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CUBA BETWEEN HURRICANES: COMMODITY FRONTIERS AND ENVIRONMENTAL CHALLENGES

Jean Stubbs

Abstract

In 2017, Hurricane Irma made landfall in Caibarién, in north-central Cuba. Images of a devastated forgotten coastal town catapulted to international prominence a once-thriving port for the export of sugar and sponges, left in the shadows of international tourism on the nearby keys. In 2019, a collaboration between the Commodities of Empire British Academy Research Project, the Antonio Núñez Jiménez Foundation for Nature and Humanity, and the Cuban Film Institute led to filming a documentary in Cuba whose point of departure was Caibarién. The aim was to combine an environmental and commodity frontiers approach to visualize historical junctures and contemporary challenges in the context of global market inequalities and accentuating climate change. Archival research underpinned local testimonies and expert interviews, along with clips from newsreels, documentaries, and feature films, to produce *Cuba: Living Between Hurricanes*. This article charts the project to film the documentary; homes in on the paradoxes of living first with international tourism, Cuba's most recent commodity frontier, and then without, due to the Covid-19 perfect storm of a pandemic, likened to a category 5 hurricane; and concludes reflecting on documentary as a tool for raising awareness during the pandemic.

Keywords: history, climate, tourism, documentary filmmaking, social inequality, tertiary economy.

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CUBA ENTRE CICLONES: FRONTERAS MERCANTILES Y DESAFÍOS AMBIENTALES

Resumen

En 2017, el Huracán Irma tocó tierra en Caibarién, norte-centro de Cuba. Volvió a la mira internacional un olvidado - y devastado - pueblo costero que otrora había prosperado como puerto para exportar azúcar y esponjas, para luego quedarse a la sombra del nuevo turismo internacional en los cayos cercanos. Colaboración entre el proyecto 'Commodities of Empire' de la Academia Británica, la Fundación Antonio Núñez Jiménez para la Naturaleza y el Hombre y el Instituto Cubano del Cine conllevó a filmar un documental cuyo punto de partida fue Caibarién. La meta fue combinar un enfoque ambiental con 'exportaciones en frontera' para visualizar coyunturas históricas y desafíos actuales en el contexto de desigualdades del mercado internacional y creciente cambio climático. Investigación de archivo se entretendió con testimonios expertos y opiniones locales, cortes de noticieros, documentales y cine ficción, para producir Cuba: Vivir entre ciclones. Este artículo traza el proyecto de filmar el documental; enfoca las paradojas de vivir primero con el turismo, la última 'exportación de frontera' de Cuba, y luego sin, debido a la 'perfecta tormenta' de la pandemia de Covid-19, comparada con un ciclón categoría 5; y concluye reflexionando sobre el documental como herramienta de concientización durante la pandemia.

Palabras clave: historia, clima, turismo, filmación documental, desigualdad social, economía terciaria.

INTRODUCTION

In September 2017, Hurricane Irma, one of the most powerful hurricanes to sweep the Caribbean, made landfall in Caibarién, in north-central Cuba. Images of the devastation of a forgotten coastal town were broadcast around the world, bringing back to international prominence a port that had once thrived on exports from its hinterland, especially sugar and, more latterly, sponges. Hurricanes have impacted significantly on the history of Caibarién and the surrounding region in what is today Villa Clara, formerly Las Villas, province, where forests and food self-sufficiency had given way to cattle ranching, coffee estates, tobacco farms, sugarcane plantations, and fishing, and most recently international tourism; all impacting on the environment and subject to global market dictates. The city of Caibarién had long fallen into decline, except as a gateway to the newly flourishing international beach resort tourism on the nearby keys.

The advent of Hurricane Irma gave rise to a 2019 initiative of the Commodities of Empire British Academy Research Project (CoE) (commoditiesofempire.org.uk) to work collaboratively in Cuba with the Antonio Núñez Jiménez Foundation for Nature and Humanity (FANJ) (fanj.cult.cu/) and the Cuban Film Institute (ICAIC) (cubacine.cult.cu/).¹ The aim was to bring together environmental scientists, conservationists, meteorologists, and community activists to produce a documentary to explore how a history of extreme weather events, in tandem with successive commodity frontiers, had impacted on the natural environment and present-day vulnerability, as well as the prospects for recovery and sustainability.

This article begins with the backstory to filming in Cuba and the issues presented in the three parts of the documentary: hurricanes and history in Cuba; the rise and decline of Caibarién; and an exploration of sustainable futures, homing in on two initiatives in Artemisa province, one in reforestation and ecotourism and the other in organic farming. It then focuses more specifically on the impact of Cuba's most recent commodity frontier, international tourism, which, like everywhere else, was brought to an abrupt halt by the Covid-19 pandemic.

While health was not dealt with in the film, it came as no surprise to see how Cuba rose to the pandemic challenge, nationally and internationally, sending Cuban medics to provide their expertise around the world, and developing their own biotechnology to trial vaccines. By 2019, foreign currency income from international tourism was only surpassed by remittances from primarily U.S.-based Cuban émigrés and that generated by medics serving abroad. Remittances were severely curtailed by successive measures on the part of the Trump administration to tighten the U.S. embargo on Cuba, and by Covid. Changes of government in countries such as Brazil and Ecuador also spelled the end of medical exchanges and the expulsion of Cuban medics there, though some were subsequently reinstated. This accorded even greater importance to the rise and demise of international tourism and its environmental consequences

The article concludes by reflecting on this in the context of (forcibly online) documentary screenings during the pandemic, as a tool for raising awareness of not only issues raised in the documentary but also developments since.

BUILDING COLLABORATION

From its inception in 2007, CoE has built up a global research network studying how commodities have circulated within, between, and beyond empires, especially from the nineteenth century to the present. A priority was to enable researchers to network across the Global South and North, to further the comparative understanding of local and global change over time. As vulnerability and conflict over commodities and resources are increasingly evidenced in many parts of the world, a focus on inter-linking systems, agents, and circuits in the movement and impact of commodities aimed to situate historically the drivers of contemporary globalization.

CoE has contributed to new areas of debate, one of which is around the concept of commodity frontiers. Moore (2000, 2015) posited commodity frontiers as integral to the very history of capitalism over the past five centuries, in which humanity has had a significant impact on the earth's geology and ecosystems, creating a metabolic rift. In successive commodity frontiers, new land, natural resources, and labor have been harnessed into production for global trade and consumption, shifting over time and from one location to the next. Vast areas of the world's natural environment have been recast in a trend to environmental degradation, food scarcity, and social fracture.

The commodity frontiers approach homes in on the proliferation of extractive economies in geologically and climatically distinct ecosystems at ever-greater distances and across broader spaces, creating frontier processes of transformation and leaving in their wake communities more vulnerable to extreme climate events and 'natural' hazards (Barbier, 2011; Joseph, 2019). CoE was involved in early discussions leading to the creation of the Commodity Frontiers Initiative (CFI), whose *Commodity Frontiers Journal* is available on open access on the CFI website (commodityfrontiers.com/).

In 2016 a joint CoE/CFI workshop was held in London on commodity frontiers, environmental change, and sustainable development. Cuban environmental historian Funes Monzote (2004, 2020) and sugar historian Zanetti Lecuona (2009, 2018) were invited to participate in the workshop and other collateral meetings, laying the foundations for future collaboration. As part of CoE's audiovisual strategy to make research findings accessible to wider audiences, historians whose work has encompassed the history of sugar and tobacco in Villa Clara, as well as contemporary landmark turning-points for Cuba (Curry-Machado, 2005, 2011; Stubbs, 1985, 1989), teamed up with a documentary filmmaker who has a track record of filming in Cuba and has published on Cuban cinema (Chanan, 2004),

to work with Funes Monzote and Zanetti Lecuna on a low-budget documentary with FANJ, ICAIC, and local Caibarién environmental activist, journalist and writer González Reinoso (2012).

Over recent years there has been a greater appreciation of the *longue-durée* connections between hurricanes and political, economic, and socio-cultural change globally (Ross, 2017) and how the Caribbean has been shaped historically as much by hurricanes as by diplomacy, commerce, or colonial rule (Schwartz, 2015). In the Cuban context, a pioneer study documented how major hurricanes, notably in the 1840s, shaped developments in Cuba under Spanish colonial rule (Pérez, 2001); two historians who subsequently participated in the project extended their historical analysis of the impact of weather-induced environmental crises over earlier and later time frames (Johnson, 2011; Ramos Guadalupe, 2009); and other studies documented hurricanes historically (Pérez Suárez, Limia Martínez & Vega González, 2010) and in contemporary times (González Herrera & Fernández Díaz, 2007; Messina, Royce & Spreen, 2008; Núñez Velis, 2010; Rubiera, 2013).

Of particular interest in the Cuban case was to trace the connections between commodities, hurricanes, climate, and the environment during the nineteenth century, when Cuba was still part of the waning Spanish empire (until 1898); through the following U.S. neo-colonial period (1898-1958); and across the post-1959 Revolution era. From the 1960s to the 1980s, faced with U.S. hostility and embargo, and committed as it became to a model of socialist development, Cuba's revolutionary government forged close ties with the former Soviet Union. After the 1991 implosion of the Soviet Union, by then its major trading partner, Cuba was catapulted into the crisis called its Special Period in Times of Peace. The crisis was further exacerbated by heightened U.S. hostility and extra-territoriality of the embargo, and up to this day Cuba has had to strategize around this.

Despite such adverse international junctures, Cuba today ranks high on a range of education, health, and environmental indicators. In 2015, it topped the newly created global Sustainable Development Index (sustainabledevelopmentindex.org/), evidencing high social performance and low ecological impact (Hickel, 2020). Possibly in part a by-product of this, alongside country case studies of more glaring developmental and environmental urgency in Latin America and the Caribbean, Cuba has often not been included in otherwise excellent recent environmental edited collections (Alimonda, Toro Pérez & Martín, 2017; Coletta & Raftopoulos, 2016; De Castro, Hogenboom & Baud, 2016) and global collaborations such as Environmental Justice (ejatlas.org/). While there have been some notable exceptions in regional environmental history that have included Cuba (Funes Monzote, 2008), the importance of looking more closely at the Cuban case was highlighted in 2017, when there was far more extensive international coverage of how Hurricane Maria ravaged Puerto Rico, and of Hurricane Irma elsewhere in the Caribbean, with relatively little of Irma's impact on Cuba.

LIVING BETWEEN HURRICANES²

The international, regional, and national backdrop of awareness, policy, and action designed to mitigate coastal vulnerability rendered of particular interest how this might be manifest at the local level. Caibarién could thus serve as a valuable starting point for learning from the past to help ensure a more environmentally, as well as economically and socially sustainable future, and for exploring the local alongside the national, regional, and global initiatives. The challenge was how to visualize this engagingly, and the documentary approaches this didactically: drawing on archival research to underpin expert testimony and local opinion, and incorporating clips from newsreels, documentaries, and feature films, in its aim to appeal to diverse audiences across educational, community and policy-making circles, and thus contribute to the local and global discussion.

Featured early in the documentary is a one-day workshop hosted by FANJ in June 2019, which was attended by several of the film's participants. Leading meteorologist at Cuba's National Institute of Meteorology, Armando Caymares, began by detailing the trajectory and intensity of Irma, and also its stationary nature over Caibarién. In his words: "From a scientific point of view, it was a completely symmetrical hurricane, well-formed like a symmetrical rock. The temperature peaked at least 80 degrees Celsius, making it such a powerful hurricane."

An interesting exchange followed when Pedro González Reinoso, from the viewpoint of having lived all his life in Caibarién, interjected that "curiously, there was more damage to buildings and more social trauma caused by Hurricane Kate [1985], which came through unexpectedly in the middle of the night, than by Irma. With Irma, everyone was better prepared." Caymares responded by pointing out how much meteorology had advanced since then, in Cuba and globally: "There weren't the satellites or methods of observation we now have", he said. "I've been working for 35 years, and I've seen a transformation from classic synoptic meteorology to cyber meteorology, computerized meteorology, as in medicine." The technological advance spans 70 local weather stations across Cuba, which record and share data nationally and internationally, enabling greater preparedness.

With Irma, there was heavy damage to the grid and telephone network, as several installations were swept away by the strength of the winds. And yet, in the testimony of Alejandro Morffi, a local Caibarién speleology enthusiast, when interviewed later for the documentary: "Much of the recovery was very quick. For example, the collection of rubbish, of debris, none of that took long. The electricity was restored in sixteen days." Housing, public buildings, factories, and warehouses, however, remained seriously damaged.

Broadening the scope, Enrique Ramos Guadalupe, basing himself on his earlier historical study of Cuba, referred to hurricanes documented in the chronicles of early navigators and conquistadores and how over time, with plantations covering large expanses of land and industry, the impact of hurricanes caused increasing economic

damage as well as human loss. As he explained, “The north-central zone of Cuba, the zone of Remedios, of Caibarién, is a classic example of that double impact.” Sugar cane, he went on to say, is particularly vulnerable to the impact of the wind and rain: “The cane falls, it is practically knocked down to the ground, and that makes the task of cutting harder, requiring greater effort, and much of the cane is lost”. And in the case of tobacco, “it’s not just the plant, but also the harvested tobacco in the drying barns”.

Likewise basing herself on her historical work, Sherry Johnson then illustrated how hurricanes of the 1840s virtually wiped out coffee to the advantage of sugar, which could recover more quickly, and how sequential bad weather in the 1860s helped throw tobacco into crisis. She explained the effects of hurricane disturbance and heavy rains caused by the phenomenon known as El Niño in contrast to the droughts caused by La Niña. A century earlier, in 1775, drought conditions in the north coastal region where we would be filming were the cause of a cattle disease that hit ranching hard. Conversely, as recorded in Cuban newsreel coverage, it was rain that devastated the coffee belt around Havana in 1968 and in 1983 hit Cuba’s sugar and tobacco harvests hard.

There is a backdrop of political, economic, and social history. Cuba’s nineteenth-century expansion of coffee, sugar, and slavery took off after the Revolution of 1798-1804 in Saint Domingue, during which French exploitation of both commodities was cut short. Tobacco also took off as Cuba opened to free trade after Spain ended its monopoly there in 1817, albeit retaining Cuba as a Spanish colony. Of these three commodities, sugar would become prevalent. As sugar plantations grew in size, they became more centralized and industrialized, with huge steam mills serviced by a rail network, technologically modern for their time, but worked by slave and contract labor and accompanied by the mass destruction of Cuba’s natural forests. In the words of Reinaldo Funes Monzote, “the biggest transformation of the Cuban landscape is due to sugarcane”. Wood was used for construction and fuel, causing the depletion of the soil biodiversity that had for centuries been stored in the forests, which the cane, in turn, depleted further.

Since the early nineteenth century, Cuba has experienced the rise and fall of three cane sugar frontiers, each linked to political developments. Under Spanish colonial rule, Cuba rose to account for 40% of the world’s sugar - and continued to be the world’s largest sugar producer until the 1920s - but was badly hit in the latter part of the nineteenth century during the dual struggle for the abolition of slavery (1886) and independence from Spain (1898). In the early decades of twentieth-century U.S. dominance, U.S. sugar companies forged a second sugar frontier, recruiting migrant labor from neighboring Caribbean countries, especially Haiti and Jamaica, to expand production in eastern Cuba. In the 1920s, Cuba still accounted for around a third of the world’s production of cane sugar, and 20-25% of total world sugar output. Competition from other producers then increased. Internationally, beet sugar had started to undercut cane sugar from the mid-nineteenth century on, though cane sugar still accounted for some two thirds of global sugar production during the first half of the twentieth century.

Sugar would continue to dominate the Cuban economy through the 1950s, and its very dominance along with increasing labor unrest fed insurrection. After the revolution, there was a brief attempt to diversify away from sugar dependency, but from the mid-1960s until the 1980s, a nationalized sugar sector was rebuilt, creating a third frontier expansion, primarily for export to the Soviet Union in what became known as the oil-for-sugar swap. When this ended in the early 1990s, and Cuba was left without oil and with an outdated mill infrastructure and technology, when world market prices for sugar were at an all-time low, the government decided to close down half the country's sugar mills as being uneconomical to run. In the documentary, Oscar Zanetti Lecuona encapsulated the rise and demise of this third frontier:

Cuban sugar production continued increasing at a time when production was practically paralyzed throughout the Caribbean - and even disappeared, as in the case of Puerto Rico. This was because of the connection with the Soviet market, and of the other European socialist countries. As a result, while under capitalism, in the 1950s the average sugar harvest was around five million tons; in the 1980s, it was around eight million tons... The Cuban industry grew during the 1970s and 1980s. It had become mechanized, above all because of the exceptionally elevated prices that the Soviet Union paid. This was not out of charity, but because the cost of producing beet sugar in the Soviet Union was very high; and so even when they bought Cuban sugar for three, four or even five times the price of sugar on the world market, it was a good deal for them... When the Soviet Union disappeared... Cuba had to turn to the international sugar market.... to sell its sugar at a price that could be three times less than what it was being sold at two years previously, with production costs that were increasing. But production was maintained largely because it was the only source of income that the country had. But while the 1989/90 harvest was in the region of eight million tons, in 1994 only four million tons were produced.

The economic and sociocultural impact of this was traumatic. While closing as far as possible the less productive and more technologically outdated sugar mills, and aiming to spread the closures as fairly as possible across the country, in the Remedios-Caibarién region only one of the 24 sugar mills was left functioning.

Whole sugar mill communities lost their livelihood overnight, buildings sank into decay, and old and young were left reeling in what some referred to as worse than a hurricane coming through. Ana Vera Estrada (2012) in the documentary highlighted: "There was significant technical potential, young graduates from vocational schools, and also university level, who had trained for specialist work in the sugar industry". After the industry disappeared, some found work in the tourist sector, leaving behind them derelict buildings and communities of older vulnerable people. Others who stayed took up options for leasing and clearing state-owned land previously given over to sugar, often by then overrun by sickle bush, to grow root crops, vegetables, and fruit, primarily to meet local needs, propelling an about-turn from large-scale state agriculture to small peasant production.

Four of the mills closed were transformed into sugar museums, all four near to areas designated 'tourism poles', one of them on the outskirts of Caibarién, on the main road to the nearby keys. The museum bears testimony to greatness in its time,

with brightly painted rolling stock of industrial plant and steam locomotives that once plied the rail network, receiving the sugarcane and conveying the processed sugar to the nearby rum distillery and the coast. Target visitors included groups of tourists on guided coach tours from hotels on the keys, by-passing Caibarién itself, which was left crying out for greater synergy. Environmentalist Armando Fernández Soriano (2005) poignantly drew attention in the documentary to how Caibarién, in tandem with other ‘satellite’ towns near beach tourist resorts, such as Cardenás, near Varadero, further west along the same stretch of the north coast, had been left relegated:

All these small coastal settlements could have an economic reactivation if the connections between public policy and tourism could be a bit more dynamic... One of the biggest problems for local development, of the localities that are peripheral to the tourism poles, is precisely that the tourism pole attracts most of the investment and most of the labor. That is, people move to where they can earn money to live a little better. And activity decreases in these communities. This is a phenomenon that is not only happening in Caibarién.

What was happening to Caibarién had not gone unnoticed. Gonzalez Herrera (2015) was among those who had been based in the Center for Tourism Studies at the Universidad Central Marta Abreu de Las Villas, located in the provincial capital of Santa Clara, directing theses, conducting, and publishing studies. Their findings argued strongly for an integral approach to tourism, which embraced environmentalism and especially investment in the architectural and cultural heritage of Caibarién, along with Remedios, as an essential complement to the beach resorts on the keys (González Herrera, Gómez Estévez, Uría Arbolase, García González, & Iglesias Montero, 2006; González Herrera & Iglesias Montero, 2009). Some investment would belatedly come to Remedios but little to Caibarién, other than that from overseas remittances, the north coast of Villa Clara having had one of the highest recent emigration rates in the country. This had at least helped some local people embellish their own homes, open small home-restaurants and cafés, and provide accommodation. Many municipal buildings, however, had either fallen into neglect or been torn apart by extreme weather events.

Caibarién’s nineteenth-century development coincided with Cuba’s sugar boom, not so much with production - it only had the one nearby mill - but with the export of sugar from the Remedios area, for which the railroad was instrumental (Venegas, 2009; Zanetti & García Alvarez, 1987). Caibarién saw its heyday in the 1920s and would recoup after the 1930s depression, though not to its previous level. Fishing and the export of sponges (Clarence-Smith, 2020) replaced some of sugar’s glory, though these became depleted. According to Abel Arnaldo González López – a Caibarién-born psychologist who at the time of filming was living in Havana and working as a tourist guide - the high-quality sponges that were considered among the largest in the world in their day and sponge fishing came to an end basically because the sponges were, in his words on the screen, “in danger of extinction”. González Reinoso also remembered “seeing the docks full of those sponges that were monstrously big, which they cut up with scissors, to make smaller for export” and added: “Sponges,

like corals, began to suffer deterioration in their proliferation due to the pollution of the sea, and the rise in temperatures. They are sensitive, like the corals, to all those adverse conditions that have been ruining some parts of the ecosystem.”

González López depicted the history of Caibarién with a strong commercial class and, also, a strong worker tradition. In its heyday, it boasted hotels, international banks, cinemas, and theatres, the last of which collapsed under the impact of Irma; and a craft industry once produced mosaic tiles. Zanetti Lecuona similarly described the period as “one of splendor for the city, not just architecturally but also with the visits of intellectuals and scientists”. González Reinoso spoke of Spanish poet Federico García Lorca and Chilean poet Gabriela Mistral, two epic figures of Hispanic and Hispanic American literature, visiting Caibarién in the early 1930s.

A later watershed for Caibarién would come in the 1970s, when bulk sugar shipping was introduced in Cuba. An earlier attempt in 1950s Havana had failed due to strong worker opposition. In the 1970s, however, with the increased scale and mechanization of the industry nationally, this was deemed necessary and meant Cienfuegos, given its size and deepwater bay on the south coast, would supplant Caibarién as the major sugar port for central Cuba.

Today only derelict remains of warehouses and wharves line the old port area, alongside a small fishing cooperative, and a couple of huge sponges can only be seen in a local museum. The nearby beach has suffered, too. As González Reinoso explained:

The beach’s existing structures were demolished. It had walls that divided it into segments - based on a very old study showing that with artificial sands on improvised beaches, the only way to stop the waves eroding the sand, is the construction of containing walls.

The beach had been socially as well as physically divided in the past, with a part for the private Yacht Club, another for the military, and a third part for the poor and blacks. While welcome socially, the removal of the containing walls had repercussions in that the sand is continually washed away and has to be replenished.

The coast is also polluted with contamination flowing downriver from sugar mills still functioning in the region, the Mulata rum distillery, and even from the local hospital since the waste-disposal plant stopped working and has yet to be repaired, and a large amount of sediment is accumulating on the coast. At the same time, Caibarién is among 70 coastal settlements most affected by sea-level rise, and among 20 that will be seeing the most impact within 50-80 years. The sea level rose by about a meter with Irma, though, as Morffi pointed out, for all people criticize the recently built Caibarién seawall, “it acted like a breakwater holding back the waves”. However, he also went on to say, the sea level is rising in periods of non-extreme weather events, a change which is upon us, not in “thousands of years, nothing like that, but rather decades, so any young person now will experience the impact of the rising sea level. More than 30 percent of Caibarién’s coast is going to disappear in a matter of decades.”

Hurricane Irma lashed into the causeway from Caibarién to the hotels on the keys. Up to km10, and bridge no.6, the damage was minor, mainly to the containing

barrier and the northern side of the breakwater, but leaving it impassable for access to the keys. The damage compounded questions that had been raised environmentally. González López recalled:

When I heard that they were going to make the causeway, I said that it was going to have an impact on the biosphere. They tried to reduce this, having had the experience of the Bay of Los Perros, and the causeway that was built between the north of Ciego de Avila and Cayo Coco. They built some 48km of road and 49 bridges... They foresaw that having the bridges would allow the marine currents to flow, and so the impact was less. But there is always an impact... and the ecosystems that are weakest, most fragile, or most vulnerable, are partially or completely affected by the strongest. Of course, you also have to consider the conditions the country was in at that time. It was a special situation... The economy collapsed almost 40% in barely four or five years. Tourism was to be the great engine driving the economy, bringing hard currency into the country.

There is, of course, an irony to this. In the Caribbean, many associate tourism with the plantation era, a legacy of colonialism, the same dependent relationship between poor and rich countries, and, in the words of Funes Monzote: “tourism has an enormous environmental cost because of the flow of materials and energy for journeys. Bringing people to the Caribbean costs a lot.” Originally the Caribbean exported calories. “Now we have to think how many calories are needed to bring all this tourism infrastructure... food imports... demand for water.”

Alternative smaller-scale forms of tourism have evolved, including ecotourism, as at Las Terrazas, west of Havana, featured in the third part of the documentary, where major reforestation and local community project was initiated back in 1968. Environmental concerns predate Fidel Castro’s impassioned speech to the 1992 Earth Summit in Rio de Janeiro, but equally that speech boosted environmental thinking and practice in Cuba (Castro, 1994; *Temas*, 1997, 2013). The strictures of the 1990s Special Period also engendered new initiatives of sustainable organic farming (Funes Aguilar & Vázquez Moreno, 2016; Rosset & Benjamin, 1994; Wright, 2009). Among those in Cuba who took up this mantra is Fernando Funes Monzote, a trained agronomist and since 2012 an organic small farmer. He spoke eloquently when filmed at his farm, Santa Marta:

[T]he world is now living through a Special Period. There are many reasons why we need change in the world’s agricultural system, and it is necessary - not only in Cuba, but in every country of the world - to rethink.... not only how food is produced, but how agriculture connects with the rest of society. And there are many people working on this. Many people around the world, from their own communities, with their own difficulties and their own problems, not only related to technology and how food is produced but, also economic and social changes. And also the impact climate change has had... Access to water. Prolonged droughts. The passing of hurricanes or tornados, and different climatic events that affect agriculture, are no more than a response by nature to the bad management of these natural resources. If we succeed in establishing agricultural systems that are more respectful of the environment, but which are also more socially viable, equal, and fair, then we can think of the world having a sustainable future.

A geologist by training and an avid advocate for environmental education, Manuel Iturralde (n.d.) elaborated on the historic contradiction between society and nature:

Society... occupies a space and... upsets the environment... There was a time in which there was the false concept that [nature] was there for us to make use of. That is a commodity that I can use whenever I want. I pull down that mountain, and we fabricate all the cement that the world needs, to make another mountain of cement, of concrete. We dig deeply to bring out all the resources of the Earth... But if we modify the environment in which we live too much, then the point will be reached in which the environment becomes hostile for us. And it is our fault.

FANJ President Liliana Núñez Velis (Núñez Velis & Sánchez, 2018) exhorted us to understand that we must be active citizens, “searching for solutions based on nature, and not confronting nature”, something she feels has not been fully taken on board in any system, socialist and capitalist, although it is accentuated more under capitalism, given the strength of consumerism”. Against a backdrop of many attempts at geotransformation in Cuba (see Núñez Jiménez, 2018), she made a strong case for “much that can be learned, for example, from traditional construction and practices more in harmony with the environment”. One of the main tasks facing FANJ, as she sees it, is to build on the excellent work of Cuba’s Civil Defense disaster management and extend this to preparing all sectors and levels of the government, the economy, and society for greater environmental awareness and action.

LIVING WITH TOURISM

Hurricane Irma demonstrated graphically that tourism is a sector in which at all levels the need for environmental awareness and action is paramount. The Caribbean Leeward Islands were hit first, when Irma was a category 5 hurricane, with catastrophic damage in Barbuda, Saint Barthélemy, Sint Maarten, Anguilla, and the British Virgin Islands. It weakened to category 4 as it hit Culebra and Vieques Islands, northwest of the Puerto Rican mainland, and passed south of Turks and Caicos Islands to flatten Little Inagua in the Bahamas. It then built up again to category 5, making initial land-fall on Cayo Romano, off the northeast coast of Cuba. It moved westerly along Cuba’s north coast keys, reducing in intensity, then becoming almost stationary, with winds of over 200kms and lashing rain, when it reached the mainland over Caibarién. In its wake, it left flooded coastal settlements, ripped-up vegetation, and buildings in various states of collapse. This included the many resorts on the north coast keys, where a clean-up and recovery operation was rapidly put into action in preparation for Cuba’s peak international tourism season due to start just two months later in November.

Navarro Jurado (2011) delineated four phases of tourism in Cuba: pre-revolutionary tourism 1902-1958, domestic tourism 1959-1970, territory-wide tourism reactivation 1970-1989, and foreign-investment-led international tourism with primarily Spanish hotel investment (post-1990). He also highlighted a vicious cycle

of 'mature' destinations, akin to what tourism experts such as Butler (2006) had by the late 1970s identified as the Tourism Area Life Cycle (seen by some as averaging 25 years): from a pre-tourism era of exploration; through domestic and international development, consolidation and stability; to stagnation and either a post-tourism era or rejuvenation. Turning points and critical junctures are linked to ecology and product life cycle, especially when the tourism destination is developed without consideration for its future preservation, thus leading to issues of sustainability of the environment and quality of life for residents and tourists alike. Linked to this are limits of acceptable change, carrying capacity for sustainable management, and Quality of Life, as highlighted in the case of Cuba, according to Beardsley (2016).

Tourism in Cuba was given a particular boost in the 1920s, when it attracted those seeking to escape U.S. prohibition laws on drinking, and by the 1950s casino-type tourism was contributing to a peak of over a quarter of a million, mainly U.S. visitors (Schwartz, 1997). In the early years after 1959, tourism was downplayed, though started to develop again nationally as of the 1970s, when the Institute of Tourism was set up, and internationally as of the 1990s, with the creation of the Ministry of Tourism (MINTUR) and tourism designated as a key strategy for rapid national recovery and development.

Depending on tourism for development has had its advocates and detractors, among them Barberia (2002), Espino (1993), Feinberg & Newfarmer (2016), Figueras (2004), Hall (1992) and Perelló Cabrera (2019). Positive ventures singled out have been the Havana City Historian's Office restoration of Old Havana, which acquired UNESCO World Heritage Site status in 1982, replicated on a smaller scale with the restoration of Trinidad (acquiring UNESCO status in 1988) and other cities down the island; and the Sierra del Rosario, including Las Terrazas and the Soroa Botanical Orchid Garden, accorded UNESCO Biosphere status in 1984. Foreign investment, however, went mostly to develop all-inclusive beach resort tourism, overwhelming all other forms of city, nature, events, and health tourism. The all-inclusive resort tourism might have seemed the best for short-term return, but, as pointed out by many, ran the risk of high consumption of resources, loss of tourism attraction, and irreparable damage to geosystems (Salinas Chávez & Salinas Chávez, 2017).

Except for a downturn in the global recession of 2008, Cuba's international tourism grew exponentially to four and a half million visitors in 2019. By then, tourism had long outflanked sugar, having grown from accounting for only 6% of Cuba's balance-of-payments income in the early 1990s - when sugar accounted for 70-75% - to 43% in 2015. As in the rest of the Caribbean, beach tourism, in particular, was heavily dependent on the seasonal preferences of principally Western Europeans and Canadians escaping their winters, creating marked high and low seasons in the eight main resort regions identified as tourism poles. While on the increase, visitor numbers from Latin America and further afield, such as Asia and Eastern Europe, and for alternative forms, such as home-stays and cultural and ecotourism, remained small by comparison.

MINTUR from the outset declared that the potential of international tourism to generate large returns quickly should also be sustainable, not at the expense of society or the environment. Cuba's national environmental framework was simultaneously developed in tandem with international and regional initiatives under the Cuban Ministry of Science, Technology and the Environment (CITMA) and is considered today one of the most robust in the world. By 1997, CITMA had launched its National Environmental Strategy and Territorial Environment Strategies. Environmental Law 81 set out a framework for marine and land environmental management, including Decree-Law No 201 for a National System of Protected Areas, ranging from Protected Areas of National Significance, Protected Areas of Local Significance, and Special Areas of Sustainable Development, and Decree-Law 212, which delimits the coast zone, bars construction 40 meters from the coastline and regulates sustainability of the coastline and communities living there. Protected areas of land and sea with a marine-coastal component are subject to permitted levels of conservation and activity. Ensuring protection in practice has yet to catch up with such laudable goals, but Cuba nonetheless has some 25% of its marine waters under protection, placing it among the world's top nations.

That Cuba's mass tourism development came later than in the rest of the Caribbean and Central and South American region meant it was possible to learn from many of the most detrimental effects visible elsewhere, avoid the homogenization other destinations have experienced by creating a more diverse built environment, and pass laws to protect areas to nurture a wealth of biodiversity in terrestrial and marine ecosystems. The tourism strategy was not, however, devoid of sociocultural and environmental impacts. Varadero replicated the large hotels on the beach all too often seen elsewhere, and Cuba now has one of the highest levels of all-inclusive resorts in the Caribbean. Tourism enclaves of plenty amidst a shortage economy and growing inequality brought unwanted spinoffs along class, race, and gender lines, including a resurgence of sex tourism that drew an early barrage of attention.

Perhaps the greatest failure in planning for the natural environment was in the 1980s, when the 20km causeway was built from the mainland to the chain of keys (one of which is Cayo Romano, where Irma hit first) off the north coast of Sancti Spíritus and Camagüey provinces, and destroyed the ecosystem by blocking the tidal flow. The causeway was refitted with bridges, or cuts, allowing water to circulate and enable significant recovery. It was a lesson heeded when it later came to building the causeway to the keys off the north coast of Villa Clara, in the region of Caibarién, though neither has that been without impact.

Due to its later pace of development coupled with strong environmental laws, an extensive network of protected areas, and strong government commitment to environmental protection, leaving a wealth of biodiversity and healthy terrestrial and marine ecosystems, Cuba has been seen as less vulnerable to the levels of commodification affecting many Caribbean destinations. Nonetheless, in 2017 figures, Cuba was importing 60-70% of foods, whereby tourism was competing with local needs;

60% of commercially valuable fish stocks were in decline and one-third overexploited, and overfishing was a major factor in the demise of coral reefs. Moreover, mass tourism increased the energy demand when Cuba's energy needs are primarily met by importing oil. Before 1959, Cuba's oil was in the hands of U.S. companies; from the 1960s to the 1980s oil came from the Soviet Union; and in the aftermath of the 1990s supplies were forthcoming from Venezuela, itself the target of U.S. hostility and restrictions, such that supplies increasingly started to dwindle. With only around 4% of Cuba's energy coming from renewable sources, the implementation of Cuba's Green Energy Development Programme will be crucial. Most of Cuba's renewable energy is biofuel, largely derived from sugarcane bagasse, while solar, biomass, hydroelectric, and wind energy projects remain small by comparison.

There has been increasing support for ecotourism, to manage resources to promote biodiversity and ecological as well as economic and socio-cultural needs, helping local communities to help themselves become more resilient. In the words of one recent study: "Robust economic valuation of Cuba's natural resources, in combination with strong community engagement, will be essential to ensure the long-term protection of Cuba's ecosystems" (Mooney Walton, Hughen, Guggenheim & Escobar-Fadul, 2018, p.117). In this vein, the Las Terrazas ecotourism developed in tandem with a major reforestation and community project featured in the documentary exemplifies what can be achieved with national planning and local input.

Ever since Hurricane Flora took Cuba by surprise in 1963, ravaging eastern and east-central Cuba, leaving a death toll of 1,000 and many more injured and displaced, disaster-management measures put in place have led to what has become an excellent Civil Defense rapid-response capability. Evacuation and other preventive measures have ensured the minimal loss of life, and major state recovery operations have guaranteed to restore electricity and other supplies in record time (Kirk, 2017).

And yet, in 2017 Hurricane Irma came as a new wakeup call. Earlier that year, an all-encompassing major national plan called Project Life (*Tarea Vida*) was adopted, one that had been a decade in the making and is designed to take pre-emptive action in light of climate change with a view to 2030 natural resource and environment objectives for sustainable development. In the words of Dalia Salabarría Fernández, a marine biologist at the National Center for Protected Areas, "Cuba learned a very important lesson", and she was echoed by Orlando Rey Santos, head of CITMA's environment division, who declared: "Irma indicated to everybody that we need to implement Project Life in a much more rapid way" (quoted in Stone, 2018).

With thousands of kilometers of low-lying coast in the path of Caribbean hurricanes, seen to be intensifying with climate change, Irma lent new urgency to the measures driving Project Life. These include prohibiting the construction of new homes in threatened coastal areas, relocating people from communities threatened by rising sea levels, shifting crop production away from saltwater-contaminated areas, and prioritizing the need to strengthen coastal defenses and restore degraded habitat to increase the resilience of vulnerable communities. According to CITMA,

seawater rise will submerge and contaminate whole swathes of land, unless mitigated by coastal engineering, restoring endangered mangroves, repairing coral reefs exposed to industrial waste, and convincing people to relocate. Priorities are also to adapt agricultural practice and thereby improve food security, given both sea level rise and also heavy rainfall and flooding oscillating with drought, by improving soils, diversifying crops, and introducing strains more resistant to temperature rise.

For the cash-strapped Cuban government, it is undoubtedly an ambitious plan, requiring significant investment. A widespread conviction remains that tourism is still the sector best equipped to revitalize other productive sectors of the Cuban economy and thus improve the welfare of society as a whole. As 2017 drew to a close, the most significant outcome, after having had to deal with the ravages of Hurricane Irma, was that rapid recovery from the damage to tourist facilities meant the high season could get off to a start in mid-November. Yet Irma had also made it obvious that goals of sustainability and adaptation to climate change were essential for the future development of tourism itself.

Project Life priorities for the tourist sector are directed at preserving beaches, coasts and sea-beds; eliminating tourist facilities on, and restoring damaged sand dunes; preserving mangroves; addressing the structural vulnerability of heritage buildings; encouraging the reuse of water for irrigation of golf courses, hotel and resort lawns; and increasing the use of renewable energy sources. After Irma, the government aimed to spend at least \$40 million on Project Life and approached overseas donors for help. Italy was the first to respond pledging \$3.4 million to the initiative in November 2017, an appeal went out to the Netherlands to lend its expertise in coastal engineering, and bids were drawn up for further international support.

The challenge with tourism had been how to create greater synergies with the rest of the economy and society and to work with communities for local environmental awareness and action. With the onset of Covid, however, the challenge would be how to implement the latter without tourism and the much-needed resources it had hoped might be engendered.

LIVING WITHOUT TOURISM

“Some compare what’s coming with a category 5 hurricane³” was how two reporters (Borrego & Morejón, 2020) summed up the economic forecast for Cuba under Covid. They were writing for the *Escambray* newspaper of Sancti Spiritus, capital of the province of the same name adjacent to Villa Clara, not that distant from where we had been filming, and at the time a Covid hot spot. Assessing the economic costs that would inevitably be felt worldwide, they put these on the magnitude of the 1929 Great Depression. The IMF was projecting a 3% contraction in the global economy, with spectacular drops in developed nations such as France, Germany, Italy, the U.K., and the U.S. What chance for an underdeveloped country like Cuba, they asked.

The Economic Commission for Latin America and the Caribbean (ECLAC) had just issued a prognosis of the economic and social impact on the region in the order of a 5.3% drop in GDP, for Cuba 3.7%. These proved to be very conservative estimates: two months later, ECLAC was predicting an 8% drop in Cuba's GDP, and by the end of the year the official Cuban government figure was 11%.

The *Escambray* reporters interviewed Oscar Luis Hung Pentón, president of the National Association of Economists, about the economic fallout and options facing Cuba as a result of the pandemic and put to him a specific question about the outlook for Cuba's international tourism. In a vein reminiscent of earlier advocates for health tourism (Spiegel, J.M., González, M., Cabrera, G.J., Catasús, S., Vidal, C. & Yassi, A., 2007), he replied: "Now is the opportunity for an alliance between tourism and health. Cuba needs to develop health tourism more strategically, with linkages to agriculture and industry. I believe tourism can retool to become a model based on nature and health." He also added: "This is no time for grand hotels with communal pools, restaurants with buffet service, or tourism crowding our towns and cities." His words would prove prescient.

At the time, Cuba appeared to have Covid under control, with one of the lowest case and death rates, achieved through a community-based track-and-trace strategy and rigorously imposed quarantine, the use of drugs developed by its biotechnology, and the closure of its borders to all but humanitarian and commercial basic needs. In June (which for Cuba is the start of the hurricane season), the United Nations Food and Agricultural Organisation - which had released emergency funds to assist agriculture and fisheries in the wake of Hurricane Irma - provided aid for vulnerable municipalities to assist the domestic agricultural sector to boost sustainable food systems resilient to weather events.

In July, when everything indicated that, with scant resources, Cuba had controlled the pandemic, reporting few cases and a cumulative total of only 87 deaths, a dual-track strategy was announced of allowing national tourism on the mainland while restricting international tourism to the natural environment of the offshore keys, with stringent health requirements and monitoring. A raft of economic reforms was also announced, many of them agreed a decade earlier but not implemented. The government went to great lengths in the Cuban media to explain its liquidity crisis and the dramatically worsening economic situation, with fewer oil shipments from Venezuela, fewer overseas medical exchange programs, fewer remittances from abroad, the underperformance of domestic agriculture, and tourism brought to a halt. According to several sources, some 95% of new investment had gone into tourism, contrasting with only 5% in domestic agriculture, thereby exacerbating dependence on imported food and other goods, when Cuba had no solvency or credit. For the Cuban people, this translated into even greater shortages of basic foods and other products, including some basic medicines.

Minister of the Economy Alejandro Gil drew attention to the four months without tourism that translated into a sustained loss of income, having had to stop exporting some products and in others having faced a drop in international market demand, and

having had additional costs in the health sector to finance isolation centers and the like. His summing up was that an economy with zero tourism and a tightened U.S. blockade could not continue as previously planned. The new strategy incorporated seven strategic principles: centralized planning, increased domestic production and import substitution, indirect market regulation, complementary state and non-state sectors, internal demand playing a multiplier role, greater business autonomy, and an environmental policy in harmony with social order and sustainable development. Covid, combined with the actions of the U.S. government, had in effect eroded the possibility of foreign-investment-led growth, shifting the focus - finally in the eyes of many economists - onto how to reorient the growth model by reanimating the domestic economy.

Amidst the increasingly serious situation, and especially worryingly for environmentalists, the effort to boost domestic food supplies extended to approval in July for controlled genetically modified (GM) farming. The Centre for Genetic Engineering and Biotechnology (CIGB) had since the late 1980s planned research in several transgenic crops (sugarcane, potato, papaya, maize, sweet potato, rice, tomato, banana, coffee, pineapple, and citrus). In 2008, CIGB oversaw the first open-field tests of GM maize, and cultivation was expanded in 2009 in an attempt to mitigate the effects of food security caused by the succession of a tropical storm (Fay) and two hurricanes (Gustav and Ike) that hit the island hard the previous year. Little more appears to have been reported on this until the July 2020 announcement of the new Decree Law and National Commission for the Use of Genetically Modified Organisms (GMOs) to oversee regulation and risk management, which would be chaired by CITMA.

Leading Cuban economist Triana (2020) drew attention to the volume edited by Funes Monzote and Freyre Roach (2009), highlighting the risks of GM agriculture, and Triana himself was skeptical regarding the declaration in its defense by CITMA Deputy Minister Armando Rodríguez Batista:

The essential thing is to incorporate the orderly and controlled use of genetically modified organisms in agricultural development programs as an alternative to develop productivity, consistent with sustainable agriculture and food sovereignty, based on local research... Cuba seeks to use this and not practices that in other contexts have had an environmental impact. Cuba can take advantage of the production and technological capacity it has, but doing so with an environmentally sustainable approach (quoted by Triana).

Achieving synergy between GMOs in agriculture and agricultural and environmental sustainability is indeed a very high goal, but how can their use be compatible with food sovereignty, environmental sustainability, nutritional quality, and local food production systems, Triana asked. He highlighted the amount of land idle or poorly cultivated and the possibility of raising yields by 'traditional methods', producing cassava, for example.

As the situation continued to worsen, the European Union (EU), within the framework of the Cuba-EU renewed political dialogue of 2016, in November agreed to provide 1.5 million Euros to mitigate the impact of the pandemic. The following

month, the government announced the January 2021 implementation of the long-anticipated monetary reform: phasing out the Cuban convertible peso and leaving in circulation the U.S. dollar (with other foreign currencies pegged to it) along with the Cuban peso, which in effect became a devalued domestic currency. Prices of basic foodstuffs and other necessities (when and where available) were to double, triple and quadruple, beyond the means of many. Mitigation measures taken earlier by way of salary increases in the state sector fell short, those in what had until the pandemic been a growing private sector lost out, and many others found themselves outside any net. Covid and exacerbated financial and economic problems provided a window for what might have been otherwise politically unpalatable economic reforms, which further accentuated previously growing inequalities.

A sign of how serious the situation had become was when, in December, the government risked opening up completely to international travel, allowing visitor home stays as well, in the hopes of kick-starting a growth of 7% in 2021. The figure was much criticized as unrealistic, presaged as it was on a prioritized reopening of tourism. The reopening went ahead, with Covid controls in place, but in the home-stay sector these were said to have often been flouted, and, amidst inevitably long queues for essentials, Cuba found itself battling a Covid resurgence on a scale not seen during 2020, especially in Havana but also across the island. Daily new cases by mid-June were topping 1,500 a day and the cumulative figure for deaths was over 1300. The race was on to complete trials for five Cuban vaccines to roll out a mass immunization program over the coming summer months, a program in jeopardy unless a way could also be found to remedy a shortfall in syringes.

The anticipated income from Covid-safe international tourism on the keys turned out to be illusory, depending as it did on the evolving situation in sender countries - primarily Canada and Europe, where lockdowns and travel restrictions were in place. In 2020, Cuba's international tourism was down to just over a million, the level it was in 1996, way below the peak of 4.7 million in 2017 and the anticipated 4.5 million before the pandemic. In the first two months of 2021, it dropped 95.5% in comparison with the same two (pre-pandemic) months in 2020. The Spanish hotel chain Meliá reported an 84% loss of income in 2020, with 60% of its 35 hotels on the island closed due to the pandemic, and in March closed two on the north coast Cayo Guillermo and one on the south coast Cayo Largo.

Meliá on Santa María key in the Caibarién corridor was spared, though without any significant tourist take-up, nor would there be any significant improvement for Caibarién, when it was not among those to benefit in a March 2021 United Nations Green Climate Fund million-dollar aid package to CITMA. Designated to strengthen the coastal resilience of ecosystems to climate change - restoring mangrove, swamp and marine vegetation, coral reefs, and container walls to protect against sea level rise - this was to go to 24 municipalities and seven coastal settlements in the provinces of Pinar del Río, Artemisa, Mayabeque, Ciego de Avila, Camagüey, Las Tunas and Granma.

As reported back in August 2020, in an article published in *Vanguardia*, the local Santa Clara newspaper, and subsequently front-page news in the national *Granma* (Pérez Cabrera, 2020), the action plan for the Caibarién corridor approved earlier in the year had been accorded priority implementation. Mention was made of the Coastal Resilience project funded in 2017 by the EU and United Nations Development Programme. The article ended, however, on a cautionary note: that this would “depend on how the plan is taken up by the authorities, how people are involved, and of course the objective conditions of the country.” The conditions had been far from conducive.

DOCUMENTARY AS A TOOL FOR RAISING AWARENESS

In March 2019, when the research was underway for the documentary, Cuban President Miguel Díaz Canel gave a speech to those gathered at the Caribbean Environmental Summit in Managua, Nicaragua, in which he declared:

Every one of us understands what we are talking about. The intensity and persistence of natural diverse phenomena in the Greater Caribbean constantly punishes us with the adverse effects of climate change, in particular the Small Island Developing States. Living between hurricanes has conditioned our lives. It has modified our geographies and spurred our migrations. And it has also educated us in the need to further study the phenomena that afflict us and work to reverse their damage.

Very much in the spirit of the planned documentary, his words provided a perfect title, and footage was included of him giving the speech, in the preamble to which he read the oft-quoted poem *El Caribe* by the late National Poet of Cuba, Nicolás Guillén: “In the aquarium of the Great Zoo/swims the Caribbean./This seagoing and enigmatic animal/has a crystal crescent./a blue back, a green tail./a belly of dense coral./grey fins of cyclone speed./In the aquarium, this inscription:/Beware: it bites.” (Guillén, 2002).

True to warning, it wasn't all plain sailing. Two changes were afoot in Cuba that impacted on filming in June and July 2019. The first was a new decree law recognizing independent filmmaking, though ICAIC still needed to approve filming permission. The second was to grant greater autonomy and decision-making powers to municipalities, away from the provincial and national government. As an independent filmmaking venture, the necessary filming permission was secured from ICAIC. However, this did not filter down to the municipality of Caibarién. The ins and outs of why this happened were never made clear, but local political sensitivities swung into play, forcing a stop to filming there. Fortunately, filming later in Las Terrazas and Santa Marta would more than compensate.

By October 2019, when the first cut was ready for a participants' viewing, Cuba was under pressure. Fresh U.S. sanctions on oil shipments from Venezuela had plunged Cuba into a fuel crisis. There wasn't enough petrol in the pumps. People were instructed to stay home if they lived too far to walk to work. There was huge pressure on public transport. Priority was given to hospitals and food distribution.

Nobody could say for sure whether any cinema projection facilities would be up and running, nor was it clear that anyone would be able to make it to a screening, or one could even take place, and much less so in Caibarién. In the event, a screening was held at the Film Institute's Chaplin Cinema, in sweltering heat since there was no air conditioning, for a small intrepid gathering, and a car was secured to reach Remedios and overnight for an intimate second screening there.

In December 2019, the finished documentary was launched in Havana during the 44th International Film Festival, with opening words by FANJ President Núñez Vélis and the British Ambassador to Cuba, Anthony Stokes, who had been involved in overseeing British aid for recovery in Caibarién after Hurricane Irma. Camagüey-based Cuban film critic Juan Antonio García Borrero and Spanish academic Maria Luisa Ortega, visiting for the Festival, led a post-screening Q&A. They each reflected on how the documentary had made them think about issues in their own lives, García Borrero in terms of other small Cuban towns past and present, and Ortega on the vulnerability of tourism-dependent areas in Spain such as the Canary Islands.

Audience discussion revolved around the challenge of getting the documentary 'out there', on television and social media, and in communities.

In January 2020, a dedicated website was set up (livingbetweenhurricanes.org), with the finished documentary available as an open-access digital resource, to be viewed as a single full-length documentary (70m) or in three separate parts for use in teaching and for reaching wider audiences, with English and Spanish versions (and one to come in French). Supporting materials regularly added to the website include a companion book ([Curry-Machado, 2021](#)).

The pandemic put paid to plans for in-person dissemination across communities and institutions in Cuba and limited national internet access meant neither was it feasible to schedule online screenings there either. Only one in-person screening took place in the U.K., before having to move to online screenings followed by Q&A. To date, these have been hosted in the U.K., Europe, U.S. and Canada, as well as at international conferences, such as one in Guyana, with more to come.

In a personal communication, Spanish academic Concha Mateo described the documentary as a very timely and enjoyable "epic poem... with a critical view and with threads of nostalgia, but with serenity, with an open attitude towards the possibilities for rescuing the connection with the earth, carrying a chronological historical sequence towards an open perspective." *Living Between Hurricanes*, she declared, "can mean many things. Cuba has always lived between hurricanes, of different kinds. One can have quite varied debates after watching the film."

This has proved to be the case. In summer 2020, the focus was on the phased post-Covid re-opening, economic reforms, and debates among Cuban economists, social scientists, and environmentalists regarding the linkages between Covid, the economy, society, and the environment - as when GM farming was approved - and how post-pandemic Cuba, and the world, might move forward to a more sustainable future. This continued through 2020 and into 2021, with Cuba's opening up to all

tourism, more economic reforms, and more debates, and Covid escalating amidst palpable shortages, inflated prices, and long lines for food and other essentials.

The local and the national were circumscribed by the global, not least the dramatic U.S. election of late 2020. While it is hoped that the Biden administration may provide breathing space by lifting some of the most onerous limitations placed on Cuba by the Trump administration, none anticipate a lifting of the U.S. embargo overnight. Amidst signs of rising discontent, how Cuba and Cubans respond to the current crisis is yet to be seen, but they undoubtedly again face an uncertain future.

Thompson & Gaviria, in a 2004 report for Oxfam America, were among many who celebrated how Cuba, with its limited economic circumstances, had demonstrated with its disaster preparedness that political commitment to saving lives is the basis from which so much else follows. Cuba's impressive work at the national level has created measures, structures, and assets that are fundamentally necessary in the long run. However, Cuba's increasing reliance on far more intangible assets such as local leadership, community mobilization, popular participation in planning, and social capital is what will be sorely needed to underpin the nation's severely dwindled tangible assets.

CONCLUSION

The coming years will, undoubtedly, be tough for the global economy and society, and international tourism, and yet there are those in Cuba who argue this is an opportunity not to be missed for a serious rethink. Torres (2020a, 2020b) reflected on how Cuba's economic growth had halved between 2016 and 2019, compared to 2010-2015. He elaborated on how factors such as the economic crisis in Venezuela, the cancellation of contracts for the provision of medical services, the end of the boom in international tourism, the effect of new U.S. sanctions, and the contradictions of the economic reform intervened in this. Significantly, he referred to how the weighting of one or another factor was the subject of wide debate in the country. For the average citizen, however, the clearest symptom of economic problems was the growing shortage of products of all kinds, including basic necessities such as food, medicine, and fuel.

While not equating the situation with the 1990s Special Period, the economic contraction and social stratification had accentuated, with a forecast of up to a fifth of Cuban households finding it hard to meet their basic needs. His verdict was that "any strategy based on export-led growth will be an uphill battle... Overdependence on one activity has proved disastrous too many times... It's not so much the external context... but rather the inconsistency of domestic policy... We are the ones pitted against each other" (Torres, 2020b).

The signs point in different directions. Social networks, which have become a mirror of the national reality, exude both optimism and hopelessness. Between 2010 and 2019, over a million left work in the state sector. Of these a little over 600,000 were reported as going into the private sector, leaving well over 400,000 excluded

from either, and by February 2021 over 250,000 (45.5% of those formally registered in the private sector) had terminated their licenses. While aspiring to social justice and yet recognizing current social injustice, what are the possible economic solutions? The Cuban government is not responsible for the pandemic, but everything that it stopped doing or was only half done impacted on a complex scenario. Can such exceptional circumstances serve to forge a necessary consensus for change and what should that change look like? These wrote Torres, are the questions people are asking.

Hernández (2021) similarly encapsulated the complexities of the situation: “Understanding the transition in which Cuba finds itself today, the political process that characterizes it during this moment, the ongoing debate about current policies and their scope, and the path that will open as of April is anything but obvious.” He made the important point, however, that there has been an inevitable re-evaluation of health, higher education, culture, and science, hitherto defined as “public services” and “budgeted sectors”, understood, that is, as “unproductive”. The challenges of the pandemic, he wrote, “have forced us to look more towards innovation and development in the production of high-end medicines and medical services, in contrast to sectors such as tourism, where more conventional representations prevail and with poor added value.”

Will such lessons be learned going forward from the perfect storm of a pandemic he, too, asked.

Fernández Soriano (2020) had earlier questioned the global paradigm of unlimited growth and the consumer culture, on a limited planet with increasingly scarce resources and all existence interconnected in the biosphere. Covid served as a warning, he declared, of the dangerous transmission of the virus to humans due to contact or consumption of wild species, shifting natural borders, and loss of biodiversity:

The global pandemic alerts us to the profound environmental changes caused by human action and its techno-industrial culture developed on the basis of fossil energy... After this pandemic, there will be no ‘new normal’, it will have to be another world that is built... with greater solidarity and conscious citizen participation, or it will be through more and more authoritarian mechanisms of power... Current and future generations will be forced to rethink their lifestyles or live in a dystopian world.

Cuba, he argued, presents a different if contradictory panorama: a poor country, blocked for 60 years by the world’s greatest power, with a declining economy and a large debt, without external financing and with a high illiquidity index, a ‘country risk’, and supply crisis threatening to turn into a food crisis as acute as the one in the early 1990s. And yet, Cuba has potential from an environmental point of view. Energy dependence is an Achilles heel for its economy and an accelerated increase in clean energies is needed. Financing dedicated to tourism expansion needs to be redirected to reactivating agriculture, when Cuba has a room capacity already far above pre-Covid market demand, averaging no more than 30% occupancy year-long in several tourism poles. To what end, he asked, the tourism development plans for the huge Punta Colorada megaproject in Pinar del Río, costing billions of dollars,

which will undoubtedly impact on the marine-coastal ecosystems of the northwest of the province and the Guanahacabibes and Viñales Biosphere Reserve. What Cuba needs urgently is to consolidate what works well, transform what is inefficient, and create an ecosocialist alternative shaped by citizen participation.

His words find an echo in the documentary: breaking with the false concept of treating nature as a commodity to do with as we please (Iturralde), finding solutions that are not in confrontation with nature (Núñez Velis), working for change from within our own communities and with our difficulties and our problems (Funes Monzote), and building greater individual awareness and action (Morffi). Cuba, like the rest of the world, is clearly at a crossroads. Current global strictures might sadly invoke a future that is less rather than more in harmony with nature, and more authoritarian than communitarian. In the struggle to make the latter a reality, hopefully Cuba and the documentary can play a demonstrable part.

NOTES

- 1 The project was made possible with funding for research networking from the U.K. Arts and Humanities Research Council.
- 2 Interviewee quotes included in this section are taken from the English-language translation for the documentary, and interviewees are first identified by their name and surname, along with dates for referenced publications if these have not been cited previously.
- 3 Author's translation into English for this quote and others that follow, when taken from Spanish-language publications.

REFERENCES

- Alimonda, H, Toro Pérez, C. & Martín, F. (Eds.). (2017). *Ecología política latinoamericana: Pensamiento crítico, diferencia latinoamericana y rearticulación epistémica*. Vols. 1&2. CLACSO.
- Barbería, L.G. (2002). Tourism as development or development for tourism. *ReVista, Harvard Review of Latin America*, Winter, 72-75. Retrieved from <https://archive.revista.drclas.harvard.edu/book/caribbean>
- Barbier, E. (2011). *Scarcity and Frontiers: How economies have developed through natural resource exploitation*. Cambridge University Press.
- Beardsley, M. (2016). Quality of Life, the Tourism Area Life Cycle and sustainability: A case of Cuba. In P. Modica & M. Uysal. (Eds.). *Sustainable island tourism: competitiveness and Quality of Life*. (pp.93-105). CABI.

- Borrego, M.L. & Morejón, Y. (2020, May 12). Cómo sobrevive la economía cubana en tiempos de coronavirus. *Escambray* (Sancti Spíritus). Retrieved from <http://www.escambray.cu/2020/como-sobrevive-la-economia-cubana-en-tiempos-de-coronavirus-fotos-y-video/>
- Butler, R. (Ed.) (2006). *The Tourism Area Life Cycle: Conceptual and theoretical issues*. Vols. 1&2. Channel View Publications.
- Castro, F. (1994). *Ecología y desarrollo. Selección temática. 1963-1994*. 2nd ed. Editora Política.
- Chanan, M. (2004). *Cuban Cinema*. University of Minnesota Press.
- Clarence-Smith, W.G. (2020). The Cuban sponge economy, 1850s-1980s. In E. Emery. (Ed.). *The global life of sponges: proceedings of the International Sponges Conference [SOAS, University of London], Island of Hydra, Greece, 19-20 May 2018*. (pp.141-6). RN Books. Retrieved from <http://www.geocities.ws/soasspongesconference2018/clarencesmith2.pdf>
- Coletta, M. & Raftopoulos, M. (Eds.). (2016). *Provincialising nature: Multidisciplinary approaches to the politics of the environment in Latin America*. Institute of Latin American Studies, School of Advanced Study, University of London.
- Curry-Machado, J. (Ed.). (2021). *Cuba: Living between hurricanes. Climate, commodities and sustainability*. Amaurea Press. Available read-only www.livingbetweenhurricanes.org.uk.
- Curry-Machado, J. (Ed.) (2011). *Cuban sugar industry: Transnational networks and engineering migrants in mid-nineteenth-century Cuba*. Palgrave Macmillan.
- Curry-Machado, J. (2005). Surviving the ‘waking nightmare’: Securing stability in the face of crisis in Cuba (1989-2004). *Working Paper 41*. Crisis States Research Centre. London School of Economics.
- De Castro, F., Hogenboom & Baud, M. (Eds.). (2016). *Environmental governance in Latin America*. Palgrave Macmillan.
- Espino, M.D. (1993). Tourism in Cuba: A Development Strategy for the 1990s?. *Cuban Studies* 23, 49-70.
- Feinberg, R.E. & Newfarmer, R.S. (2016). *Tourism in Cuba: Riding the wave towards sustainable prosperity*. Latin American Initiative at Brookings.
- Fernández Soriano, A. (2020, June 5). La pandemia, el medio ambiente y Cuba: Será posible un mundo igual después del coronavirus? Qué tenemos que cambiar? *On Cuba News*. Retrieved from <https://oncubanews.com/cuba/ciencia/medio-ambiente/la-pandemia-el-medio-ambiente-y-cuba/>.
- Fernández Soriano, A. (2005). *Comarcas vulnerables: riesgos y vulnerabilidad en el Gran Caribe*. CRIES.
- Figueras Pérez, M.A. (2004). El turismo internacional y la formación de clusters productivos en la economía cubana. In O. Everleny Pérez Villanueva. (Ed.). *Reflexiones sobre economía cubana*. (pp.85-99). Editorial de Ciencias Sociales.
- Funes Aguilar, F. and Vázquez Moreno, L.L. (Eds.). (2016). *Avances de la agroecología en Cuba*. Matanzas Estación Experimental de Pastos y Forrajes Indio Hatuey.

- Funes Monzote, R. (2020). *Nuestro viaje a la luna. La idea de la transformación de la naturaleza en Cuba durante la Guerra Fria*. Casa de las Américas.
- Funes Monzote, R. (Ed.). (2008) *Naturaleza en declive: miradas a la historia ambiental de América Latina y el Caribe*. Centro Francisco Tomás y Valiente UNED Alzira-Valencia, Fundación Instituto de Historia Social.
- Funes Monzote, R. (2004). *De los bosques a los cañaverales: una historia ambiental de Cuba 1492-1926*. Editorial de Ciencias Sociales.
- Funes Monzote, F. & Freyre Roach, E.F. (Eds.). (2009) *Transgénicos: ¿Qué se gana? ¿Qué se pierde? Textos para un debate en Cuba*. Publicaciones Acuario, Centro Félix Varela. Retrieved from http://web.archive.org/web/20130309234456/http://www.landaction.org/IMG/pdf/Libro_Transgenicos_Cuba.pdf
- González Herrera, M.R. (2015). Perspectiva estratégica de la producción del espacio turístico en Remedios y Caibarién, Cuba. *Revista iberoamericana de ciencias*, November. Retrieved from www.reibci.org.
- González Herrera, M. & Fernández Díaz, M. (2007). Prevención del impacto del huracán Wilma en la zona hotelera de Caibarién, Cuba. *Teoría y Práxis* 4, 67-84.
- González Herrera, M.R. & Iglesias Montero, G. (2009). Impactos del turismo sobre los procesos de cohesión social: Caibarién, Cuba. *Estudios y perspectivas en turismo* 18, 53-68.
- González Herrera, M., Gómez Estévez, I, Uría Arbolase, G., García González, Y. & Iglesia Montero, G. (2006). Puesta en valor turístico del patrimonio histórico cultural de Caibarién con criterios de sostenibilidad. Universidad Central de Las Villas.
- González Reinoso, P.M. (2012). "Roxy the Red". In J. Loss & J.M. Prieto. (Eds.). *Caviar with Rum: Cuba-USSR and the Post-Soviet Experience*. (pp. 55-65). Palgrave Macmillan.
- Guillén, N. (2002). *El Gran Zoo, The Great Zoo*. English trans. R. Márquez, Mango.
- Hernández, R. (2021, April 12). The path to the VIII Party Congress: Cuban politics between the new government and contemporary society. Cuba Study Group blog. Retrieved from http://cubastudygroup.org/blog_posts/the-path-to-the-viii-party-congress-cuban-politics-between-the-new-government-and-contemporary-society.
- Hall, D.R. (1992). Tourism development in Cuba. In D. Harrison. (Ed.). *Tourism and the Less Developed Countries*. (pp.102-120). Halsted Press.
- Hickel, J. (2020). The Sustainable Development Index: Measuring the ecological efficiency of human development in the anthropocene. *Ecological Economics* 167. Retrieved from <https://makewealthhistory.files.wordpress.com/2020/02/86216-hickel-the-sustainable-development-index.pdf>.
- Iturralde Vinent, M. (n.d.) *Desastres naturales en Cuba: Memorias y prevención*, Editorial Citmatel.
- Johnson, S. (2011). *Climate and catastrophe in Cuba and the Atlantic World in the Age of Revolution*. University of North Carolina Press.

- Joseph, S. (Ed.). (2019). *Commodity frontiers and global capitalist expansion: Social, ecological and political implications from the nineteenth century to the present day*. Palgrave Macmillan.
- Kirk, E.J. (2017). Alternatives—dealing with the perfect storm: Cuban disaster management. *Studies in political economy* 98(1), 93-103.
- Messina Jr., W.A., Royce, F.S. & Spreen, T.H. (2008). *Cuban agriculture and the impacts of Tropical Storm Fay and Hurricanes Gustav and Ike*. EDIS Report No. FE755, Food and Resource Economics Department, Institute of Food and Agricultural Sciences, University of Florida. Retrieved from <https://ufdcimages.uflib.ufl.edu/ir/00/00/09/45/00001/fe75500.pdf>
- Mooney Walton, M., Hughen, R., Guggenheim, D.E. & Escobar-Fadul, X. (2018, June). *A century of unsustainable tourism in the Caribbean: Lessons learned and opportunities for Cuba*, Ocean Doctor/Center for International Policy.
- Moore, J.W. (2015). *Capitalism in the web of life: Ecology and the accumulation of capital*. Verso.
- Moore, J.W. (2000). Sugar and the expansion of the early modern world-economy: Commodity frontiers, ecological transformation, and industrialization. *Review* (Fernand Braudel Center), 23(3), 409-433. Retrieved from: <https://jasonwmoore.com/wp-content/uploads/2017/08/Moore-Sugar-and-the-Expansion-of-the-Early-Modern-World-Economy-REVIEW-2000.pdf>
- Navarro Jurado, E. (2011). Características del desarrollo turístico en Cuba. In M. Blázquez & E. Cañada. (Eds.). *Turismo Placebo. Nueva colonización turística: del Mediterráneo a Mesoamérica y el Caribe. Lógicas espaciales del capital turístico*. (pp.75-100). Edisa.
- Núñez Jiménez, A. (2018). *Geotransformación de Cuba*. Selection and Introduction R. Funes Monzote. Fundación Antonio Núñez Jiménez & Editorial Científico-Técnica.
- Núñez Velis, L. (2010). Taller: arquitectura y huracán. *Catauro: Revista cubana de antropología* 12(22).
- Núñez Velis, L. & Sánchez, R. (2018). Cayucas SOS: Active Citizenship for a sustainable economy. In I. Marín and E. Velis. (Eds.). *Active citizenship for a sustainable economy*. (pp.6-8). Kettering Foundation. Retrieved from <https://www.kettering.org/catalog/product/active-citizenship-sustainable-economy>
- Perelló Cabrera, José Luis. (2019, November 27). Tourism in Cuba: Changes and Tendencies. Horizonte Cubano/Cuban Horizon, Cuban Capacity Building Project, Columbia Law School. <https://horizontecubano.law.columbia.edu/news/tourism-cuba-changes-and-tendencies>.
- Pérez, L.A. (2001). *Winds of change: Hurricanes and the transformation of nineteenth-century Cuba*. University of North Carolina Press.
- Pérez Cabrera, F. (2020, August 7). Caibarién: ‘a la medida’ del desarrollo. *Granma*. Retrieved from <http://www.granma.cu/cuba/2020-08-07/caibarien-a-la-medida-del-desarrollo-perspectivo-07-08-2020-23-08-24>.
- Pérez Suarez, R. Limia Martínez, M., & Vega González, R. (2010) Los huracanes de Cuba: Una revisión de la información histórica. *Catauro: Revista Cubana de Antropología*, 12 (22).
- Ramos Guadalupe, L.E. (2009). *Huracanes. Desastres naturales en Cuba*. Editorial Academia.

- Ross, C. (2017). *Ecology and power in the Age of Empire: Europe and the transformation of the tropical world*. Oxford University Press.
- Rosset, P. & Benjamin, M. (1994). *The greening of the revolution. Cuba's experiment with organic agriculture*. Ocean Press.
- Rubiera, J. (2013, January-March). Huracanes, cambio climático y reducción del riesgo. *Temas* 73.
- Salinas Chávez, E. & Salinas Chávez, E. (2017). El turismo en Cuba: Planificación y desarrollo. In N. Wallingre. (Ed.). *Desarrollo del turismo en América Latina: Fases, enfoques e internacionalización*. (pp.119-157). Universidad Nacional de Quilmes.
- Schwartz, R. (1997). *Pleasure Island: Tourism and Temptation in Cuba*. University of Nebraska Press.
- Schwartz, S.B. (2015). *Sea of Storms: A History of Hurricanes in the Greater Caribbean from Columbus to Katrina*. Princeton University Press.
- Spiegel, J.M., González, M., Cabrera, G.J., Catasús, S., Vidal, C. & Yassi, A. (2007). Promoting health in response to global tourism expansion in Cuba. *Health Promotion International* 23(1).
- Stone, R. (2018, January 10). Cuba embarks on a 100-year plan to protect itself from climate change. *Science Magazine*. Retrieved from <https://www.sciencemag.org/news/2018/01/cuba-embarks-100-year-plan-protect-itself-climate-change>.
- Stubbs, J. (1989). *Cuba: The Test of Time*. Latin America Bureau.
- Stubbs, J. (1985). *Tobacco on the Periphery: A Case Study in Cuban Labour History, 1860-1958*. Cambridge University Press.
- Temas* 9. (1997). Special Issue: Ambiente y desarrollo: una cultura sustentable.
- Temas* 73. (2013). Special Issue: Cambio climático.
- Thompson, M. & Gaviria, I. (2004). *Weathering the Storm: Lessons in Risk Reduction from Cuba: An Oxfam America Report*. Boston: Oxfam America. Retrieved from <https://www.oxfamamerica.org/explore/research-publications/cuba-weathering-the-storm/>.
- Torres, R. (2020a, May 7). El rompecabezas cubano frente a la pandemia. *Nueva Sociedad*. Retrieved from <https://nuso.org/articulo/el-rompecabezas-economico-cubano-frente-la-pandemia/>.
- Torres, R. (2020b, July 29). Nosotros frente a nosotros mismos? *Progreso Semanal*. Retrieved from <https://progresosemanal.us/20200730/nosotros-frente-a-nosotros-mismos/>.
- Triana Cordoví, C.J. (2020, July 28). Should Cuba promote modified organisms in agriculture? *OnCuba*. Retrieved from <https://oncubanews.com/en/opinion/columns/counterbalance/should-cuba-promote-introduction-of-genetically-modified-organisms-in-agriculture>
- Venegas Delgado, H. (2009). *Historia regional*. Editorial Universitaria.

- Vera Estrada, A. (2012). *Guajiros del Siglo XXI*. Instituto Cubano de Investigación Cultural Juan Marinello.
- Zanetti Lecuona, O. (2018) *El Caribe: procesos económicos en perspectiva histórica*. Editorial de Ciencias Sociales.
- Zanetti, O. (2009) *Economía azucarera cubana. Estudios históricos*. Editorial de Ciencias Sociales.
- Zanetti, O. & García Alvarez, A. (1987) *Caminos para el azúcar*. Editorial de Ciencias Sociales.
- Wright, J.E. (2009). *Sustainable Agriculture and Food Security in an Era of Oil Scarcity. Lessons from Cuba*. Earthscan.