests on getting all hands on deck and deepening connections with other Caribbean islands. By fostering community participation and continuing to exchange best practices on resilience planning regionally, Providence can chart an adaptive course that draws on regional wisdom and local leadership.

Dr. Laura Canevari, is an accomplished climate change adaptation specialist with over 12 years of experience in climate adaptation and resilience building. She is the CEO and Founder of ITACA (Innovation Training and Adaptation in Coastal Areas), a technical assistance and consulting service provider committed to accelerating climate adaptation in the broader Caribbean Region. Over the past years, Laura has supported the design and provision of climate services for the public and private sector, including: the development of vulnerability, climate risk assessments and adaptation plans; community based adaptation initiatives; decision support tools for financial institutions; analysis of climate resilience in agricultural value chains; accessing climate finance for private start-ups and Civil Society Organisations; and the design and delivery of training and capacity building programs for both the public and private sector. Prior to her role in ITACA, she worked as climate risk analyst and business development associate for Acclimatise, a UK-based firm internationally renowned for helping to shape the climate adaptation agenda globally. She holds a PhD in Geography from King's College London and an MSc from Oxford University.

Protecting Our Coasts: The Importance of Sustainable Mangrove Management

Written by: **Mikayla Johnson**

Mangroves have been identified as highly effective carbon sinks that are able to store large quantities of carbon absorbed from the atmosphere (UNEP, 2020). In the face of climate change, mangroves are also able to reduce the vulnerability of coastal communities. Small Island Developing States (SIDS) in the Caribbean islands are especially susceptible to the adverse short-term and long-term effects of climate change, due to their size and location. Sea level rise and an increase in the frequency and intensity of storm surge may occur as a direct result of climate change. As a result of this, low-lying coastal communities across the Caribbean region are at risk. "Integrated sea-level rise projections and flood risk analysis indicate that floods reaching at least 0.5 m above high tide line at shore will become common events throughout most of the Caribbean within half a century, and more likely sooner" (Stauss and Kulp, 2018). How can this issue be alleviated? Mangrove areas may prove to be a key nature-based solution, as they are able to reduce flood risk and provide flood protection to vulnerable coastal communities.

Many Caribbean SIDS are reliant on the tourism, agriculture, and fishing sectors due to their developing economies. The impacts of climate change

are predicted to affect sectors such as agriculture, human health, human settlements, coastal zones, water resources, and the energy sector. Moreover, natural coastal and marine resources within these SIDS are vulnerable to the effects of climate change, which will in turn negatively impact the provision of products as well as the livelihood of citizens (Clarke et al., 2019). Furthermore, Soanes et al. express that "The unprecedented loss of mangroves will have huge impacts on biodiversity, and ecosystem services including the ability of this natural sea defence to defend our shores and coastal communities".

Mangroves are a key part of the Caribbean's rich biodiversity. Additionally, they can help to prevent coastal erosion while acting as a natural barrier to coastal communities. This natural barrier can save lives and protect infrastructure. "They are vital in helping society adapt to climate change impacts, reducing the impact of storms and sea-level rise" (UNEP, 2020). According to vulnerability models, "small-scale mangrove restoration initiatives can help reduce the flood risk of homes and infrastructure up to 475 m inland" (Soanes et. al, 2021). This suggests that mangrove restoration can be a powerful tool for building resilience across Caribbean coastal communities.

In their research, Soanes et al. (2021) explore the impact of restoring mangroves in opportunity areas by focusing on each community's vulnerability to storm surge. "Areas that are predicted to receive protection from storm surges if mangroves were restored were overlaid with maps and infrastructure shapefiles to highlight the impact that mangrove restoration could have on reducing the flood risk for local communities" (Sonaes et al., 2021).

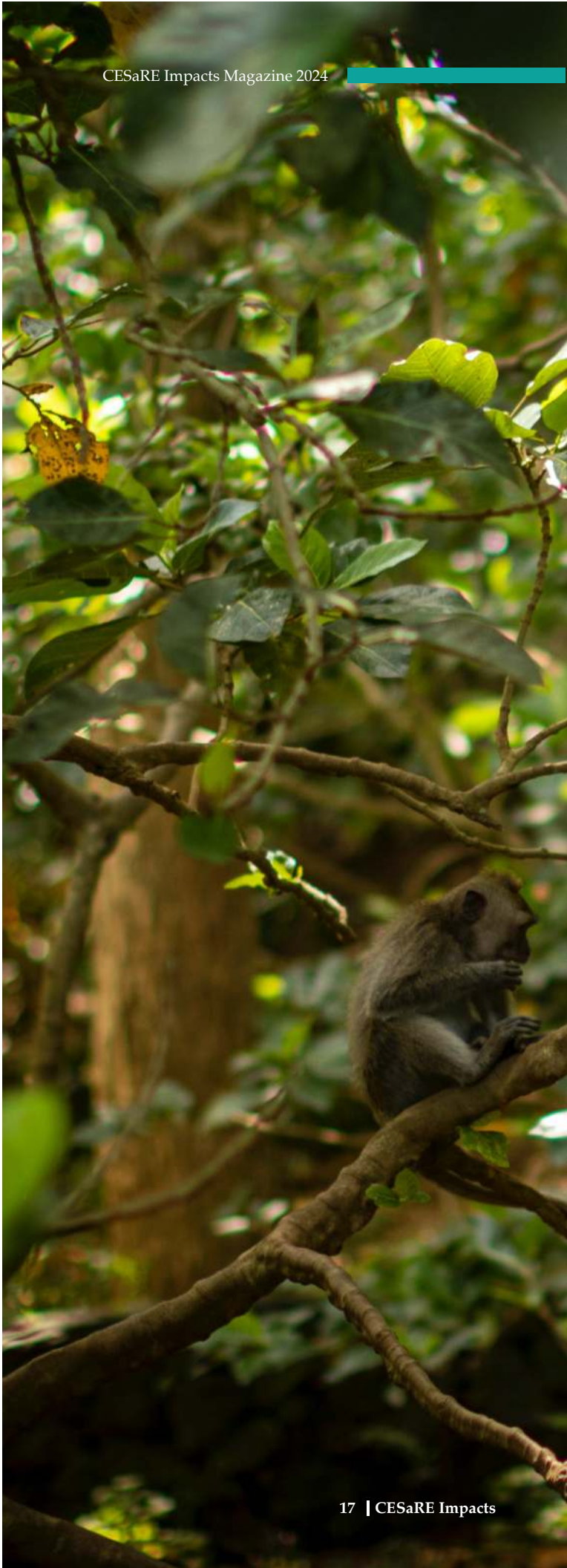
Results of this study indicate that less than 10% of the opportunity area for mangroves already contained mangrove species in one location studied, while 76% and 55% of opportunity areas already contained mangroves at the second and third locations respectively. Furthermore, the restoration of red mangroves at identified opportunity areas has the potential to provide flood protection up to 200 m, 300 m, and 475 m inland at three locations respectively. This research is important as it demonstrates to us the potential for proper mangrove management.

Mangrove habitat loss is an issue plaguing coastal areas regionally. Mangroves are vulnerable to reclamation (the transformation of mangrove habitat into urban development areas), extraction (the large-scale and unsustainable extraction of

mangrove resources), deforestation, and pollution. These actions leave coastal communities further exposed to the impacts of climate change. This, therefore, emphasises the importance of mangrove protection and restoration across nations regionally.

In the fight against climate change, Caribbean nations should consider nature-based solutions which can help to alleviate the negative impact of climate change on coastal communities and islands at large. As indicated in vulnerability models, mangrove restoration initiatives are one step in this direction.

Mikayla Johnson is a recent graduate of the University of West Indies with a BA in Geography and Communications. As a geographer and environmentalist, she is dedicated to raising awareness about contemporary issues facing the Caribbean and believes that education is integral to environmental solutions.



Assessing the Advancement of New Renewable Energy Sources in the LAC

Written by: **Zadie Neufville**

Nuno Silva et al. (2021) conducted an assessment of the advancement of new renewable energy sources in 19 countries across Latin America and the Caribbean (LAC).

The study "Assessing the advancement of new renewable energy sources in the LAC", which focussed on policy and regulation, financing and technology, examined the situation in these countries between 2001 and 2017 and is ongoing and focussed primarily on the installation of non-hydro electrical renewable capacity including wind, solar, and bioenergy.

The researchers noted that research into the emergence of new renewable energy sources is important since the technologies are often diversified and at varying technological maturity. They continue, that given the dimension of the transition process from fossil fuels to renewables, policymakers and markets should lead the selection process.

The authors found that LAC countries have made significant progress in the adoption of renewable energy sources due to the abundance of renewable energy resources such as solar, wind, hydro, and geothermal, which can be harnessed to meet the increasing energy demand.

The researchers also highlighted the role of government in the adaptation of renewables. “Governments have been an active partner (sic) and are involved in mitigating several economic and societal problems that arise from the vast transformations underway,” the report said.

They noted that governments have also led the growth in renewable energy adoption through the implementation of a range of policies and measures to incentivise the deployment of renewable energy. These include feed-in tariffs, net metering, and renewable energy auctions. The authors noted that the measures implemented have been effective in attracting private investment and promoting the development of renewable energy projects.

Despite their involvement, however, the authors believe that governments are limited in their capacity to finance the energy transition. It is therefore the private sector's participation in the rise of new renewables that has been creating competitiveness in the sector.

While the team struggled with the absence of data in terms of installed capacity, they found that the LAC countries have made efforts to mobilise domestic and international capital to finance renewable energy projects. The authors conclude that the availability of financing, mainly through development banks and international organisations, has played a crucial role in deploying renewable energy in the region.

According to the report: “LAC countries' lessons could be valuable for countries initiating the first stages of the take-off of new renewables. Indeed, the same processes have a high probability of occurring in the same way for new energy sources in the future”.

In terms of technology, the authors found that some countries had made significant progress in the deployment of solar and wind energy. In Brazil, Chile, and Mexico in particular as well as in Uruguay. They also noted a surge in the installation of utility-scale and distributed solar projects.

The study also noted the progress made in the region's renewable energy sector in recent years, with several countries showing impressive growth rates in the deployment of renewable energy technologies. The researchers also noted that the increasing competitiveness of renewable energy sources compared to fossil fuels has been a key driver of this growth.

In addition to policy frameworks, several factors were also identified that have contributed to the growth of renewable energy in the region. These include declining costs of renewable energy technologies and increased private sector investment. However, several challenges have also been highlighted. These include grid integration issues and the need for more innovative financing mechanisms to support renewable energy deployment.

Overall, the study suggests that while LAC countries have made significant progress in the adoption of renewable energy sources, several challenges remain. Governments and investors need to improve grid infrastructure and storage solutions. The authors also see the need for the promotion and adoption of electric vehicles. They believe that policymakers, investors and technology providers will have to increase their efforts to promote the deployment of renewable energy in the region.

The researchers believe this study is only the beginning but should provide a solid foundation for others to continue the work on the topic of renewable energy and its advances across the region.

Zadie Neufville is an Independent Jamaican Journalist and communications specialist writing on issues relating to climate change, environment and development, women, and health. She also writes for Inter Press Service and is also a part-time ITC analyst, Photography teacher and aspiring researcher.

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