



A bi-monthly electronic bulletin about interdisciplinary research, teaching and outreach at the
Centre for Resource Management and Environmental Studies (CERMES)
Editors: Maria Pena and Dr. Patrick McConney



Barbados' ambition to be fossil free by 2030

By Hugh Sealy

12 December 2020 marked the 5th anniversary of the signing of the Paris Agreement. To mark the occasion, the UN Secretary General held a Climate Ambition Summit and world leaders were invited to announce bold commitments to reduce their greenhouse gas emissions in their Nationally Determined Contributions (NDCs), originally due to be submitted this year but now delayed to next year because of the global pandemic as if climate change itself has been postponed. The Hon. Mia Amor Mottley was invited by the UNSG to announce Barbados' commitment to reduce its miniscule carbon footprint. Her announcement that Barbados would strive to completely decarbonise its economy and have zero greenhouse gas (GHG) emissions, economy-wide, by 2030, was, by far, the most ambitious plan announced by any of the world leaders.



Source: climateambitionssummit2020.org

The same plan, to be fossil fuel free by 2030, had been announced just the day before, on 11 December by the Hon. Adrian Forde, Minister of the Environment and National Beautification, at the CARICOM Moment of Ambition organised by the Incoming COP President- the

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UK, in partnership with Italy, and the outgoing Chair of the Alliance of Small Island States (AOSIS), Belize. Belize is due to hand over the chairmanship of AOSIS to Antigua and Barbuda on 1 January 2021. When Minister Forde made the statement, a colleague from Antigua texted me immediately, in shock, - "Did he just say zero emissions economy-wide by 2030?" I laughed and replied, "Yes, it's ambitious but achievable." Part of my responsibility as an advisor to the Government of Barbados is to help implement this unprecedented project to decarbonise an entire economy in one decade. In this article I would like to address the electricity sector, which is currently responsible for about half of the 2 million tonnes of carbon dioxide equivalent emitted by Barbados annually.



Utility scale solar farm at Trents, St. Lucy, Barbados. Source: solarbarbados.com

For more information contact:

CERMES, University of the West Indies, Cave Hill Campus, St. Michael, Barbados

Phone: (246) 417-4316 Fax: (246) 424-4204;

cermes@cavehill.uwi.edu; www.cavehill.uwi.edu/cermes

We are at less than 10% renewable energy (RE) penetration in the electricity sector now - how can anyone be optimistic about achieving 100% RE in electricity generation in just 10 years? My answer is I believe that we have a special, if not unique, advantage of being small. It's one of those rare occasions where it helps not to have the inertia of a large fossil-fuel based economy, to be nimble, agile and able to leapfrog to the most cost-effective technologies now available.

It will not be easy, it will mean replacing about 200 MW of existing thermal generating capacity with about 635 MW of primarily solar and wind energy and lots of energy storage (~ 150 MW equivalent). The capital costs are estimated at around US\$2 billion but the fuel savings are expected to be around US\$200-400 million/year. That's a decent payback period provided that we don't simply replace the foreign exchange used to purchase imported fuel, with foreign exchange leaving the island to repay debts and pay dividends to foreign investors. Frankly, getting the economics right is going to be more difficult than the technical challenge of having such a high penetration rate of intermittent sources of energy.

What's also exciting and unprecedented about the upcoming energy revolution in Barbados is the opportunity to literally empower the masses. Changing from a centralised model of electricity generation to a more distributed model is the technical jargon. In plain language, it means that the costs of solar photovoltaic (PV) has become so cheap, that it is now cheaper for a typical household to generate its own electricity than it is to buy that electricity from a grid where the central generator is using heavy fuel oil and diesel. Imagine every Bajan home with a solar PV system (engineer-secured to the roof, so that it does not become another UFO in an extreme wind event) and an electric vehicle in the garage. I leave it up to our sociologists to determine the social impact of such a transformation, but I suspect it will be profound.

But back to why I am so optimistic that 100% renewable is achievable and quickly in Bim (Barbados). The major drivers/enablers are now in place:

- The vertically integrated monopoly of the electricity sector has been broken by a new legislative framework which now allows for Independent Power Producers (IPPs).

- The primary utility company - Barbados Light & Power has "crossed the Rubicon" and is both willing and able to make the transition. That's critical.
- A stable pricing signal is being sent by the independent regulator - the Fair Trading Commission through the feed-in-tariffs that are now guaranteed for 20 years (at least for systems less than 5 MW).
- The ongoing Integrated Resource and Resilience Plan (IIRP) is showing that 100% RE can be achieved by 2030 technically and cost effectively.

There has been a surge in interest in building solar, and to a lesser extent, wind farms across the island (and offshore). Attracting investment in RE does not seem to be the problem, as I said earlier, keeping a significant portion of the money in Barbados will be the challenge. Land use conflicts between renewable energy, agriculture and housing are already surfacing and will need to be managed, preferably at the level of the Physical Development Plan. I anticipate that very soon, organically-rich waste streams (e.g. secondary sludges, vinasse, brewery and dairy waste) will become valuable sources of bio-energy.

I have not yet addressed how we will be able to change out over 120,000 vehicles currently running on gasoline and diesel. How are we going to wean Bajans away from the internal combustion engine? That's going to have to be the subject of another article!

Book on Blue Economy in the Caribbean presented to Minister

By Patrick McConney



CERMES co-editors Robin Mahon, Patrick McConney and Hazel Oxenford presented a copy of the recently published book *The Caribbean Blue Economy* to Minister in the Ministry of Maritime Affairs

and the Blue Economy (MMABE), the Hon. Kirk Humphrey. Also pictured in the presentation is the National Coordinator GEF Small Grants Programme (SGP) of UNDP, David Bynoe (far right) who was attending a CERMES workshop on a Sargassum Adaptive Management Strategy (SAMS) for Barbados. This workshop is part of a planning grant awarded by the GEF-SGP for advancing the collaboration with the MMABE and CERMES to tackle sargassum within a blue economy.

The “Caribbean Blue Economy” book

By Robin Mahon

The “Caribbean Blue Economy” provides a broad introduction to a new approach to sustainable development that is widely considered to have the potential to transform developing economies and the lives and livelihoods of the citizens of those countries. Most of the chapters are written by experts from the Caribbean or with a long history of working on sustainable development in the region.



The book opens with an overview of the genesis of the Blue Economy approach globally and of its uptake in the Wider Caribbean Region. Early in the book we are rightly reminded that past economic development has in many cases led to great inequalities in wealth and power as well as significant degradation of the very ecosystems from which that wealth was derived. It warns that if we pursue a similar path for the oceans,

we will be taking the planet and its inhabitants deeper still into risky and undesirable territory.

The book places the marine ecosystems upon which ocean goods and services are based as foundational in any Blue Economic thrust, and the conservation of ecosystem function that provides those goods and services as tantamount. It further flags the significant pressure placed on those ecosystems by climate change. It notes that most of these ecosystems are already substantially degraded and must be rehabilitated if they are to provide their potential benefits. Several chapters stress the importance of good governance as a critical component of a Blue Economy. They cover coastal and marine planning, national intersectoral and community-based approaches and the importance of regional approaches for the ocean where many resources and impacts are transboundary in nature and require collaboration for successful governance. The importance of science-based governance including especially the need for valuation of ecosystem goods and services is a recurrent theme.

Attention then turns to the traditional ocean sectors, fisheries, tourism, and shipping and marine transport, which will continue to be the backbone of Blue Economies while new and potentially game changing ocean uses are explored in the medium to long-term. Subsequently, new and exciting opportunities such as oil and gas, ocean energy, deep sea mining and genetic resources are reviewed and their potential discussed. In all these chapters, risks to sustainable development are considered as are the many changes and developments that must take place for them to reach their full potential. One of the greatest threats to our marine ecosystems, pollution, in all its forms, is treated in a chapter of its own.

Finally, financial and geopolitical challenges to achieving Blue Economies in the Wider Caribbean are considered. Reflections on the way ahead are a mixture of cautious optimism and caveats. The editors note that, “Many of the potential benefits of Blue Economy development involve taking better care of economic activities already occurring in coastal and marine ecosystems and adding value where appropriate.” They stress the importance of having a realistic understanding of the time-frames associated with taking advantage of the new opportunities that are said to hold great potential. They

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cermes@cavehill.uwi.edu; www.cavehill.uwi.edu/cermes

conclude by emphasising that coordinated, integrated thinking and planning will be crucial for Caribbean countries to develop individual and collective approaches so that “Blue Economic development in the WCR delivers all that is anticipated.”

CERMES drone team ready to “fly” underwater in 2021

By Kimberly Baldwin



[Wildlife Conservation Society \(WCS\)](#) has partnered globally to support conservation organisations to explore and protect our oceans, freshwater systems, and aquatic biodiversity. Based on her research and extensive application of drones for coastal marine management, WCS recently awarded CERMES Postdoctoral Research Associate, Dr. Kim Baldwin, an [Underwater Exploration Grant](#). Two [Sofar Trident](#) Remotely Operated Underwater Vehicles (ROVs) will be arriving in early 2021 to help CERMES applied research to address data gaps and to monitor, protect, and tell stories about the marine environment.

We plan to use the ROVs to support underwater data collection and develop standard techniques in a number of areas that can be applied across the Caribbean. ROV research initiatives to be conducted by CERMES include:

1. Informing management of Caribbean sargassum influxes: Under the SargAdapt project we are planning to use the ROVs to identify and quantify changes in the biodiversity of the mobile fauna that travels with/under floating sargassum mats as they approach the shore. This is an important knowledge gap and will be important in informing at-sea harvest management practices that minimise biodiversity loss in Barbados and elsewhere in the wider Caribbean.
2. Measuring coral restoration success: Under our coral rehabilitation pilot project on a west coast fringing reef in Barbados, we will test the use the ROVs to conduct a time-series of photo-mosaics over the existing elkhorn coral populations and

transplant sites to monitor the growth and extent of live coral cover.

3. Gathering evidence to improve coral reef management: Due to COVID-19 pandemic measures from March 2020, Barbados has hosted a large number of roaming cruise ships. An unfortunate consequence of cruise ship anchoring was significant areas of damage along sections of the west coast bank reef. It has been extremely difficult to visually convey to policy makers and the public, the extent of damage using still photographs and limited video footage. We hope to use underwater drone footage to better record these impacts for use in changing future policy and practices in Barbados.

We are really excited to add the WCS-supplied ROVs to the CERMES Unmanned Aerial System (UAS) Unit's arsenal, thereby expanding our remote-sensing and marine field data capabilities as well as supporting the development of practical UAS-related techniques and training courses offered by CERMES.

BIOPAMA STGA call for proposals

By Jay Belmar

The first call for proposals for the BIOPAMA Small Technical Grants for Assessment (STGA) is open until 29 January 2021. It is an open ended-call and proposals will be reviewed on a rolling basis in order of their receipt. The purpose of the BIOPAMA STGA is to identify or update result-oriented priority actions for improved protected and conserved areas management and governance, through new or updated quantified management and governance assessments and their associated enhancement plans.

STGAs will fund exclusively assessment for a maximum total value of ≤EUR 20,000. Unlike the Medium Grants, there is no co-funding required for Small Technical Grants for Assessment. The maximum duration of a project is 5 months but it can be shorter depending on the type of activities funded. Interested organisations may visit <https://action.biopama.org/stga/> for more information and for the Guidelines for Applicants available in English, French and Spanish.