Environmental Bed Taxes as a Driver of Sustainable Tourism Infrastructure Development in Cuba

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Abstract

Cuba's tourism growth has outpaced the global tourism market over the last several decades, growing at an annualized rate 7.4% from 2000-2014 and 17.39% in 2014-2015 (WTO, 2016) versus the trailing global annualized growth rate of ~4% (WTO, 2016). After Canada and Germany, the United States is the third most frequent country of origin for Cuba tourists, comprising 5% of annual visitors in 2015 and growing at a rate of 77% annually between 2014-2015 (WTO, 2016).

Executive changes enacted during the Obama administration designed to ease restrictions on US-Cuba travel have the potential to increase American tourist traffic in Cuba further over the coming decades, though recently announced intentions of the new Trump administration to reverse this easing may dampen this trend. An initial premise of the proposed research is that if tourism infrastructure development is properly managed to accommodate increased demand, Cuba has the potential to direct resultant capital inflows towards improving the long term social and economic welfare of the Cuban people and long-term sustainability of the Cuban tourism economy. On the other hand, if this development is poorly managed, it may degrade the environmental resources that draw tourists, sacrificing long term economic, social and environmental sustainability for short-term gain.

While Cuba has many unique natural and sociopolitical conditions that make it an ideal candidate for sustainable development, a lack of funding is cited by researchers and Cubans themselves as a barrier to implementing environmentally-friendly tourism

development and conservation practices (e.g. to create and administer protected areas and measure the environmental impacts of tourism activities) (UNDP, 2012; Cabello et al., 2012; Vázquez, n.d.; Whittle, Lindeman, & Tripp, 2003). Case studies of other economies that depend heavily on tourism have shown that an environmental tax can be an efficient and effective tourism taxation method (e.g. Iceland's accommodation tax and dedicated Tourism Site Protection Fund; Belize's multiple tourism taxes and Protected Areas Conservation Trust), and multiple international research and development organizations have supported this view. The United Nations Development Programme UNDP's Guidebook of Environmental Finance Tools highlighted multiple case studies of environmental financing tools and found that among all options taxes and fees related to direct tourism activities such as departure or accommodation taxes have the "biggest opportunity for increased revenue with minimal associated costs" (UNDP, 2012). However, no Cuba-specific research has been done to assess the potential direct revenues that could be raised as a result of the tax or the impact such a tax would have on overall tourist foreign currency inflows.

This research seeks to address this knowledge gap and add to the body of knowledge applicable to Cuba's unique situation in two ways: first, by reviewing current environmental taxation and fund management systems that could inform best practices for implementation in Cuba, and second, by conducting a contingent valuation study of Cuban tourists' willingness to pay an environmental fee and estimating the potential funding that could be raised by such a fee to fund environmental protection and sustainable tourism infrastructure development.

The study found that on average, tourists would be willing to pay an environmental fee equal to 5.3% of their nightly accommodation budget and, if an environmental fee were enacted would spend 2.1% more total in-country including the environmental fee and incremental spending in other areas. Projecting these results forward would yield between $1.7-2.8 billion in environmental fees collected and $1.8-2.8 billion in incremental tourist revenue inflows excluding environmental fees, for a total of $3.5 -5.6 billion in total incremental tourist spending in country including both environmental fees and incremental spending in other budget categories over 10 years, and depending on growth rate assumptions and excluding inflation. Based on these results and research on best practices for environmental taxation from other countries, preliminary recommendations include implementing a 5% environmental bed tax, the proceeds of which are managed and distributed via an independent trust. Limitations of the study include the efficacy of contingent valuation studies and the fact that the majority of survey respondents were American and therefore the data set could be skewed. Further research is needed to determine whether willingness to pay conclusions can be assigned to all demographics of tourists visiting Cuba as well as the legal and logistical feasibility for the Cuban government to implement and enforce an environmental bed tax and independent trust.

The purpose of this research is to provide preliminary results that help the Cuban Ministries of Tourism and the Environment and other researchers understand the potential efficacy and economic impact of an environmental bed tax and independent trust on the Cuban tourism sector as a basis for future research. The research seeks to present a possible avenue to supplement and grow funding for Cuba's current policies

and systems for re-investment in conservation, which could in turn bridge the current environmental management funding gap and contribute to Cuba's environmental protection. As a result, Cuba could improve the long-term sustainability of the tourism sector and the country's social and financial health, and these findings could potentially be applied to other countries as well.

Biography

Kate Cosgrove is an avid traveler and environmentalist. She has traveled to over 20 countries, including living in China for a year as an English teacher and cover band lead singer. She was born in Montreal, Canada, grew up in Boston MA, and lives in Brooklyn, New York with her fiancé, Jed. Kate graduated from Harvard College in 2007 with a degree in English and American Literature and Language and The Tuck School of Business at Dartmouth in 2014 with a Masters in Business Administration. She has worked as a product and project manager in fashion, technology and sustainability and is currently an investment advisor at Goldman Sachs where she advises nonprofits, foundations and individuals on their investment portfolios with a focus on environmental, social and governance and impact investing.

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Dedication

This thesis is dedicated to Jed, whose lifelong dream to visit Cuba brought us there in March 2016 on an unforgettable trip that opened my eyes to the beauty of the Cuban people, their fascinating history, and the stunning biodiversity and geography of their island home. Jed, your sense of adventure was the inspiration for this thesis, and your unwavering support and confidence allowed me to get everything on paper. Thank you for your love and for the endless errands you ran while I was working. Here's to many more adventures with you.

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Introduction

Cuba's tourism growth has outpaced the global tourism market over the last several decades, growing at an annualized rate 7.4% from 2000-2014 and 17.39% in 2014-2015 (WTO, 2016) versus the trailing global annualized growth rate of ~4% over the last seven years (WTO, 2016). Tourism is the largest generator of foreign exchange in Cuba (Gancedo Gaspar, 2016) and one of the country's largest single drivers of GDP (Romeu, Perez-Lopez, & Mesa-Lago, 2016). Further detail on Cuba's GDP breakdown can be found in Table 1.

After Canada and Germany, the United States is the third most frequent country of origin for Cuba tourists, comprising 5% of annual visitors in 2015 and growing at a rate of 77% annually between 2014-2015 (WTO, 2016). On March 15, 2016, President Obama announced a series of executive changes designed to ease the restrictions on US-Cuba trade, financial transactions and travel (Lee & Schwartz, 2016). Included in these decrees was the end of a ban on travel to Cuba for US visitors and greater openness to business relations between the United States and Cuba, which have the potential to further increase tourist traffic and promote international investment in Cuba over the coming decades (Lee & Schwartz, 2016). While more recent announcements from President Trump throw into question the future ability of business relations and United States citizens' ability to legally visit Cuba (Davis, 2017), the combination of above-trend growth of United States and non-US visitors to Cuba is likely to have a large impact on the country over the next several decades.

If tourism infrastructure development to accommodate increased demand is properly managed, Cuba has the potential to direct the increased capital inflows to improve the social and economic welfare of the Cuban people over the long-term. On the other hand, if this development is poorly managed, it may degrade the environmental resources that draw tourists, sacrificing long term economic, social and environmental sustainability for short-term gain. As such, Cuba must balance the desire for short-term growth in the tourism industry with preserving the resources important to the industry's success to ensure long-term social and economic well-being of the Cuban people and the country's environmental sustainability.

Social and environmental scientists have commented on the unique conditions present in Cuba that make it an ideal candidate for sustainable development. First, the scale and assortment of ecosystems and biodiversity present on the island (Whittle et al., 2003), coupled with periods of economic stagnation that have slowed development compared to its neighbors in the Caribbean (Levins, 2005; Stricker, 2010), mean it's environmental state is comparatively undisturbed. Second, the country's sociopolitical context has long promoted sustainability; sustainability has a place in the constitution. Guidelines for sustainable development are well-developed and a highly educated population is well equipped to implement them (Cabello et al., 2012). Cuba has the opportunity to learn from the negative examples of unsustainable tourism development evidenced by its peers. It also possesses the natural and human resources in place to enable its following a different developmental pathway.

At the same time, social and environmental scientists have cited insufficient funding to implement, monitor and enforce sustainable development guidelines. Globally,

the United Nations Development Programme has observed that funding for environmental protection is decreasing, “thus widening the funding gap for effective operations and revenue generation”, and that “to supplement inadequate national and regional budget allocations, financial strategies need to include mechanisms to self generate and retain revenues” (UNDP, 2012). Specific to Cuba, Cabello and Whittle have both highlighted insufficient funding as a barrier to necessary environmental protection measures and Dr. Raúl Garrido Vázquez, Ph. D, economist and Officer of the Environmental Directorate within Cuba’s Ministry of Science, Technology and Environment (CITMA) made a call to action to ameliorate insufficient funding for environmental efforts, based on the fact that average annual environemental investment totals $7.3M/ 6.5% of total country investments (XE, 2017 ; Vázquez, n.d.). An environmental bed tax - assessed as a nightly line item added to tourist hotel bills - has been suggested as a way to capitalize on tourist interest in Cuba while creating a budget to enable long term sustainable development and environmental management (Whittle et al., 2003). The environmental bed tax has received academic review that is not always favorable, as stakeholders have conflicting views on whether such a tax would increase or reduce tourist interest and corresponding daily spend in Cuba (Beladi, Chao, Hazari, & Laffargue, 2009). This array of opinions can also be observed in the varying stances on tourism taxation that have been taken in other countries. On one hand, countries such as Belize have enacted taxes on tourists to generate revenue to help offset the stresses they place on nationally-funded resources (Andy Drumm, n.d.). On the other hand, other countries have chosen to reduce taxes on tourism-related purchases in hopes of making their destination offering more attractive and encouraging increased spending – for

example, the Bahamas' proposed VAT reduction (Ministry of Finance of the Bahamas, 2012). However, surveys of existing environmental taxation systems and best practice recommendations have generally agreed that taxes assessed nightly are equitable and efficient, as they are scaled based on a visitor's spending on accomdations, cost effective to collect at the point of accommodation, and place the financial burden directly on the tourists whose presence strains existing resources instead of distributing their additional resource requirement across local citizen taxpayers (L. Ambrosie, 2014; Gooroochurn & Thea Sinclair, 2005).

Cuba has experimented with environmental taxes, although as of yet significant funds have not been collected and there are no accommodation taxes or other taxes that specifically target tourists. A Forestry tax is used to fund a Forestry Fund that provides funding for reforestation activities and protected area support, however, annual collections total only $220K (XE, 2017; Vázquez, n.d.). The country also assesses a small tax on the use of Havana Bay, which is used for bay cleanup activities and yields $98K annually (XE, 2017 ; Vázquez, n.d.). No research could be found that undertakes valuation of the economic impact of an environmental bed tax in Cuba or assesses the overall economic impact of such a tax on Cuba's tourism sector. This work will build on currently available data as it applies to other countries and develop Cuba specific data and recommendations.

To address the current knowledge gap, this research explores the existing environmental taxation landscape to highlight best practices for implementation and ultimate management of funds raised, and puts a specific price on tourist willingness to pay an environmental bed tax in Cuba and the tax's impact on tourist total daily spend

and corresponding overall impact on the country's tourism sector and economy. I conducted a contingent valuation survey among recent and near-term future international tourists to Cuba and analyzed the results to arrive at average willingness to pay an environmental tax as well as the potential overall impact of levying such a tax on the overall Cuban economy. While the data showed signs of potential skew and thus requires further research due to the high concentration of American survey respondents vs the overall Cuba tourist population, the results preliminarily support the initial hypothesis that an environmental bed tax will increase total tourist daily spend and create a significant budget for environmental protection. Best practices from other countries (e.g. Belize; Iceland) and recommendations by the United Nations Development Programme suggest a trust system is an effective way to protect and invest funds back into conservation efforts as well as gain stakeholder buy-in and support (UNDP, 2012), though additional research is needed to determine whether the establishment of a trust is legally possible in Cuba. Together, an environmental bed tax and effective protection and investment system for the funds raise could make a meaningful contribution to Cuba's long-term environmental and economic sustainability.

This research has the potential to provide preliminary results to help the Cuban Ministries of Tourism and the Environment and other government entities understand the potential efficacy and economic impact of an environmental bed tax and independent trust on the Cuban tourism sector. The research seeks to present a possible avenue to supplement and grow funding for Cuba's current policies and systems for re-investment in conservation, which could in turn bridge the current environmental management funding gap and contribute to Cuba's environmental protection. As a result, Cuba could

improve the long-term sustainability of the tourism sector and the country's social and financial health. Given the current 5.4% / $4.1 billion budget deficit ("The World Factbook," 2016), the fact that Cuba's Investment Plan for the Environment has averaged a $7.3M annual budget for environmental investment (XE, 2017; Vázquez, n.d.), and the fact that for fiscal year 2015 the total USAID budget for funding being directed towards in-country development work was $6.5 million (USAID, 2016), a relatively small dollar amount could still have a significant incremental impact. Finally, the findings of this research can be added to the current academic knowledge base on the efficacy of environment-specific tourism taxation and applied to other countries with significant natural resources and large tourism industries.

Definition of Terms

Definitions for three terms used throughout this paper vary depending on the speaker and context. The context in which these terms are being used in this paper is as follows:

1) **Sustainable Tourism:** We will use the definition of sustainable tourism that Cuba has developed for itself, as described by Daniel Whittle. Cuban sustainable tourism is built on four pillars:
    i. Economic: "growing in a measured fashion that recognizes and respects both physical and capital limitations"
    ii. Environmental: recognizes "environmental limitations of building in or near fragile areas"
    iii. Cultural: "demands that tourism be consistent with and not be disruptive of existing cultures and lifestyles."
    iv. Social: "measured by the number of Cubans employed in the tourism sector, the availability of housing for employees, and tourism offerings for Cuban vacationers" (Whittle et al., 2003)

2) **Sustainable Development:** ''The current situation demands a holistic concept of sustainable development, where development policies in economy, science and technology, finance, commerce, energy, agriculture, industry, defense, etc., are

linked with the requirements of environmental protection and sustainable use of natural resources and with social justice and equity''(Cabello et al., 2012), quoting the *Estrategia ambiental nacional de Cuba* 2007.

3) **Ecotourism:** "Responsible travel to natural areas that conserves the environment and improves the well-being of local people." (Honey, 1999) Honey asserts that real ecotourism has seven characteristics:

   i. involves travel to natural destinations
   ii. minimizes impact
   iii. builds environmental awareness
   iv. provides direct financial benefits for conservation
   v. provides financial benefits and empowerment for local people
   vi. respects local culture
   vii. supports human rights and democratic movements (Whittle et al., 2003).

Background

Tourism is a meaningful component of the Cuban economy. It is the largest driver of foreign exchange in Cuba (Gancedo Gaspar, 2016) and one of the largest single drivers of GDP (Romeu et al., 2016). In the mid-1990's, tourism surpassed sugar as the primary source of foreign exchange. ("The World Factbook," 2016). Today, ~3 million tourists visit Cuba annually, generating ~$2 billion in revenue, with an annualized growth rate of 7.4% from 2000-2014 and 17.4% growth from 2014-2015 (WTO, 2016), far above the international annualized average growth rate of 4% (WTO, 2016).

The segment of the Cuba tourist population originiating from the United States has been an area of increased focus over the last several years. After Canada and Germany, the United States is the third most frequent country of origin for Cuba tourists, comprising 5% of annual visitors in 2015 and growing at a rate of 77% annually between 2014-2015 (WTO, 2016). The lifting of the ban on US tourists and re-establishment of commercial flights to Cuba enacted under President Obama was expected to create a large influx of tourists over the coming decades, though more recent policy announcements from the current Trump administration suggest current rules may be subject to change. President Obama also began a dialogue aimed at lifting the US trade embargo with Cuba. While again such changes may be delayed given conflicting priorities of the current Trump administration, it is expected that the embargo may be loosened or lifted in the future given the length of time that has passed since its inception and the aging of the Castro regime. Whether such changes occur in the nearer or more

distant future, the impact of the United States tourist in Cuba, and the corresponding requirements of accommodating this as well as increased global demand, are likely to be significant.

Tourism infrastructure development is an area where the consequences of mismanagement can be severe for the environment and as a result the quality of life of Cuban people and long-term sustainability of the industry. Cuba has the opportunity to harness these inflows of new tourists and their dollars to bring long-term economic benefits to her people, partnered with the challenge of how to best direct them towards ends that are environmentally and economically viable for the long-term.

Cuba has unique factors that make it an interesting case study for sustainable development. First, it is a country that in many ways has been on pause, economically speaking, for the last fifty-plus years. The last period of significant investment occurred before the 1959 Revolution and severing of diplomatic relations with the United States (Stanley, 2011). During the Special Period from 1991-1994 after the fall of the Soviet Union and with it the significant subsidies Cuba had been receiving from the Soviets, Cuba's economy shrank by approximately two thirds (Stanley, 2011). Such influences have delayed the technology and infrastructure investments enjoyed by developed economies and necessitated conservation-minded changes as well as a spirit of conservation among Cuban citizens (Maal-Bared, 2006). Second, the ideological framework that governs Cuba makes it an interesting environment for change management. The one-party system means that change can be enacted fairly quickly through unilateral decision making and implementation, and the Socialist belief system makes citizens receptive to change that benefits the community (Stricker, 2010). On the

other hand, the centralized governance system has also historically created challenges to effective implementation of changes (Maal-Bared, 2006) – for example, if a priority does not enjoy widespread support among political leadership it can be very difficult to enact change. Third, the size and scale of the country, with a population of only 11 million people ("The World Factbook," 2016), makes the possibility of swift and overarching change management and implementation feasible.

Cuba is also fascinating given its positive track record for sustainable development thus far. To date, Cuba has managed to achieve high health and education standards with minimal environmental impact gaining international recognition for these achievements (Cabello et al., 2012; Stricker, 2010).

Historical Context and Recent Developments

Cuba won its independence from Spain in 1898 in the Spanish-American War and became an independent republic in 1902. From the early 1900's through the 1950's, the country was ruled by a string of military governments until Fidel Castro led a communist revolutionary army to victory in 1959. Raul Castro took over the presidency from his brother in 2008 and remains in power today (Stanley, 2011). In 1961, the US enacted a broad-scale trade embargo against Cuba with wide-reaching commercial, economic, and financial impacts ("Charting a New Course on Cuba," 2016). From that point on, the Soviet Union became a major supplier of foreign aid, and importantly, oil. During the Special Period, the removal of subsidized Soviet oil supplies crashed the Cuban economy, reducing it by 60% and causing Cuban citizens to lose, on average, 1/3 of their body weight (Stanley, 2011). Cuba has been bitterly scarred by the perils of relying on imported fossil fuels, and the Cuban people know all too well the dangers of foreign fossil fuel reliance.

Cuba is a country with a deeply engrained belief in environmental protection. Cuba's sociopolitical and historical contexts create a fascinating study into the factors that have contributed to this outcome. Several environmental and social scientists (Levins 2005; Stricker 2010) cite the opportunities and challenges created under the socialist governance structure as primary drivers of Cuba's environmental protection ethos.

A central goal of the Cuban Revolutionary agenda was to improve the welfare and quality of life of the Cuban people (Levins, 2005). The Revolution's explicit goals were to eliminate poverty, improve equality, and provide both basic needs (housing, water,

sanitation, food security) and higher ones (literacy, community engagement) for the Cuban people (Levins, 2005). While the revolutionary agenda did not cite environmental protection as an explicit goal, it became an implicit one due to the connections between a healthy environment and healthy citizens (Levins, 2005). Levins posits that the way Cuba has achieved high levels of human health and quality of life with low environmental impact is via socialism, asserting that "socialist social arrangements and ideological priorities made ecological development an almost 'natural' correlate of the economic and social development and of the commitment to improving the quality of life as the primary goal of development" (Levins, 2005). Importantly, in a community-oriented culture promoting shared resources, Levins suggests "there are no externalities," and the familiar tragedy of the commons issue is alleviated because environmental harm enacted by some creates a shared problem for a society where resources are shared by all (Levins, 2005).

Periods of shortage have become drivers for a conservation and sustainability mindset as a necessity. After the revolution, "the destruction of Cuba's forests, the erosion caused by monoculture and the sugar cane economy, the prevalence of infectious diseases that could be prevented, and the need to develop the resources of the country to eliminate poverty all led to the creation of separate programs that later nourished ecological development as a conscious goal" (Levins, 2005).

Later, during the Special Period, Cuba "witnessed a decrease in many environmentally damaging activities both by choice and by necessity" (Maal-Bared, 2006). Crawford and Febles-Gonzales both cite how food shortages in the Special Period led to agricultural innovation that made "production healthier, sustainable, [and] closer to home" (Colin, 2003). More broadly, being cut off from cheap Soviet oil caused the

government of Cuba to address the reality of limited resources and "transformed itself into a more self-reliant, less energy-intensive society without abandoning its longstanding commitment to strong health and educational programs" (Cabello et al., 2012), quoting Wiskind. The embargo and the Special Period both also created, by necessity, a "culture of savings and rational use of resources" underscored by "government policies that acknowledge saving opportunities as one of the main resources for the country" (Cabello et al., 2012). Cuba's "commitment to social justice and equitable distribution of wealth among its citizens" is a "necessary pre-condition for a true transition to a sustainable society" (Stricker, 2010). The First Vice President of Cuba's State Council is quoted as saying ''Sustainable development requires a revolution in our values and in the way we confront today's inequalities and tomorrow challenges" (Cabello et al., 2012), citing (Machado 2007).

The results of Cuba's sociopolitical history on her approach to sustainable development are impressive: in 2006, the World Wide Fund for Nature (WWF) judged Cuba as the only nation truly following a path of sustainable development, defined as "minimizing [sic] its ecological footprint while preserving a healthy quality of life" (Stricker, 2010). The study took into account social, environmental and economic factors and found that Cuba achieved high marks on social and economic factors as explained by the Human Development Index measured by quality of life (health indicator measured as life expectancy at birth), knowledge (education indicator measured as adult literacy) and the standard of life (economic indicator measured by the Gross Domestic Income) while achieving a smaller environmental footprint than other countries with similar Human Development Index scores (Cabello et al., 2012).

The long-term and holistic view of development created by conscious sociopolitical choices, and its positive and negative results both predicted and unseen, lie in stark contrast to the values and ideals espoused by capitalist societies. At their worst, the capitalist influences of the United States that will have greater access to Cuba given the recent changes to tourism and trade policies may conflict with the values that have been built by the socialist culture over time, and investors may prioritize short-term interests of shareholders in the capital markets over long-term sustainability. According to researchers such as Gossling (Epler Wood, pers com September 8, 2017), all forms of commercial tourism show that a growing tourism footprint will far exceed local residents in terms of use of water use and waste and waste water generation, and Americans specifically have one of the highest per capita ecological footprints of all citizens around the globe (Global Footprint Network). As such, it is critical for Cuba to put frameworks in place to capitalize on the benefits of increased tourism and trade while protecting the ethos of sustainability developed over the course of history.

Cuba's Environmental Resources: Natural and Human-Centered

Cuba is the largest island in the Caribbean, with an area of 42,426 sq mi), and the second-most populous after Hispaniola with 11,031,433 (July 2015 est.) million inhabitants ("The World Factbook," 2016) From an environmental perspective, Cuba is graced with an abundance of natural resources and advantages. Its coastline spans over 3000 miles of coastline and includes 3200 islets and keys. (Whittle et al., 2003). Housed on and surrounding a single main islands are some of the world's most spectacular examples of biodiversity, undisturbed coral reefs, and differentiated ecosystems and climates.

> *"Cuba is by far, the largest and most ecologically diverse island in the Caribbean, with several archipelagos equaling or exceeding the Florida Keys in length. Cuba's extensive coastal areas are still home to massive mangrove wetlands, tropical wet forests, coastal mountains, and a variety of associated habitats with a diverse range of plants and animals. It has a great variety of marine ecosystems, including many diverse coral reef habitats, extensive grass beds, and more than a dozen enormous estuaries and coastal lagoons.2 The country, as a whole, is by no means a pristine environment. Cuba has witnessed substantial environmental degradation both before and after the 1959 Revolution, and current threats to coastal and marine ecosystems from water pollution, coral bleaching, and other impacts are significant. But all in all, many of the country's coastal and marine resources are in remarkably good condition. And compared to coastal areas in the United States and the Caribbean, Cuba's coastlines are characterized predominantly by natural environments, not developed ones."(Whittle et al., 2003)*

The fact that the country's natural resources remain primarily intact, in stark contrast to some of its Caribbean neighbors and other geographies, is driven by multiple factors. The first is primarily circumstantial, a result of the lack of investment and density of environmentally harmful activity compared to neighboring countries over the last half

century. While other Caribbean coastal countries were being pumped with development dollars, due to the sociopolitical dynamics occurring within Cuba and between Cuba and the United States, Cuba was largely passed over for investment and development during this time period. As a result, the country has not experienced the same environmental degradation that has occurred elsewhere (Whittle et al., 2003).

The second factor that has influenced the state of the environment in Cuba has been a far more active choice on the part of the Cuban government. Cuba has a highly educated and dedicated workforce including scientists, economists, lawyers and other professionals who have a deeply engrained belief in the importance of environmental stewardship backed up by advanced organizational structure (Whittle et al., 2003). Since the mid-1990s, Cuba has taken meaningful actions to protect the environment (Vázquez, n.d.), including a "cabinet-level environmental department and developing in record time an unprecedented array of environmental laws" (Whittle et al., 2003) and policies that span coastal protection, environmental licensing, and other environmental laws Article 27 of the constitution states ''The protection of the environment and of the natural resources, because of their close relation with the social and economic aspects for sustainable development to ensure the survival of human life, the well-being and safety of the current and future generations''(Cabello et al., 2012).

The Cuban government has implemented a legal and organizational system that incorporates environmental priorities throughout tourism and regulatory operations, though gaps and challenges persist. The mandate of the Ministry of Tourism (MinTur), founded in 1994, is to manage and promote the tourism industry with a primary focus on international guests. MinTur manages 17 tourism schools that "provide a comprehensive

program of education to train Cuban tourism workers in the newest industry trends" (Perez, 2014). In 1997, the Academy of Sciences was reorganized to become the Ministry of Science, Technology and Environment (CITMA). As the dedicated agency for the implementation of science-based environmental planning, monitoring and research, the Ministry of Science Technology and the Environment (CITMA)'s primary mandate is to implement legislation and regulate/manage tourism in coastal areas, as well as educate Cubans on sustainable tourism development (Perez, 2014).

Also in 1997, the Environmental Law (Law No. 81) was approved, which "provides the political and legal framework for the growth of the tourist industry in accordance with the government's ideal of sustainable development" (Perez, 2014). Articles 65 and 66 of this law authorize the National Environment Fund which is managed by an inter-sectoral board (Lindeman, Tripp, Whittle, Moulaert-Quiros, & Stewart, 2003). Annual inflows are funded primarily by new construction licensing fees and fines, and the majority of outflows are directed to protected areas and restoration projects. As of 2003, inflows were "insufficient" at $250,000 annually, and the Fund had "little legal identity" (Lindeman et al., 2003). MinTur, CITMA, the Ministry of Planning, the Institute of Physical Planning, and other relevant agencies work together to develop the coastal tourism infrastructure, including "granting environmental licenses to international developers, designing and implementing tourism development plans, and ensuring that every tourism development project follows strict environmental assessment procedures" (Perez, 2014). Finally, the National Commission for Ecotourism which brings together CITMA, Ministry of Tourism (MinTur) and the Ministry of Agriculture

to perform various standards-setting, evaluation and marketing functions to promote Cuban ecotourism worldwide (Whittle et al., 2003).

These regulatory, legislative and governmental organization structureal accomplishments bring to light a final advantage Cuba has as a centrally-planned economy: once decision-makers have decided on an environmentally-friendly course of action, mobilizing people and resources to accomplish change can be done relatively quickly with minimal friction.

In their work on reverse innovation and leapfrog technology, Govindarajan and Trimble assert that such practices are not only an opportunity, but critical for the environmental and economic success of developing countries. Investors and executives from rich countries have demonstrated greater success by forgetting the lessons that made them successful at home and leapfrogging to innovative solutions that are lower cost and more sustainable (Vijay & Chris, 2012). Given the healthy state of the Cuban environment today, Cuba has the opportunity to leapfrog over some of the poorly managed examples of Caribbean tourism development to a more sustainable choice.

Recent Sociopolitical Updates and their Impact on the Tourism Industry

In December 2014, the United States under the Obama administration ceded to the widespread opinion that restrictions on Cuba-US trade policies were overly punitive and detrimental to the Cuban people, and began efforts to re-establish diplomatic relations with Cuba ("Charting a New Course on Cuba," 2016). Importantly, Obama called on Congress to lift the existing Cuba trade embargo, an action that, until recently, was considered likely to be achieved in the near future (Lee & Schwartz, 2016). Prior to officially rescinding the embargo, both the United States and Cuba began taking important interim steps, including reopeing their respective embassies in both countries on July 20, 2015 ("Charting a New Course on Cuba," 2016). In addition, former President Obama enacted a series of executive changes designed to ease the restrictions on US-Cuba trade, financial transactions and travel. On March 15 2016, Obama decreed that Cuban citizens could earn salaries from US companies and have limited American bank account, US dollars could be used in financial transactions with Cuba without the previous 10% penalty on exchanging dollars, and broadened the scope of legal reasons US individuals could travel to Cuba ("Charting a New Course on Cuba," 2016).

The March 2016 Obama decree effectively lifted a 50-year prohibition against American tourists visiting Cuba, allowing them to self-certify travel under twelve acceptable categories, including the most popular category of educational 'people to people' trips that allowed "American travelers to go to Cuba on their own and justify a visit simply by filling their schedules with what most would consider tourist activities,

such as visiting galleries and eating in privately owned restaurants" (Lee & Schwartz, 2016).

Following this announcement, the Obama family made an historic visit to Cuba in March of 2016, and President Obama became the first sitting US President to visit the country in almost a century ("Charting a New Course on Cuba," 2016). Cuba and the US Department of Transportation signed the agreement in February of 2016 to resume air service between the two countries and the first flights were awarded in June 2016 ("Department of Transportation," 2016).

More recently, some of these changes have been thrown into question since President Trump's inauguration in January 2017 as a result of announcements and presumed future policies of the Trump administration. On June 16, 2017, President Trump announced, "Effective immediately, I am canceling the last administration's completely one-sided deal with Cuba" (Davis, 2017). That said, no changes to current travel regulations have yet been made, and Department of Homeland Security's Updates on US Policy Towards Cuba frequently asked questions webpage states "there is no immediate impact [to travelers going to Cuba for tourism or business purposes]. Additional information and guidance for both business and tourism purposes is expected in the coming days" ("Update on U.S. Policy Toward Cuba | Homeland Security," 2017). While current regulations preserve diplomatic relations, commercial flights between the United States and Cuba, and the twelve categories of authorized group travel to Cuba, it is thought that the most likely eventual regulatory change on US-Cuba tourism will be to eliminate the ability for Americans to make individual educational people-to-people trips, instead only allowing these on a group basis (Holland, 2017). This change would likely

dampen the ease and ability for American tourists to continue traveling to Cuba. The Treasury and Commerce departments officially have 30 days from the date of the June 16 annoucement to draft new rules, but Trump's statements have faced harsh criticism from both Republicans and Democrats and in the words of one senior official, "the process takes as long as it takes" (Zanona, 2017).

The Cuba Tourism Market

The historic changes to the United States' Cuban trade and travel policy are likely to have a tremendous impact on the Cuban economy, and have been met with many questions and much interest as to the potential size, scale and scope of the impact. Over three million tourists visit Cuba annually, spending over $2.5 billion each year (WTO, 2016). The World Travel and Tourism Council's 2017 Economic Impact study found that while the direct impact of tourism on Cuba's ecomony was $2.08 billion in 2016 (2.2% of GDP) and forecast to grow to $3.49 billion in 2027 (3% of GDP), the indirect impacts of tourism (defined by direct travel & tourism spending, investment, and incremental spending of direct and indirect sector employees) grow the total contribution to $8.87 billion (9.6% of GDP) and are forecast to rise to $14.39 billion (12.4% of GDP) by 2027 (Turner & Freiermuth, 2017). In 2016 travel and tourism directly supported 110,000 jobs in Cuba (2.1% of total employment), and is forecast to rise to 138,000 jobs (2.9% of total employment) in 2027; it supported 8.9% of total employment (462,000 jobs) including indirect employment, and is expected to rise to 549,000 jobs in 2027 (11.7% of total) (Turner & Freiermuth, 2017). Additional detail on tourism's contribution to GDP and employement can be found in Tables 2 and 3.

Many factors have contributed to the growth in Cuba's tourism industry over the last several decades, including overall improvement to the economy following the Special Period and a renewed marketing focus. However, the impact of the re-opening of diplomatic relations between President Obama and Raul Castro in December 2014,

should they be continued under the current Trump administration or future administrations, cannot be overlooked as a contributor potential future growth. American tourists in Cuba increased 77% to 161,000 visitors in 2015 – contributing 2% to the 17.4% total growth in visitors for the year (WTO, 2016) - and Cuba is expecting a similar increase in 2016 (Frank, 2016). After Canada and Germay, the United States is the third most popular country of origin for international visitors to Cuba, representing ~5% of visitors (WTO, 2016).

While the market share of American tourists is relatively small as a portion of the overall Cuba tourism market (WTO, 2016), the lifting of travel restrictions implemented in 2016 is likely to dramatically increase American visitors to Cuba and have a meaningful impact on the overall market size. Anecdotally, evidence of increased global interest in travel to Cuba can be seen in the dramatic increase in "Cuba" and "Cuba Flights" as Google search terms over the last several years ("Google Trends - Web Search interest - Worldwide, 2004 - present," 2016).

> *"There is widespread agreement that the "absence of large numbers of U.S. tourists to Cuba is costing the island at least hundreds of millions of dollars each year in foregone revenues and that lifting the embargo would bring substantial economic benefits to both countries. In fact, some predict that if the embargo were lifted the United States would swiftly emerge again as Cuba's main trading partner and could supply up to 80% of all imports to Cuba, worth billions of dollars annually to U.S. business. It is also expected that U.S. businesses and tourists would pump billions of dollars into the Cuban economy as well."(Whittle et al., 2003)*

Up to this point, Cuba has had a mixed record when it comes to sustainable tourism infrastructure development. In Cayo Coco (in the Province of Ciego de Avila), tourist facilities and installations have been built to be mindful of ecologically sensitive environments, including sand dunes, and in Caibarién–Cayo Santa María, "the local

community is now actively participating in tourism development and conservation efforts by collaborating with government authorities to minimize the potentially harmful effects of tourism development on the environment and the sociocultural well-being of the local residents" (Perez, 2014). However, in other areas development has been less environmentally conscious. In the Sabana-Camagüey Archipelago, stone embankments connecting larger cays have been indentified by environmentalists as dangers to coastal ecosystems because they "block the movement of water in the intracoastal waters, exacerbating contamination and destroying coastal and marine habitats. Many of these semi-enclosed water bodies are already subject to weak circulation regimes and high organic matter contents" (Perez, 2014). Overall, there is an "urgent" need for investment in infrastructure that is and will continue to be stressed by tourist use and directly impacts environmental health (Lindeman et al., 2003).

What Could Go Wrong in Tourism Infrastructure Development: A Cautionary Tale

Properly implemented, host nations can benefit from tourism activities, which can provide social and economic benefits with neutral environmental impact, or even a positive effect. Examples of the positive impact tourist demand can have include wildlife preserves created for tourists to view a country's flora and fauna. However, significant socioeconomic and environmental costs can often be a negative byproduct of tourism's social and positive economic benefits. Unfortunately, such negative impacts can be self-defeating by over time degrading or eliminating the natural resources that created the initial tourist draw. Davenport & Davenport highlight the problem that "the inherent conflict between 'biological sustainability' (i.e. maintenance of a situation that conserves biodiversity and the functioning of ecosystems such as coastal wetlands and dunes) and 'economic sustainability' (i.e. the constant supply of employment and economic health) is almost never resolved in favour of the former" (Davenport & Davenport, 2006). The researchers cite the case study of Cancun, Mexico as an example:

> *"Holder (1988) postulated the 'self-destruct theory of tourism'. This theory states that an attractive natural place may become developed for an upscale exclusive market wanting low-density settlement and willing to pay top prices. Soon other developers move in and competition develops. In order to fill rooms, rates are lowered, standards are proportionately lowered and the place becomes a destination for mass tourism. The elite move on to unspoiled areas. A cogent and cautionary account (Wiese, 1996) of irreversible environmental and socio-economic degradation on the island of Cancun (Mexico) is a good illustration of this phenomenon. Cancun Island is 17 km long and 100e400 m wide with an enclosed shallow mangrove lined lagoon that, before development, held a variety of marine life and was an important nesting site for seabirds and sea turtles. There were several openings to the lagoon. Thousands of unskilled workers moved into the area. Quarries were developed and causeways constructed linking*

> *the island to the mainland and restricting the flow of fresh water into the lagoon. Sections of the lagoon were filled in for golf courses and marinas and amusement parks were built. Sewage treatment and the disposal of other wastes became major problems; eventually the exhausted quarries were used as rubbish dumps, polluting the groundwater supplies. After hurricane Gilbert hit Cancun in 1988, tourists were reluctant to return. Hotels reduced their prices and tourist arrivals increased, but these were more budget conscious and unwilling to spend extra money. The income for the country and the local people has been considerably reduced" (Davenport & Davenport, 2006).*

Linda Ambrosie has added to the body of knowledge on the impacts of tourism infrastructure in Cancun. She noted that while early development efforts in Cancun could have been argued to be a success, the change in tourism models in the early 2000's towards all-inclusives eroded such success, leading to the current situation where "Mexican people now subsidize the international tourist" (L. M. Ambrosie, 2015). In her 2014 dissertation, she observes that "Cancún's reefs are degrading, school attendance is falling, teenage pregnancy and suicide is rising, and insecurity is increasing" and "fewer residents than ever have social security or some form of insurance," ultimately concluding that

> *"Public sector mega-resort development does not lead to poverty alleviation and a reduction in income disparities in emerging economies partially due to a lack of political will but more importantly because resulting economic activity from infrastructure expenditure may not generate the tax revenue necessary to provide social services, to protect the environment and to sponsor further development especially in economies that lack transparency and institutional cohesion" (L. Ambrosie, 2014).*

In Mexico, there are three taxes that are levied on tourism. Two are levied on tourists (hotel and departure) and the third is a resource fee applied to beach front properties on a federal level. The tourism tax was increased from 2 to 3% in 2010 (Gooroochurn & Thea Sinclair, 2005). Despite implementing tourism taxes, Mexico has not chosen to divert a meaningful percentage of revenues to environmental protection,

instead diverting a majority towards re-investment in tourism marketing activities. For example, 80% of international passenger fees are allocated to tourism promotion (L. Ambrosie, 2014).

Cuba and Cancun share many traits in common as coastal Caribbean destinations in close proximity to the United States. It is possible to imagine a similar fate to Cancun's for Cuba's natural resources and tourism sector should tourism regulation and infrastructure development be poorly managed. As such, it is important for the country to focus on identifying potential issues and implementing a system to balance current needs and long-term sustainability.

Leisure and adventure water activities are an example of tourism impacts that can have profoundly negative consequences. Jet skis in particular are worrisome given their fast speeds, loud noise and highly polluting characteristics (Davenport & Davenport, 2006). SCUBA is another example of an activity that, while often cited for its environmental friendliness, has in certain areas caused irreparable damage to coral reefs due to large volumes of divers (Davenport & Davenport, 2006).

The case study of Cancun highlights one of the major pitfalls of tourism: when tourist infrastructure scales too quickly and the volume of users grows to an unsustainable level, the environment suffers (Davenport & Davenport, 2006). This is often the case when the short-term economic interests are prioritized above a longer-term plan for scalability and sustainability. The Cancun study, in highlighting the failure to protect the pristine coastal environment and thus causing a 'race to the bottom' and degraded pricing power for tourism-related business (Davenport & Davenport, 2006), also presents the positive outcome of the opposite path. The study of Cancun points out

that coastline degradation decreases tourist willingness to pay and ultimately erodes the area's pricing power and potential for economic benefit. Tourists willing to pay a premium for an upscale experience moved their interests elsewhere (Davenport & Davenport, 2006). If Cuba is able to preserve the natural highlights currently present on both the coastline and internal island, it may have the opportunity to attract a tourist clientele willing to pay more for a premium experience. Crouch & McCabe have suggested that such tourists tend to be more socially and environmentally conscious and value the opportunity to connect and engage with the community they are visiting, and have shown that tourists 'buy into' eco-tourism as an expression of personal identity (Crouch & McCabe, 2003). An environmental bed tax may signal to this group that their presence is a welcome participant in building and maintaining the country's sustainable future and thereby increase total willingness to spend while in-country. In this thesis, I will test this hypothesis and endeavor to put a price on the luxury tourist's willingness to pay for this premium.

Cuba's Challenges & Economic Considerations

While Cuba has many factors in its favor for environmental protection, the current suite of academic writing in the space highlights challenges to implementation as well.

While government centralization and corresponding unilateral decision-making can in some cases accelerate implementation of environmental efforts, centralization can also slow down "local initiatives that have shown their potential when freedom of management was allowed' (Velázquez, 2002; Cabello et al., 2012). Central to Cuba's environmental protection implementation challenges is a lack of financial resources. In their work, Whittle, Cabello and Davenport all cite a lack of financial resources as a barrier to achieving better environmental protection.

> *The Cuban government recognizes that in the field of environmental protection ''there have been mistakes and shortcomings, mainly because of insufficient awareness, knowledge and environmental education; lack of more emphasis on management; limited introduction and generalization of the results of science and technology; insufficient incorporation of the environmental dimension in policies, plans and development programs and absence of a sufficiently integrated and coherent legal system. Moreover,* ***lack of material and financial resources*** *has hampered the achievement of higher levels of environmental protection, which was exacerbated in recent years by the economic situation of the country, because of the loss of the commercial relations with the former socialist countries and because of the continued and increasingly rigorous economic embargo imposed by the US government*'' (Estrategia ambiental nacional de Cuba 2007).(Cabello et al., 2012) - emphasis added.

Because the socioeconomic and environmental byproducts of tourist traffic are country-wide and are comprised of a wide range of activities that could include food and energy consumption, water use, water and land sports and leisure activities, it is unreasonable to assume that a small hotel or resort could adequately create a closed ecosystem to address

tourism sustainability. As such, partnership between government agencies and tourism-related businesses is the most workable solution to address and manage the environmental impacts of tourism. Davenport and Davenport assert that in order to avoid irreversible environmental damage that will permanently reduce economic sustainability and pricing power of natural tourist attractions, the country's governing body must implement "control over access (to control demand), effective planning that pays due attention to the values of ecological services, and rigorous environmental legislation, properly enforced" (Davenport & Davenport, 2006).

Current academic research and writing on Cuba's tourism industry mentions an environmental tax as an option for increasing revenues to be used for environmental protection, often noting this as an area for further research and exploration. Scholars note that up to this point, Cuba has not implemented or experimented user fees on any meaningful scale and that the potential to leverage could be significant. (Whittle et al., 2003). Whittle proposes a bed tax using the following scheme: "The tourist users of these protected areas require places to stay. A lucrative and relatively simple way to generate substantial revenues for long-term park management is through dedicated environmental protection fees, such as bed taxes (e.g. a hotel room would cost $86/night, instead of $85, with the revenue dedicated to audited conservation needs)"(Whittle et al., 2003).

The current academic research does not include research-driven recommendations on the specifics of implementing or messaging a potential bed tax or seek to measure the potential impact it could have for Cuba. That said, there is evidence to support the hypothesis that an environmental tax can have positive effects. Beladi has studied pollution taxes and found that "to preserve the environment and attract tourists, pollution

regulations are necessary" and that "if a country is attempting to attract environmentally conscious tourists, then the optimal pollution tax can be higher even when the tourism market is competitive" (Beladi et al., 2009).

This research seeks to add to the current knowledge base of environmental bed taxes as a way to ensure long-term sustainability of the tourism industry for Cuba. Through surveys of tourist visitors to Cuba, I will seek to 1) define the optimal value of an environmental bed tax, 2) recommend best practices for the protection and investment of funds raised, and 3) estimate the potential impact such a tax could have on the environmental preservation budget and overall economy.

Given that the existing body of literature continuously highlights funding as a constraint for environmental efforts in Cuba and there are many valid areas requiring funding for successful implementation, an identification of a viable revenue source is an important and useful contribution to the existing body of knowledge. Such revenue generation must be paired with an effective method for protecting and determine investment opportunities for the funds, and a planning structure for the most impactful investments to make over time.

The findings of this research may also be expanded to the Caribbean and broader global tourism industry. Travel and tourism together are worth around US$ 3.5 trillion per annum and employed 200 million people at the end of the 20th Century (Davenport & Davenport, 2006). Tourism is especially important for developing countries – many gain significant or dominant income from the industry, particularly islands and other countries with substantial coastal tourism – and Caribbean countries are four times more dependent

on tourism than any other area in the world (Davenport & Davenport, 2006 - citig Gormsen 1997).

The Current Tourism & Environmental Tax and Fee Landscape

There is a well-documented need for supplemental funding for environmental efforts globally. The United Nations Development Programme has underlined an important trend of growing insufficient funding for Protected Areas – a determination of land that is deemed important for biosphere health and diversity. They cite a 2008 World Wildlife Fund study of over 50 countries that shows a widening the funding gap for these areas. In the Latin America and Caribbean region - which accounts for almost 40% of the earth's biodiversity, the Protected Area funding gap ranges from $314 to 700 million, depending on the rigor of management activities prioritized (UNDP, 2012). They cite the need to supplement "inadequate national and regional budget allocations" with stand-alone financial strategies to generate and retain revenues for environmental protection, and offer that tourism-specific tax revenue generation can be "substantial" (UNDP, 2012). In a 2015 study out of Cambridge University, researchers found 8 billion tourists visit protected areas annually, generating as much as US$600 billion of tourism expenditure annually, which is a vast economic benefit compared to the less than $10 billion annually spent on site conservation (Cambridge, 2015). Specific to environmental protection funding needs, Dlamini and Masuku concluded that "protected areas are not adequately funded regardless of their unique contribution to nature conservation. As a result, there is an urgent and serious need for the development of innovative, diverse and sustainable financing mechanisms for protected areas" (Dlamini & Masuku, 2012). COP 12 also concluded that developing countries need external funding to boost national

budgets for conservation of biodiversity at ecosystem, gene and species levels (Dlamini & Masuku, 2012).

For countries where tourism is a major industry, tourism-related taxes and fees have become more widespread over the last two decades, creating precedent for initiating such a tax or fee in Cuba. It is important to note, however, that the revenues for 'tourism taxes' are not necessarily allocated to environmental conservation spending needs (Epler Wood, 2017) and therefore the difference in general tourism taxes and tourism taxes whose revenues are earmarked for environmental protection must be clearly deliniated. In 2014, noting that "there is currently an intense debate about the role of tourism taxation and its impact on the competitiveness and attractiveness of destinations; and a strong demand for more information" (OECD, 2014) the Organization for Economic Cooperation and Development (OECD) produced a study of 30 OECD and partner countries' tourism incentive schemes (primarily VAT reductions) and taxation systems. The results showed a varied approach to tourism economics, with some countries choosing to tax tourism activities and others choosing to reduce standard taxes and fees on tourism-related activities. The study found that most environmental-specific fees have been levied since 2000, so this area is still relatively young. The study found that the majority of bed/accommodation taxes are administered at the sub-national and primarily the municipal level, with only five countries (Chile, the Czech Republic, Egypt, Ireland and Spain) identifying examples at the national level (OECD, 2014). Importantly, Iceland's accommodation tax is one of very few where revenue is dedicated to promote the development, maintenance and protection of nature-based tourist attractions under public ownership or supervision via the Tourist Site Protection Fund, established in 2011.

Gooroochan & Sinclair identified 45 different types of taxes applied to the tourism industry in developed and developing countries, some of which are paid by businesses and others which tourists pay directly (Gooroochurn & Thea Sinclair, 2005). Most research into tourism tax efficiency agrees that the indirect specific hotel and the direct airport taxes are the least distorting in terms of tourism competitiveness (L. Ambrosie, 2014).

A World Tourism Organization study shows a wide range of total government tax revenues generated by the tourism industry. In Mauritius, for example, it accounts for 12–15% of tax revenue, whereas in some small, specialized countries where tourism is a major industry this percentage is much higher – 40% in the Maldives and over 50% in the Bahamas (Gooroochurn & Thea Sinclair, 2005). Accommodation taxes are common implementations of tourism taxes, due to the relative ease of collecting them, the large user base compared to specialized tourism activities, and the ability to distribute the impact based on the time the tourist spends in-country. In some countries, including Jamaica, the tax is levied as a flat rate of $4-12 per night, whereas in others it is assessed as a percentage of nightly accommodation price, including 13% in South Africa, 12.5% in Senegal, and 7.5% in Grenada (Gooroochurn & Thea Sinclair, 2005).

As adoption has grown more widespread, tourism taxes have also enjoyed growing support. Gooroochurn and Sinclair found that “tourism taxes can increase domestic welfare since international tourists bear most of the welfare loss associated with higher revenue” (Gooroochurn & Thea Sinclair, 2005). Taxes can be used to support local public resources and services, including energy and transportation infrastructure, waste and water management, and public land protection and maintenance. If tourists

benefit from these services and amenities without bearing a portion of the tax responsibility, their use becomes an externality to the tourists that is absorbed by local resident taxpayers. As such, there is a case to be made that it is appropriate to tax tourists and apply funds raised to support and maintenance of the public resources they use. Gooroochurn and Sinclair observe "the influx of tourists may impose extra public costs relating to the provision and maintenance of some amenities. As nonresidents, tourists do not pay direct taxes to finance these extras. An indirect tax may redress the balance so that the burden falls on those who are responsible for increasing the costs of provision" (Gooroochurn & Thea Sinclair, 2005). They also note that accommodation taxes charged on a percentage basis are equitable (because the more a visitor pays for a room, the more tax they pay), neutral to overall revenue generation if the tax is "relatively modest", cost effective (as collection and compliance falls to the accommodation providers) (Gooroochurn & Thea Sinclair, 2005). Finally, they re-set the balance of resource protection and use as "the burden falls on non-residents of the locality and is, in essence, a rent on the local resources, if used as such" (L. Ambrosie, 2014).

The United Nations Development Programme UNDP also supports the view that a tax or fee directly linked to tourism activities can be an effective tool. The UNDP's Guidebook of Environmental Finance Tools highlighted multiple case studies of environmental financing tools including environmental taxes, direct tourism-related fees and taxes, market-based-mechanisms (e.g. carbon offsets) and payments for ecosystem services (e.g. structures that incentivize long-term behavior changes at the individual level - for example, a sliding fee paid by tourists to a local village based on how many types of endangered species they see on an eco-tour that incentivizes villagers to cultivate

biodiversity). The UNDP found that among these options, fees such as departure or accommodation taxes have the "biggest opportunity for increased revenue with minimal associated costs" (UNDP, 2012).

There are conflicting views on the market's response to an environmental tax, which is why a willingness to pay study for Cuba's specific example is worthwhile. In a 1982 study, Fish showed that demand was elastic for trips to West African beaches and that tourists would seek a beach vacation elsewhere if overall vacation prices were raised due to a nightly bed tax, and as a result, "hoteliers cannot raise prices further because of strong competition from other beach destinations and are forced to absorb the tax by lowering costs or leaving the industry" (Gooroochurn & Thea Sinclair, 2005). However, more recent studies have challenged this view, finding that a Hawaii hotel room tax resulted in insignificant hotel revenue change and a small room tax on United States accommodations would have little tourism industry impact while generating substantial tax revenue – both implying inelastic demand (Gooroochurn & Thea Sinclair, 2005).

The Balearic Islands provide support for the viewpoint that enacting an environmental tax could have potential short-term negative economic impacts. A short-dated eco-tax levied in the Balearic Islands on nightly accomodations in 2002 was removed in 2003 due to the resulting ~20% reduction in visitor flows occurring since the taxes' inception ("The return of the eco-tax: Balearic islands to tax tourists," 30 March 2016). However, the tax was approved for re-instatement in 2016 for several reasons: first, the urgency of environmental protection has continued to come to the forefront forefront given tourism overcrowding and resultant waste management challenges, and second, destination taxation has become more common in Europe since the first iteration

of the tax and thus tourists are expected to be more used to such taxes and therefore less resistant. Business representatives were supportive of the tax, stating “a destination has a price, and as we have opted for more quality rather than quantity, then the tax is necessary” ("Government stands firm on tourist tax,").

The UNDP 2012 Environmental Financing Guidebook discusses common challenges and best practices for implementing an environmental tax or fee, including:

1) **Determining appropriate tax/fee:** Research into the appropriate fee, including willingness-to-pay studies and gathering opinions from stakeholders on all sides of the table, is critical to finding the equilibrium fee that maximizes revenue. Pricing that ignores consumer’s willingness to pay can lead to foregone revenue. Gathering information and obtaining buy-in can be lengthy and the results are likely to be inexact (UNDP, 2012).
2) **Fee collection:** An efficient and transparent fee collection infrastructure is important to ensure fees are accurately corrected and the funds make it to their intended destination. Tax development and administration requires experienced and highly trained staff, and ideally computerized systems to collect statistics and track revenue. In addition to creating a system that is operationally straightforward, it is also important to consider the potential for corruption or graft. The UNDP suggests an electronic system where no money changes hands to support accountability (UNDP, 2012). In Cancun, for example, tax evasion rates between 1980 and 2010 ranged from 9% to 96% (L. Ambrosie, 2014). However, with increased online declarations directly through the banking system to the treasury, evasion of tourist-related taxes

have dropped sharply from 48 percent in 2000 to 13 percent in 2008 (Fuentes Castro H., 2010).

3) **Fund distribution:** It is important that once funds have been collected, that they are directed to their intended purpose (UNDP, 2012). An independent trust fund, such as those established in Belize and Iceland, can help ensure independent oversight and accountability that funds are distributed appropriately. They write that this mechanism will "facilitate stakeholder approval" and mention that "revenue generation capability, implementation time, and a low degree of complexity make this tool worth consideration, especially when compared to other tools" (UNDP, 2012).

Again, it is important to note that available research shows for the most part general tourism-related taxes are spent on marketing efforts for the destination in question, e.g. as Linda Ambrosie has elucidated in her research on tourist taxes in Mexico (L. M. Ambrosie, 2015). Through her research, Epler Wood has found that funds raised via a tourism tax are not typically allocated to infrastructure or local environmental protection unless the tax is levied specifically for the environment and proceeds are administered through trust fund that is dedicated to this purpose, such as is the case in Belize. In her work she calls for a more thorough international review of how tourism taxes are allocated (Epler Wood, 2017). While we see precedent for taxing tourists and examples of how such taxes have been sized in other countries, in putting an environmental tax on tourists in place it is important for Cuba to clearly delineate the purpose of the tax and supporting structure to ensure the funds are properly directed to achieve environmental goals.

Environmental Tax Mechanism Case Studies

Belize was an early adopter of environmental fees, and has set up a successful infrastructure for the stewardship of these proceeds. As a result of the 1995 passing of the Protected Areas Conservation Trust Act, Chapter 218, in January 1996, the country established the PACT (Protected Areas Conservation Trust), a trust fund which is an independent legal entity outside of the government, dedicated to directing monies for environmental ends. The trust is funded with proceeds from a BZ $7.50 (US $3.75) conservation fee, levied at the airport upon departure, as well as a 20% cruise passenger tax and tourist entrance fees in addition to supplemental government funding. In 2010, total trust revenues were $10.7MM – equal to ~2.6% of the Belize government's annual budget – with $6.1MM coming from fees (Drumm, n.d.). The PACT allocates grant funding to PA managers through a competitive bidding process (Drumm, n.d.). Best practices learned from Belize's system include that fee collection must be complemented by an appropriate and effective legal and regulatory framework, and that government participants must be educated on the benefits of a comprehensive environmental program to ensure buy-in. Interestingly, even a country as invested in environmental protection as Belize has struggled with pricing the environmental fee. The initial fee proposal of US $20 was fought by the tourist industry who worried that it might discourage tourist visits, and thus the fee was reduced to $10 and ultimately $3.75 where it stands today (UNDP, 2012).

Iceland has also implemented an accommodation tax, which funds a Tourist Site Protection Fund, established in 2011. The Fund is managed by a board made up of four representatives appointed by the Minister of Industry. Two are appointed upon nomination by the Icelandic Travel Industry Association, one upon nomination by the Association of Local Authorities in Iceland, and one without nomination who acts as chairperson. The Fund is managed by the Icelandic Tourist Board. Currently 40% of available funds are allocated to the Environment Agency for developments in national parks and other protected areas. The Fund board makes proposals to the minister regarding fund allocations, taking into consideration the views of environmental authorities and other stakeholders concerning the relative merits for proposed developments. OECD survey of current trends and policies in tourism taxes cites the "need for a better understanding of the tax landscape, including an analysis of the costs and benefits, price sensitivities and the overall impact on international competitiveness associated with various taxes, fees and charges" (OECD, 2014)

In 2012 the Bahamas embarked on a planning process for tax reform where the main proposal was a 10% VAT applied to certain tourism-related items (hotel lodging; food and beverages served in hotels) and 15% VAT overall. While this system actually created an abatement opportunity for tourists, there are important lessons that can be learned from their planning process regarding taxation implementation for a small island country. Projected 2013 revenue from the adoption of this system was $45.1 million, or 3% of total tax budget. The proposed VAT relies on a self-assessed collection system to minimize complexity and compliance and administration costs (Ministry of Finance of the Bahamas, 2012). In a whitepaper on this implementation, the Bahamanian government

acknowledges that they must make an active choice on the size threshold above which registrants must collect the VAT. They cite an international IMF study entitled "The Modern VAT", which concludes that the largest 10 percent of firms account for roughly 90 percent of total turnover and that therefore revenues collected from smaller firms do not warrant the resources required to collect them. They note, "even if a small amount of revenue is foregone by dropping many small taxpayers, any such revenue loss should as a rule soon be recouped because the tax administration will be able to concentrate its efforts where they are most needed, that is on the medium and large taxpayers who account for almost all VAT revenues. It is also relevant to note that, with the record keeping practices of small firms generally, the task of auditing them is extremely challenging and costly (relative to any potential revenue recoveries)" (Ministry of Finance of the Bahamas, 2012).

Methodology

International tourist willingness to pay was evaluated using a contingent valuation study. The contingent valuation/stated preference approach is a well-accepted study method for collecting data about a consumer's willingness to pay in the absence of actual historical data. In 1993, the National Oceanic and Atmospheric Administration (NOAA) convened a panel co-chaired by Nobel Prize winners Kenneth Arrow and Robert Solow to examine efficacy and best practices for contingent valuation (CV) analysis which concluded, "CV studies can produce estimates reliable enough to be the starting point for a judicial or administrative determination of natural resource damages including lost passive-use value" (Carson, 1999). Over 80 studies offer comparisons between contingent valuation findings and results gathered through other indirect methods - for example, comparing willingness to pay an entrance tax for a state park via survey vs actual travel data - and several studies also compare a CV survey with actual behavior. The results are, on average, close, with continent valuation methods estimating a slightly lower willingness to pay than other indirect methods while staying highly correlated (Hanemann, 1994).

The NOAA panel stated that "the simplest way to approach the valuation problem is to consider a contingent valuation survey as essentially a self-contained referendum in which respondents vote to tax themselves for a particular purpose" (Hanemann, 1994) – and this is the approach that was taken for this study. The questionnaire used sliding payment scales for respondents to indicate their willingness to pay in each category.

Payment scales were shown by Donaldson, Thomas & Torgerson to be more effective than open-ended survey methods (i.e. requesting a free response to the question, "How much would you be willing to pay for X") in creating valid WTP responses (Donaldson, Thomas, & Torgerson, 1997). The NOAA panel further underscored the importance of the closed-end format. In addition, Hanemann advised that anonymity is an important pre-condition for success of WTP surveys in order to create an environment where respondents feel they can answer truthfully without judgment (Hanemann, 1994). As such, the survey was administered via an anonymous link with no way for the researcher to trace the origin of the response, and no personal identifying information was collected. Other best practices that were taken into consideration include that the survey should contain a clear and well laid-out introduction so the respondent understands what they are being asked; the survey should be of reasonable length and complexity; the survey should be administered in an environment where the respondent can digest, reflect and make an informed decision (i.e., not in a busy, loud and crowded mall) (Carson, 1999). To comply with these best practices, the survey contained an introduction and clear instructions, was brief (the respondent clicked through 4 web pages including introduction and questions pages and took on average less than five minutes to complete the survey) and was administered online so the respondent could answer at their leisure in a quiet environment without distractions. Finally, Carson recommends the findings should be scanned for coherence to make sure they make sense and any outliers should be evaluated and if appropriate, removed (Carson, 1999), which was followed for this survey.

Data were collected via an online survey of international tourists who have visited or are planning a trip to Cuba. The entire survey including introduction can be found in

Table 6 in the Appendix. Data was collected during a one month time period from April 15 2017 to May 15 2017. The survey was distributed via personalized and general outreach by the researcher to potential survey candidates via email, social media, and online Cuba-related travel forums including Fodor's, TripAdvisor, Trippy, and Reddit. The travel forums were selected as an appropriate venue to solicit responses because their purpose is to give travelers a place to share travel experiences and request and provide tips and recommendations and therefore the Cuba-specific forums are populated with people who have recently traveled to or are planning to travel to Cuba. Advertisements or postings from businesses or officials are not allowed on these forums. No reward or compensation was given for survey participation and respondents were instructed that they could skip any questions they did not want to answer or quit the survey completely at any time. Survey and recruitment materials were reviewed and deemed eligible for a a Category 2 Exemption by the Committee for the Use of Human Subjects at Harvard University. The exemption was received due to the fact that the research involved survey procedures where information obtained was not recorded in such a manner that Human Subjects can be identified, directly or through identifiers linked to the subjects. Further, any disclosure of the Human Subjects' responses outside the research will not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

The first section of the survey asked about country of citizenship and country of residence, as well as basic trip data (length of stay, number of people in travel party). In order to keep prices consistent, respondents were asked to confirm that they had visited Cuba in the last 18 months or were planning a trip in the upcoming 18 months. Responses

from participants who did not fall within that range were eliminated in order to keep absolute prices consistent. Participants were asked to state their country of citizenship and country of residence, the length of their trip in days, and the number of people they were accounting for in their travel budgets. The second section asked about actual spending budgets in USD. USD was used as the currency measure instead of Cuban currencies. First, Cuba has two currencies: the Convertible Cuban Peso (CUC) and the Cuban Peso (CUP), so asking for responses in Cuban currency could have been confusing to participants and yielded less accurate responses. Second, given that the majority of solicited survey participants were American citizens or residents and USD are widely accepted in Cuba, it was assumed that quoting budgets in USD would be easier and more efficient for participants than trying to convert to a Cuban currency in their head while taking the survey. Participants were asked to state their actual daily budget for accomodations, food and beverage, transportation, and activities & entertainment. They were also asked to state their shopping and souvenir budget for the entire trip. In the final section, participants were asked their hypothetical willingness to pay an environmental fee levied on accomdations, using language adapted from a 2015 peer-reviewed study of willingness to pay for marine-based tourism was conducted in the Ponta do Ouro Partial Marine Reserve, Mozambique (Daly, Fraser, & Snowball, 2015). The question was stated as follows and participants replied using a % sliding scale from 0% to 20%:

> *"Consider the possibility that the Cuban government levies a tourist fee to fund environmental protection efforts. The fee is payable at your nightly accommodation and will be included on your bill. The proceeds go to a fund that is controlled by a government conservation agency to protect the environment in Cuba with the goal of enabling long-term sustainability of Cuba's natural resources for generations of tourists and Cuban citizens to come. Keeping in mind that there are other things you may want to spend your money on, what is*

the highest amount as a percentage of your nightly accommodation bill, that you are personally willing to pay per day as an environmental conservation fee?"

Finally, participants were asked the following question and asked to reply using a % sliding scale from -20% to 20% for the same budget categories they had originally outlined (accomodations, food and beverage, transportation, activities & entertainment and souvenirs):

"Assume you must pay the environmental fee you indicated you would be willing to pay in the last question. How much more/less on a % basis would you be willing to spend in the following categories?"

A total of 151 responses were collected. 29 responses were eliminated leaving 122 useable responses. Responses were because the participant had not been to Cuba nor was planning to visit within 18 months, the participant did not complete all survey questions, or the answers did not make sense (i.e., answered $0 actual/predicted spending for each budget category).

The data were then analyzed. "Shopping & Souvenir" total trip spend was divided by # of days spent in country to arrive at a daily average "Shopping & Souvenir" total and this was added to each respondent's other daily spending budgets to create an "Daily Per Person Total Spend – Pre-Environmental Fee ($)". The "% of accomodation bill you would be willing to pay as an environmental fee" was applied to the respondent's stated daily accommodations budget to calculate a "Daily Per Person Environmental Fee - Willingness to Pay ($)". The "Daily Per Person Environmental Fee - Willingness to Pay ($)" was multipled by the average of 7.55 "Nights Spent in Cuba" (minimum: 2; maximum: 24; standard deviation: 4.18) to arrive at the "Per Person Per Trip Environmental Fee – Willingess to Pay ($)". The percentage increase or decrease in a respondent's willingness to pay in each budget category if they assumed they had to pay

the environmental fee they had stated they would be willing to pay was applied to their originally stated daily budgets and added to their stated daily environmental fee willingness to pay to calculate a "Daily Per Person Total Spend – After/Including Environmental Fee ($)". The "Daily Per Person Total Spend – After/Including Environmental Fee ($)" was compared to "Daily Per Person Total Spend – Pre-Environmental Fee ($)" to calculate "Change in Daily Per Person Total Spend – After/Including Environmental Fee ($)" on a USD and percentage basis. Minimum, maximum, mean value and standard deviation were determined for each gathered or collected data set that returned a numerical response.

Correlation analyses were run on the following data pairs: "Country of Citizenship" and "Willingness to Pay an Environmental Fee"; "Country of Residence" and "Willingness to Pay an Environmental Fee"; "Country of Citizenship" and "Daily Per Person Total Spend – Before Environmental Fee"; "Country of Residence" and "Daily Per Person Total Spend – Before Environmental Fee"; "Country of Citizenship" and "Nights in Cuba"; "Country of Residence" and "Nights in Cuba"; "Daily Per Person Total Spend – Before Environmental Fee" and "Willingness to Pay an Environmental Fee".

Using historical tourism data (WTO, 2016) and suvey results for average "Days Spent In Country", average "Willingness to Pay an Environmental Fee" and average "Change in Daily Per Person Total Spend – After/Including Environmental Fee ($)", estimated "Total Potential Annual Environmental Fee Collections" and "Potenial Change in Annual Tourism Revenues" were calculated. Given that there was no correlation between "Country of Residence" or "Country of Citizenship" and tourist's "Daily Per

Person Total Spend – Before Environmental Fee", "Willingness to Pay an Environmental Fee", or "Nights Spent in Cuba", these values were based on average "Daily Per Person Total Spend – Before Environmental Fee", "Willingness to Pay an Environmental Fee" and "Nights Spent in Cuba" multiplied by the most recent total arrivals of non-resident visitors at Cuban national borders (Table 5), and projected forward using multiple growth assumptions.

Results

When stating their travel budget before being asked about a potential environmental fee, survey respondents had a mean "Daily Per Person Total Spend – Pre-Environmental Fee ($)" of $272 (minimum $37; maximum $2,659; standard deviation $259), which included budget for Accomodations, Food & Beverage, Transportation, Activities & Entertainment, and Shopping & Souvenirs.

When asked about their willingness to pay an environmental fee, survey respondents stated that, on average, they would be willing to pay an environmental fee equal to 5.3% of their nightly accommodation budget (minimum 0%; maximum 20%; standard deviation 3.7%). Applying this % willingness to pay to the subject's stated pre-environmental fee accommodation budget led to an average "Daily Per Person Environmental Fee - Willingness to Pay ($)" of $4.61 (minimum $0; maximum $97.70; standard deviation $9.34), corresponding to an average "Per Person Per Trip Environmental Fee – Willingess to Pay ($)" of $34.81 based on the average trip length of 7.55 days. A visual depiction of willingness to pay before and after the introduction of an environmental fee can be found in Table 8.

After being told that they would have to pay the environmental fee they said they would be willing to pay, respondents' total daily willingness to pay was, on average, static or increased. On average, respondents were willing to pay 0.6% more for Food & Beverage, 0.5% more for Accomodations, Transportation and Activites & Entertainment, and 0.1% more for Shopping & Souvenirs. Applying these percentages to their pre-

environmental fee budgets in each category and totaling the revised budgets and stated environmental fee resulted in an average "Daily Per Person Total Spend – After/Including Environmental Fee ($)" of $282 (minimum $40; maximum $3,242; standard deviation $305), or an average increase in total spending per person per night of $9.29 / 2.1% including the environmental fee, compared to their pre-environmental fee budgets. This corresponded to an additional spending of $70.14 per person over the course of her trip, including the environmental fee. Not only were respondents willing to pay an environmental fee, they were willing to pay an average of $4.68 more per person per day or $35.33 per person per trip on the surveyed budget categories above and beyond the environmental fee, which is equal to 0.2% of their initial travel budgets.

No statistically significant correlation was found among any of the following data pairs: "Country of Citizenship" and "Willingness to Pay an Environmental Fee"; "Country of Residence" and "Willingness to Pay an Environmental Fee"; "Country of Citizenship" and "Daily Per Person Total Spend – Before Environmental Fee"; "Country of Residence" and "Daily Per Person Total Spend – Before Environmental Fee"; "Country of Citizenship" and "Nights in Cuba"; "Country of Residence" and "Nights Spent in Cuba"; "Daily Per Person Total Spend – Before Environmental Fee" and "Willingness to Pay an Environmental Fee".

Because there was no statistically significant correlation found in sub-groups of respondents based on the data collected, the average willingness to pay an environmental fee and incremental spending from the survey was used to project total potential collections and future growth. Based on average suvey participant "Willingness to Pay an Environmental Fee" per person per trip combined with 2015 data on arrivals of non-

resident visitors at national borders, “Total Potential Annual Environmental Fee Collections” were estimated to be $122,681,695. Incremental spending in other budget categories were estimated to be $124,544,541, for a total $247,226,237 “Potential Change in Annual Tourism Revenues” including both the environmental fee and incremental spending in other budget categories.

Based on the results of this survey, if the environmental fee program were implemented in 2018, over a 10-year period assuming the more conservative 2000-2014 annualized growth rate of non-resident visitors arriving at Cuba’s national borders of 7.4% and holding all other averages found in this study constant, the total collections of environmental fees would be $1.7 billion before inflation. Using the more aggressive growth rate experienced from 2014-2015 of 17.39%, total collections would equal $2.8 billion before inflation. Over this same 10 year period using the same assumptions, total incremental tourism spending in the other surveyed budget categories excluding the environmental fee would be $1.8 billion using the 2000-2014 growth rate and $2.8 billion using the 2014-2015 growth rate. Total incremental revenues including both environmental fee collections and incremental spending would be $3.5 billion using the 2000-2014 growth rate and $5.6 billion using the 2014-2015 growth rate.

Discussion

This research had two goals surrounding a potential environmental fee for Cuba: first, determining the best practices for levying and administering an environmental fee and its proceeds, and second, determining optimal willingness to pay such a fee. By studying practices in other countries, I determined the best way to assess an environmental fee is to levy it as a percentage of each tourist's nightly accommodation bill, due to both the ease of instating and the fact that it dynamically adjusts based on each tourist's overall spending and length of time spent in country. Best practices from other countries (i.e. Belize, Iceland) who have successfully implemented and administered an environmental tax suggest that the funds should be deposited in an independent trust that sits outside of the Cuban government and is not subject to special interests from the government or industry. The trust should have discretion to evaluate grant proposals from government and NGO groups and distribute funds at its discretion, and should be responsible for monitoring and reporting on collections and distributions. An important concern for the trust will be ensuring assets are used for their intended purposes and do not become subject to graft, corruption or special interests. In order to safeguard against these issues, board members should be selected from diverse and independent backgrounds trust and be audited periodically by an independent third party auditor.

The survey results supported the initial hypothesis that an environmental tax levied as a percentage of the visitor's accommodation bill would not decrease overall

tourism spend in-country. On average, tourists would be willing to pay an environmental fee equal to 5.3% of their nightly accommodation budget. In addition, if they were made to pay the environmental fee they said they would be willing to pay, they would be willing to pay an average of 0.2% more across all of their original budget categories, for a total increased spend in country of 2.1% including the environmental fee and incremental spending in other areas. Projecting these results forward would yield between $1.7-2.8 billion in environmental fees collected and $1.8-2.8 billion in incremental tourist revenue inflows excluding environmental fees, for a total of $3.5 -5.6 billion in total incremental tourist spending in country including both environmental fees and incremental spending in other budget categories over 10 years, and depending on growth rate assumptions and excluding inflation.

Based on these preliminary findings, it is possible that Cuba could institute an environmental fee equal to 5% of the nightly accommodation bill, in line with tourist reported willingness to pay. This fee could be collected at the point of sale for accomodations, and should include specific language about the purpose of the fee and trust stewardship plan, similar to how it was messaged in the survey. Additional analysis should be performed to determine the optimal merchant size threshold for collections, as well as the opportunity for electronic collection to streamline processes and make collection as efficient as possible.

It is important to note that these results are preliminary and based on a limited and potentially skewed data set. There are several limitations to the survey data collection methods and results. First, age and income demographic data were not collected so it is possible that the data is skewed. It is also possible that there is a statistically significant

difference in travel budget and willingness to pay an environmental fee among different age groups and income brackets. Finally and perhaps most importantly, the countries of origin/residence of the surveyed sample set are not representative of the overall Cuba tourist population. 84% of survey respondents were US citizens/residents, though US citizens made up only 4.57% of total visitors to Cuba in 2015 (WTO, 2016). While no statistically significant correlation was found between country of citizenship or residence and total travel budget and willingness to pay, it is possible that this could be due to the fact that the demographics of survey respondents was skewed, and a larger sample size and more proportional diversity of global citizenship could have yielded different results. While no correlation between US and non-US based visitors was found, given the skew in the sample and the lack of other information collected about the sample set's overall deomgrapics, it is possible that the travel preferences and willingness to pay among the sample set of survey respondents may differ from the overall Cuba tourist population and therefore the results of the survey are not representative of this population. Further research is needed to understand whether the preferences on willingness to pay provided by the subset of Cuba tourists represented in the survey respondents applies among a larger sample whose demographics are consistent with the demographic breakdown of all Cuba tourists.

Potential further research could include collecting samples from a wider sample set that is more representative of the overall Cuba tourist population to see if there is a statistically significant difference in metrics for travel budget and willingness to pay an environmental fee. In addition, more demographic data could be collected to see if a difference in willingness to pay is present among different demographic subgroups. If

such difference exist, they could be mapped into the total environmental fee and incremental spending growth model based on historical Cuba tourist demographics to provide greater precision to these results.

Broader limitations of the research include that willingness to pay surveys may differ from actual willingness to pay. Finally, pragmatic limitations of the research include the feasibility of the Cuban government to implement, collect and enforce an environmental bed tax and provide the resources and infrastructure that would be required to do so, proper stewardship of the trust, and elimination of graft. Specifically, the legality of establishing a trust for the stewardship of environmental fee funds based on Cuban laws has not been determined. Further research into feasibility of legally creating a trust for this purpose must be done. Daniel J. Whittle, whose work on legal issues in Cuba I cited several times in this paper, is the Senior Attorney and Senior Director of the Cuba Program for the Environmental Defense Fund ("Environmental Defense Fund," 2017) and may be a good resource for exploring this area further.

One hypothesis for the high willingness to pay an environmental tax found in the contingent valuation study is based on Richard Butler's life cycle of a tourism destination model which was developed in 1980 (Butler, 2014). A depiction of this model can be found in Table 9. Butler asserts that tourist destinations go though stages of development. When a destination begins gaining traction among tourists, the first visitors to venture there are the "explorers" who value being among the first guests to a destination and don't mind the tradeoff of fewer creature comforts than a more established destination. Over time the destination develops as infrastructure is built to accommodate increased demand. Eventually, the destination reaches maturity or

saturation, at which point it either begins to decline or actively seeks rejuvenation. While Cuba has been a popular destination for Canadians and other non-Americans, the historical hurdles for US citizens to visit Cuba over the last 50 years mean that those who have recently visited or are planning to visit Cuba are among a small subset of Americans and can therefore be categorized as "explorers". Given that the majority of survey respondents were American, we can assume that they are predominatly "explorers" which may explain why they are willing to pay a preminum for environmental protection and spend more in-country when they believe environmental stewardship to be a local value. Such an explanation would provide a strong impetus for the Cuban government to act quickly to put an environmental tax in place. Based on the survey results, the environmental tax is supported by the current visitor demographic so is unlikely to receive significant pushback or dis-incentivze them from visiting. However, tourists likely to visit as Cuba achieves maturity as a tourist destination may not share this same view, so putting the tax in place now is likely to be the smoothest transition point from a timing perspective and will set the standard for future – and hopefully eliminate or reduce the process of stagnation and decline in the future from an environmental perspective.

Again, future research could be conducted that requests demographic data from survey respondents including age and income to further examine differences in preference between sub-groups. Another avenue for future research could include qualitative interviews to understand why the institution of an environmental fee created a higher total willingness to pay among survey respondents.

Regardless of the reason for tourists' willingness to pay an environmental fee, it is important to consider the fact that ideally, an environmental fee should be assessed based

not on tourist willingness to pay but on the environmental and corresponding economic costs imposed by such tourists on the receiving country. The results of this study beg the question of whether the receipts that would be generated by a 5% environmental bed tax sufficient to fund a robust environmental protection system for the country. The estimated ~$122.6 million of annual environmental fee receipts is equal to 0.1% of Cuba's 128.5 billion GDP ("The World Factbook," 2016). While the absolute value of future receipts is significant, ideally, an environmental tax should be set based required revenues to fund a comprehensive sustainable tourism management program. Further research is needed to understand what developing such a program would look like for Cuba, but the OECD provides useful guidance on how any such program should be supported by "detailed monitoring, evaluation and analysis of the impacts of existing taxes and incentives to ensure that policy makers have the necessary tools to implement evidence-based policies to support the long-term sustainable growth of the tourism industry" (OECD, 2014). The WTO's Guidebook detailing "Indicators of Sustainable Development for Tourism Destinations" is an exhaustive manual for how and what should be measured in determining key programs and their efficacy (Organization, 2004). For a country like Cuba, it is necessary to preserve environmental assets to uphold the long-term value of the tourism industry. The relationship of cost of tourism to its benefits, which has been researched by Ambrosie and others, is currently not measured and must be in order to create a program of true "sustainability". If an environmental budget in excess of $122.6 million annually is required for proper stewardship, tourism taxes should be levied to achieve this even if there is a breaking point where the fee reduces short-term tourism revenue flows.

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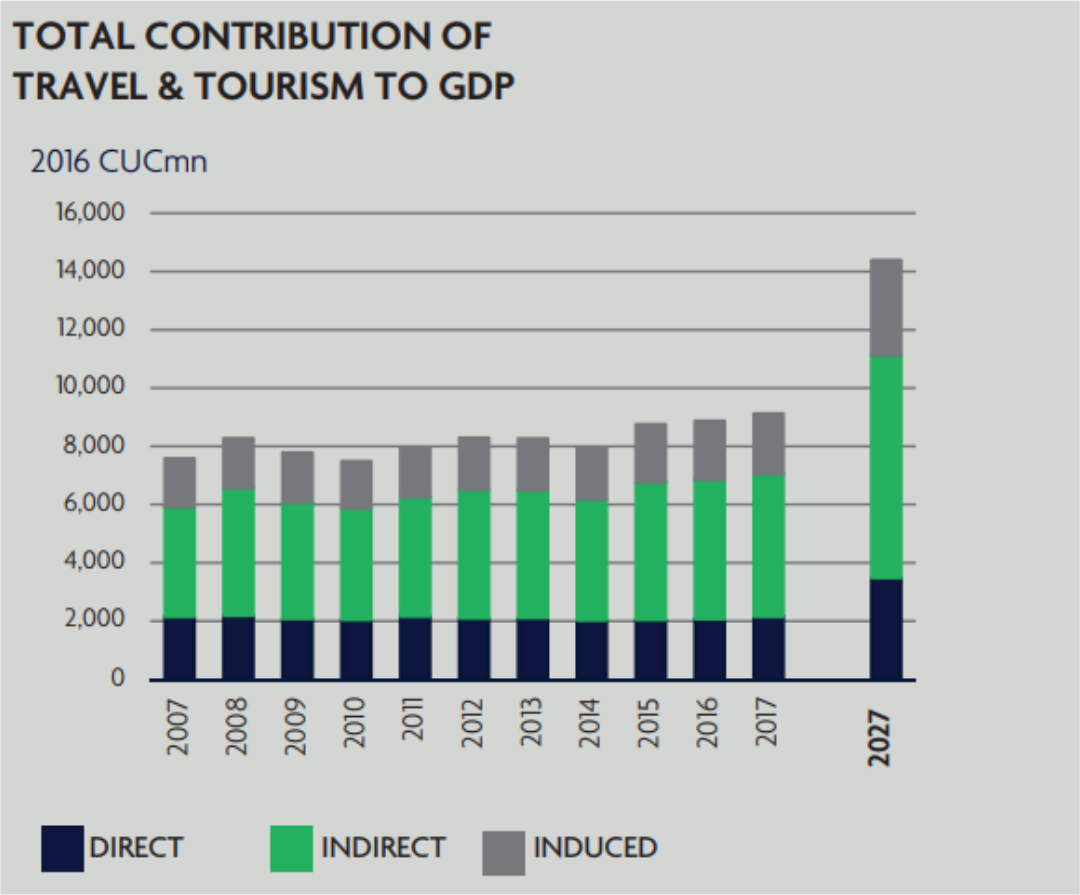
Appendix

Table 1: Real GDP Shares, Cuba Average 1997-2009

GROSS DOMESTIC PRODUCT	**100.0**
GOODS	22.2
AGRICULTURE, CATTLE, FORESTRY	4.8
FISHING	0.4
MINING	0.8
SUGAR	1.0
MANUFACTURING (EXCL. SUGAR)	14.0
IMPORT RIGHTS	1.3
BASIC SERVICES	41.5
ELECTRICITY, GAS, WATER	1.7
CONSTRUCTION	6.1
COMMERCE, SMALL REPAIRS	19.7
HOTELS AND RESTAURANTS	5.1
TRANSPORT, STORAGE, COMMUNICATION	9.0
OTHER SERVICES	36.2
FINANCIAL INTERMEDIATION	2.8
ENTREPRENEURIAL SERVICES, REAL ESTATE	3.5
PUBLIC ADMINISTRATION AND SECURITY	3.6
SCIENTIFIC RESEARCH	0.4
EDUCATION	8.3
PUBLIC HEALTH AND SOCIAL SERVICES	12.4
SPORTS AND CULTURAL SERVICES	3.2
OTHER COMMUNAL SERVICES	2.1

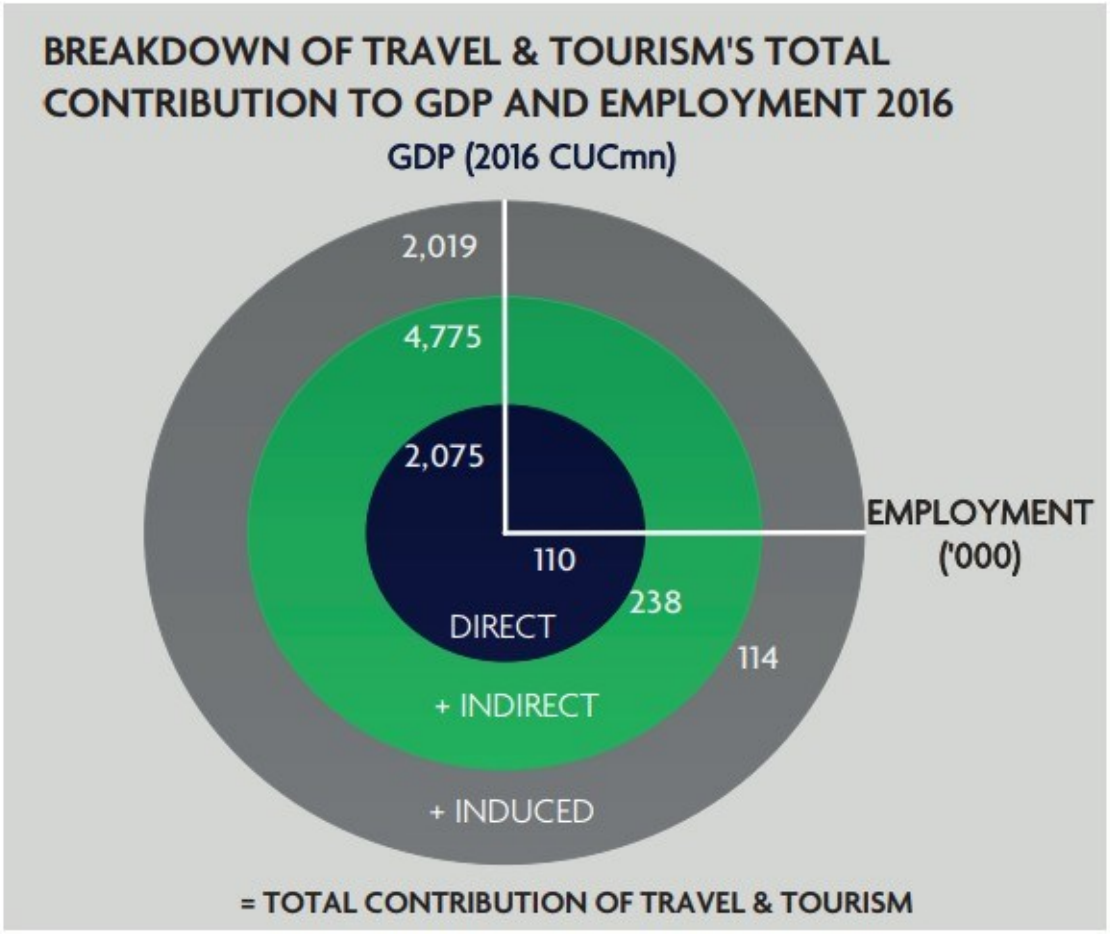
(Romeu et al., 2016)

Table 2: Total Contribution of Travel and Tourism to Cuba GDP



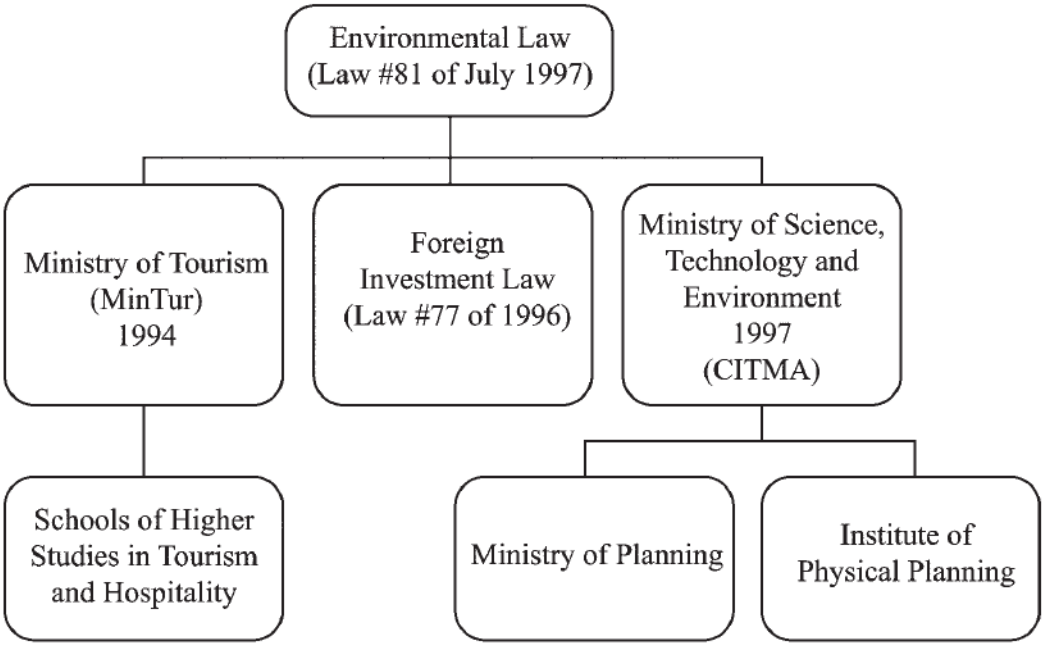
(Turner & Freiermuth, 2017)

Table 3: Breakdown of Travel and Tourism's Total Contribution to GDP and Employment 2016



(Turner & Freiermuth, 2017)

Table 4: Cuban Government Restructuring of Development and Conservation Policies



(Lindeman et al., 2003)

Table 5: Cuba - Arrival of Non-Resident Visitors at National Borders, by Country of Residence

	2011	2012	2013	2014	2015	Market share 2015	% Change 2015-2014
TOTAL	**2,716,317**	**2,838,607**	**2,852,572**	**3,002,745**	**3,524,779**	**100.00**	**17.39**
AFRICA	**8,202**	**10,975**	**12,573**	**14,714**	**14,163**	**0.40**	**-3.74**
EAST AFRICA	**646**	**675**	**691**	**785**	**1,366**	**0.04**	**74.01**
All countries of East Africa	646	675	691	785	1,366	0.04	74.01
CENTRAL AFRICA	**3,180**	**4,196**	**6,413**	**7,232**	**5,527**	**0.16**	**-23.58**
Angola	2,838	3,793	5,380	5,905	5,062	0.14	-14.28
Other countries of Central Africa	342	403	1,033	1,327	465	0.01	-64.96
NORTH AFRICA	**1,789**	**1,994**	**2,412**	**2,800**	**3,084**	**0.09**	**10.14**
All countries of North Africa	1,789	1,994	2,412	2,800	3,084	0.09	10.14
SOUTHERN AFRICA	**1,355**	**2,300**	**1,555**	**2,279**	**2,136**	**0.06**	**-6.27**
All countries of Southern Africa	1,355	2,300	1,555	2,279	2,136	0.06	-6.27
WEST AFRICA	**1,232**	**1,810**	**1,502**	**1,618**	**2,050**	**0.06**	**26.70**
All countries of West Africa	1,232	1,810	1,502	1,618	2,050	0.06	26.70
AMERICAS	**1,401,201**	**1,542,413**	**1,590,686**	**1,680,782**	**1,959,970**	**55.61**	**16.61**
CARIBBEAN	**15,536**	**15,568**	**16,915**	**19,126**	**25,681**	**0.73**	**34.27**
Antigua and Barbuda	76	89	90	113	86	0.00	-23.89
Bahamas	2,966	3,007	2,644	2,953	3,450	0.10	16.83
Barbados	165	172	149	183	241	0.01	31.69
Bermuda	99	114	123	139	173	0.00	24.46
Cayman Islands	583	637	723	1,033	1,232	0.03	19.26
Dominica	112	91	103	103	123	0.00	19.42
Dominican Republic	4,969	4,807	4,652	5,376	6,797	0.19	26.43
Grenada	81	84	80	190	208	0.01	9.47
Haiti	3,839	3,836	5,351	5,315	8,670	0.25	63.12
Jamaica	1,285	1,309	1,636	1,875	2,411	0.07	28.59
Martinique	3				1	0.00	
Netherlands Antilles	86	37					
Puerto Rico	10	4	10	11	5	0.00	-54.55
Saint Lucia	179	104	108	133	176	0.00	32.33
Saint Vincent and the Grenadines	102	120	88	123	242	0.01	96.75
Trinidad and Tobago	892	1,097	955	1,226	1,573	0.04	28.30
Other countries of the Caribbean	89	60	203	353	293	0.01	-17.00
CENTRAL AMERICA	**29,075**	**33,425**	**28,922**	**28,172**	**35,871**	**1.02**	**27.33**
Belize	230	300	299	345	368	0.01	6.67
Costa Rica	8,071	8,119	5,783	5,751	9,144	0.26	59.00
El Salvador	2,700	3,817	3,659	2,913	3,764	0.11	29.21
Guatemala	3,689	3,712	3,144	2,847	3,453	0.10	21.29
Honduras	1,950	2,806	1,106	1,104	2,091	0.06	89.40
Nicaragua	2,088	2,373	2,166	1,935	2,204	0.06	13.90
Panama	10,347	12,298	12,765	13,277	14,847	0.42	11.82
NORTH AMERICA	**1,152,210**	**1,248,035**	**1,282,781**	**1,349,151**	**1,566,731**	**44.45**	**16.13**
Canada	1,002,318	1,071,696	1,105,729	1,175,077	1,300,092	36.88	10.64
Mexico	76,326	78,289	84,704	82,820	105,406	2.99	27.27
United States of America	73,566	98,050	92,348	91,254	161,233	4.57	76.69
SOUTH AMERICA	**204,380**	**245,385**	**262,068**	**284,333**	**331,687**	**9.41**	**16.65**
Argentina	75,968	94,691	90,084	68,849	85,172	2.42	23.71
Bolivia, Plurinational State of	1,286	2,204	2,440	2,752	3,410	0.10	23.91
Brazil	14,507	16,174	17,573	19,513	22,001	0.62	12.75
Chile	23,527	27,551	35,952	38,500	49,194	1.40	27.78
Colombia	24,873	33,343	34,828	37,403	30,746	0.87	-17.80
Ecuador	6,964	6,281	7,369	6,647	7,229	0.21	8.76
French Guiana		1	1	9	2	0.00	-77.78
Guyana	297	294	282	205	320	0.01	56.10
Paraguay	559	677	661	1,385	1,997	0.06	44.19
Peru	15,188	19,737	18,528	19,536	24,861	0.71	27.26

	2011	2012	2013	2014	2015	Market share 2015	% Change 2015-2014
Suriname	106	149	100	435	150	0.00	-65.52
Uruguay	7,009	7,910	8,294	10,258	11,482	0.33	11.93
Venezuela, Bolivarian Republic of	34,096	36,373	45,943	78,839	95,123	2.70	20.65
Other countries of South America			13	2			
EAST ASIA AND THE PACIFIC	**48,498**	**53,158**	**56,229**	**67,683**	**89,592**	**2.54**	**32.37**
NORTH-EAST ASIA	**25,403**	**31,790**	**33,991**	**42,804**	**54,393**	**1.54**	**27.07**
China	14,749	18,836	22,218	28,239	31,733	0.90	12.37
Hong Kong, China	10	15	2	7	9	0.00	28.57
Japan	5,420	7,348	5,896	7,589	13,792	0.39	81.74
Korea, Democratic People's Republic of	318	234	149	224	44	0.00	-80.36
Korea, Republic of	4,352	4,568	4,996	5,730	7,567	0.21	32.06
Mongolia	78	98	87	83	77	0.00	-7.23
Taiwan Province of China	468	688	640	917	1,169	0.03	27.48
Other countries of North-East Asia	8	3	3	15	2	0.00	-86.67
SOUTH-EAST ASIA	**14,611**	**11,061**	**10,676**	**12,453**	**16,050**	**0.46**	**28.88**
Brunei Darussalam					4	0.00	
Cambodia	19	25	25	25	16	0.00	-36.00
Indonesia	1,277	854	621	1,350	2,355	0.07	74.44
Lao People's Democratic Republic	3	8	9	17	6	0.00	-64.71
Malaysia	299	404	346	413	550	0.02	33.17
Philippines	11,561	8,289	8,461	9,204	11,073	0.31	20.31
Singapore	255	261	285	313	480	0.01	53.35
Thailand	159	241	229	232	279	0.01	20.26
Viet Nam	1,031	960	672	891	1,251	0.04	40.40
Other countries of South-East Asia	7	19	28	8	36	0.00	350.00
AUSTRALASIA	**8,423**	**10,253**	**11,518**	**12,355**	**19,058**	**0.54**	**54.25**
Australia	7,115	8,719	9,792	10,340	15,591	0.44	50.78
New Zealand	1,308	1,534	1,726	2,015	3,467	0.10	72.06
MELANESIA	**41**	**40**	**33**	**43**	**49**	**0.00**	**13.95**
Fiji	15	25	22	24	29	0.00	20.83
New Caledonia	20	1			2	0.00	
Papua New Guinea	1	4	2	5	2	0.00	-60.00
Solomon Islands					12	0.00	
Vanuatu	5	10	9	14	4	0.00	-71.43
MICRONESIA	**13**	**8**	**7**	**17**	**11**	**0.00**	**-35.29**
All countries of Micronesia	13	8	7	17	11	0.00	-35.29
POLYNESIA	**7**	**6**	**4**	**11**	**31**	**0.00**	**181.82**
All countries of Polynesia	7	6	4	11	31	0.00	181.82
EUROPE	**852,065**	**839,258**	**810,381**	**867,013**	**1,058,202**	**30.02**	**22.05**
CENTRAL/EASTERN EUROPE	**127,179**	**136,926**	**123,144**	**129,094**	**113,463**	**3.22**	**-12.11**
Bulgaria	1,832	1,885	2,041	2,589	2,672	0.08	3.21
Czech Republic	8,927	8,723	9,145	8,937	10,382	0.29	16.17
Estonia	527	592	651	1,154	855	0.02	-25.91
Hungary	3,512	3,064	3,361	4,006	4,696	0.13	17.22
Latvia	691	954	900	976	1,014	0.03	3.89
Lithuania	1,279	1,185	1,366	1,579	1,647	0.05	4.31
Poland	13,972	13,035	13,395	16,569	26,246	0.74	58.40
Romania	3,023	3,336	3,252	4,010	4,415	0.13	10.10
Russian Federation	78,472	86,944	70,401	69,237	43,387	1.23	-37.34
Slovakia	4,324	4,679	4,749	5,629	5,918	0.17	5.13
Ukraine	6,771	7,519	8,250	7,536	7,126	0.20	-5.44
Uzbekistan	68	117	225	271	116	0.00	-57.20
Other countries Central/East Europe	3,781	4,893	5,408	6,601	4,989	0.14	-24.42
NORTHERN EUROPE	**210,758**	**193,677**	**191,363**	**172,904**	**213,703**	**6.06**	**23.60**
Denmark	8,009	8,031	8,419	9,640	12,485	0.35	29.51

	2011	2012	2013	2014	2015	Market share 2015	% Change 2015-2014
Finland	5,756	6,381	7,932	8,156	7,810	0.22	-4.24
Iceland	188	242	209	502	759	0.02	51.20
Ireland	5,171	4,972	5,231	5,419	8,260	0.23	52.43
Norway	8,754	10,743	9,697	10,573	11,269	0.32	6.58
Sweden	7,055	9,571	10,357	14,698	17,315	0.49	17.81
United Kingdom	175,822	153,737	149,515	123,910	155,802	4.42	25.74
Other countries of Northern Europe	3		3	6	3	0.00	-50.00
SOUTHERN EUROPE	**235,698**	**203,233**	**187,755**	**214,958**	**277,500**	**7.87**	**29.09**
Albania	351	378	408	617	538	0.02	-12.80
Andorra	113	81	84	109	131	0.00	20.18
Bosnia and Herzegovina	288	304	340	363	413	0.01	13.77
Croatia	1,383	1,578	1,581	1,784	2,209	0.06	23.82
Greece	3,427	2,551	2,676	3,408	4,057	0.12	19.04
Italy	110,432	103,290	95,542	112,076	137,727	3.91	22.89
Malta	125	117	104	145	257	0.01	77.24
Montenegro	151	165	161	154	250	0.01	62.34
Portugal	13,733	9,148	9,440	14,626	19,110	0.54	30.66
San Marino	111	94	249	120	106	0.00	-11.67
Serbia	1,669	2,022	2,317	2,374	2,696	0.08	13.56
Slovenia	1,941	1,853	1,491	1,692	2,216	0.06	30.97
Spain	101,631	81,354	73,056	77,099	107,368	3.05	39.26
Other countries of Southern Europe	343	298	306	391	422	0.01	7.93
WESTERN EUROPE	**266,923**	**294,292**	**295,895**	**333,856**	**430,846**	**12.22**	**29.05**
Austria	11,803	13,250	15,201	16,923	20,081	0.57	18.66
Belgium	14,266	14,414	14,098	15,895	20,436	0.58	28.57
France	94,370	101,522	96,640	103,475	138,474	3.93	33.82
Germany	95,124	106,712	115,984	139,138	175,264	4.97	25.96
Liechtenstein	85	87	92	71	125	0.00	76.06
Luxembourg	693	724	677	928	1,384	0.04	49.14
Monaco	37	45	46	55	55	0.00	
Netherlands	32,402	35,284	32,165	33,491	42,455	1.20	26.80
Switzerland	18,143	20,254	20,992	23,880	32,562	0.92	36.36
EAST MEDITERRANEAN EUROPE	**11,507**	**11,130**	**12,224**	**16,201**	**22,690**	**0.64**	**40.05**
Cyprus	344	240	217	318	453	0.01	42.45
Israel	5,327	4,857	5,549	8,952	13,428	0.38	50.00
Turkey	5,836	6,033	6,458	6,931	8,809	0.25	27.10
MIDDLE EAST	**1,814**	**2,191**	**2,321**	**2,789**	**3,319**	**0.09**	**19.00**
Bahrain	22	22	22	31	56	0.00	80.65
Egypt	292	23	458	653	832	0.02	27.41
Iraq	78	103	156	160	140	0.00	-12.50
Jordan	162	173	218	145	184	0.01	26.03
Kuwait	52	47	38	95	127	0.00	33.68
Lebanon	574	616	593	607	941	0.03	55.02
Libya	29	12	16	30	28	0.00	-6.67
Oman	19	50	24	17	37	0.00	117.65
Qatar	7	36	15	25	39	0.00	56.00
Saudi Arabia	210	300	387	452	399	0.01	-11.73
State of Palestine	56	60	67	50	50	0.00	
Syrian Arab Republic	266	388	263	420	368	0.01	-12.38
Yemen	32	36	45	64	49	0.00	-23.44
Other countries of Middle East	15	325	19	39	69	0.00	76.92
SOUTH ASIA	**5,841**	**5,901**	**6,728**	**8,474**	**8,883**	**0.25**	**4.83**
Afghanistan	48	61	76	106	153	0.00	44.34
Bangladesh	91	108	107	114	171	0.00	50.00
Bhutan					2	0.00	

	2011	2012	2013	2014	2015	Market share 2015	% Change 2015-2014
India	3,574	3,480	3,870	5,116	5,733	0.16	12.06
Iran, Islamic Republic of	1,075	1,048	1,239	1,299	1,387	0.04	6.77
Maldives	1	3	3	6	7	0.00	16.67
Nepal					181	0.01	
Pakistan	185	212	233	306	378	0.01	23.53
Sri Lanka	362	466	570	839	512	0.01	-38.97
Other countries of South Asia	505	523	630	688	359	0.01	-47.82
NOT SPECIFIED	**398,696**	**384,711**	**373,654**	**361,290**	**390,650**	**11.08**	**8.13**
Other countries of the World	823	523	227	62	24	0.00	-61.29
Nationals Residing Abroad	397,873	384,188	373,427	361,228	390,626	11.08	8.14

(WTO, 2016)

Table 6: Survey

This is a research study being done by Kate Cosgrove from Harvard University.
This survey will help us learn more about international tourists in Cuba's willingness to pay an environmental tax. The survey will take about 3 minutes.

Participation is voluntary. You can skip questions that you do not want to answer or stop the survey at any time. The survey is anonymous, and no one will be able to link your answers back to you.

If you have questions, please contact Kate Cosgrove at:

kathryn.a.cosgrove@gmail.com
+16177339557
138 Joralemon Street Apt 3F
Brooklyn NY 11201

I agree to participate

I do not agree to participate

>>

Have you traveled to Cuba within the last 18 months, and/or are you planning to travel to Cuba within the next 18 months?

Yes

No

>>

What is your country of citizenship?

United States

Other

What is your country of residence?

United States

Other

How many nights did you/ will you spend in Cuba?

0 6 12 18 24

# of Nights

How many people are you accounting for in your travel budget?

0 1 2 3 4 5 6 7 8 9 10

# of People

>>

Accomodations (per person per night)

0 125 250 375 500 625 750 875 1000

USD ($)

Food and beverage (per person per day)

0 50 100 150 200 250

USD ($)

Transportation (per person per day, not including international airfare to/from Cuba)

0 50 100 150 200 250

USD ($)

Activities & entertainment (per person per day)

0 125 250 375 500 625 750 875 1000

USD ($)

Shopping & souvenirs (per person per trip)

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000

USD ($)

>>

Consider the possibility that the Cuban government levies a tourist fee to fund environmental protection efforts. The fee is payable at your nightly accommodation and will be included on your bill. The proceeds go to a fund that is controlled by a government conservation agency to protect the environment in Cuba with the goal of enabling long-term sustainability of Cuba's natural resources for generations of tourists and Cuban citizens to come. Keeping in mind that there are other things you may want to spend your money on, what is the highest amount as a percentage of your nightly accommodation bill, that you are personally willing to pay per day as an environmental conservation fee?

0 2 4 6 8 10 12 14 16 18 20

% of nightly accommodation bill

Assume you must pay the environmental fee you indicated you would be willing to pay in the last question. How much more/less on a % basis would you be willing to spend in the following categories?

-20 -18 -16 -14 -12 -10 -8 -6 -4 -2 0 2 4 6 8 10 12 14 16 18 20

Accommodations (per person per night, before environmental fee)

Food and beverage (per person per day)

Transportation (per person per day, not including international airfare to/from Cuba)

Activities and entertainment (per person per day)

Shopping and souvenirs (per person per trip)

>>

We thank you for your time spent taking this survey.
Your response has been recorded.

Table 7: Survey Results - Projected Receipts

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	TOTAL
Nonresident Tourist Arrivals in Cuba Forecast - Using 2015 Actual Arrivals and '00-'14 Growth Assumption	3,524,779	3,785,613	4,065,748	4,366,613	4,689,743	5,036,784	5,409,506	5,809,809	6,239,735	6,701,475	49,629,804
Nonresident Tourist Arrivals in Cuba Forecast - Using 2015 Actual Arrivals and '14-15 Growth Assumption	3,524,779	4,137,738	4,857,291	5,701,974	6,693,547	7,857,555	9,223,983	10,828,034	12,711,029	14,921,477	80,457,406
Total Env. Fee Collections - '00-'14 Growth Assumption	$ 122,681,695	$ 131,760,141	$ 141,510,391	$ 151,982,160	$ 163,228,840	$ 175,307,774	$ 188,280,550	$ 202,213,310	$ 217,177,095	$ 233,248,200	$ 1,727,390,159
Total Env. Fee Collections - '14-'15 Growth Assumption	$ 122,681,695	$ 144,016,042	$ 169,060,432	$ 198,460,041	$ 232,972,242	$ 273,486,115	$ 321,045,351	$ 376,875,137	$ 442,413,724	$ 519,349,470	$ 2,800,360,251
Additional Total Spend excluding Env. Fee - '00-'14 Growth Assumption	$ 124,544,541	$ 133,760,837	$ 143,659,139	$ 154,289,915	$ 165,707,369	$ 177,969,715	$ 191,139,473	$ 205,283,794	$ 220,474,795	$ 236,789,930	$ 1,753,619,510
Additional Total Spend excluding Env. Fee - '14-15 Growth Assumption	$ 124,544,541	$ 146,202,837	$ 171,627,510	$ 201,473,534	$ 236,509,782	$ 277,638,833	$ 325,920,226	$ 382,597,753	$ 449,131,503	$ 527,235,471	$ 2,842,881,990
Additional Total Spend including Env. Fee - '00-'14 Growth Assumption	$ 247,226,237	$ 265,520,978	$ 285,169,531	$ 306,272,076	$ 328,936,209	$ 353,277,489	$ 379,420,023	$ 407,497,105	$ 437,651,891	$ 470,038,130	$ 3,481,009,669
Additional Total Spend including Env. Fee - '14-15 Growth Assumption	$ 247,226,237	$ 290,218,879	$ 340,687,942	$ 399,933,575	$ 469,482,024	$ 551,124,948	$ 646,965,577	$ 759,472,891	$ 891,545,226	$ 1,046,584,941	$ 5,643,242,241

2014-2015 Growth in Arrivals of Nonresident Visitors at Cuban National Borders [1]		17.39%
2000-2014 Growth in Arrivals of Nonresident Visitors at Cuban National Borders [1]		7.40%
Nights Spent in Cuba - Average [2]		7.55
Environmental Fee WTP - Per Person Per Day Average	$	4.61
Environmental Fee WTP - Per Person Per Trip Average	$	34.81
Additional Spend Excluding Environmental Fee - Per Person Per Day Average	$	4.68
Additional Spend Excluding Environmental Fee - Per Person Per Trip Average	$	35.33
Additional Total Spend in Country including Env. Fee - Per Person Per Day Average	$	9.29
Additional Total Spend in Country including Env. Fee - Per Person Per Trip Average	$	70.14

[1] *Cuba: Country-specific: Basic indicators (Compendium) 2011 - 2015 (11.2016): Tourism Statistics: Vol , No. (2016). Retrieved from http://www.e-unwto.org/doi/abs/10.5555/unwtotfb0192012220112015201611*

[2] *Cosgrove survey*

Table 8: Survey Results – Willingness to Pay

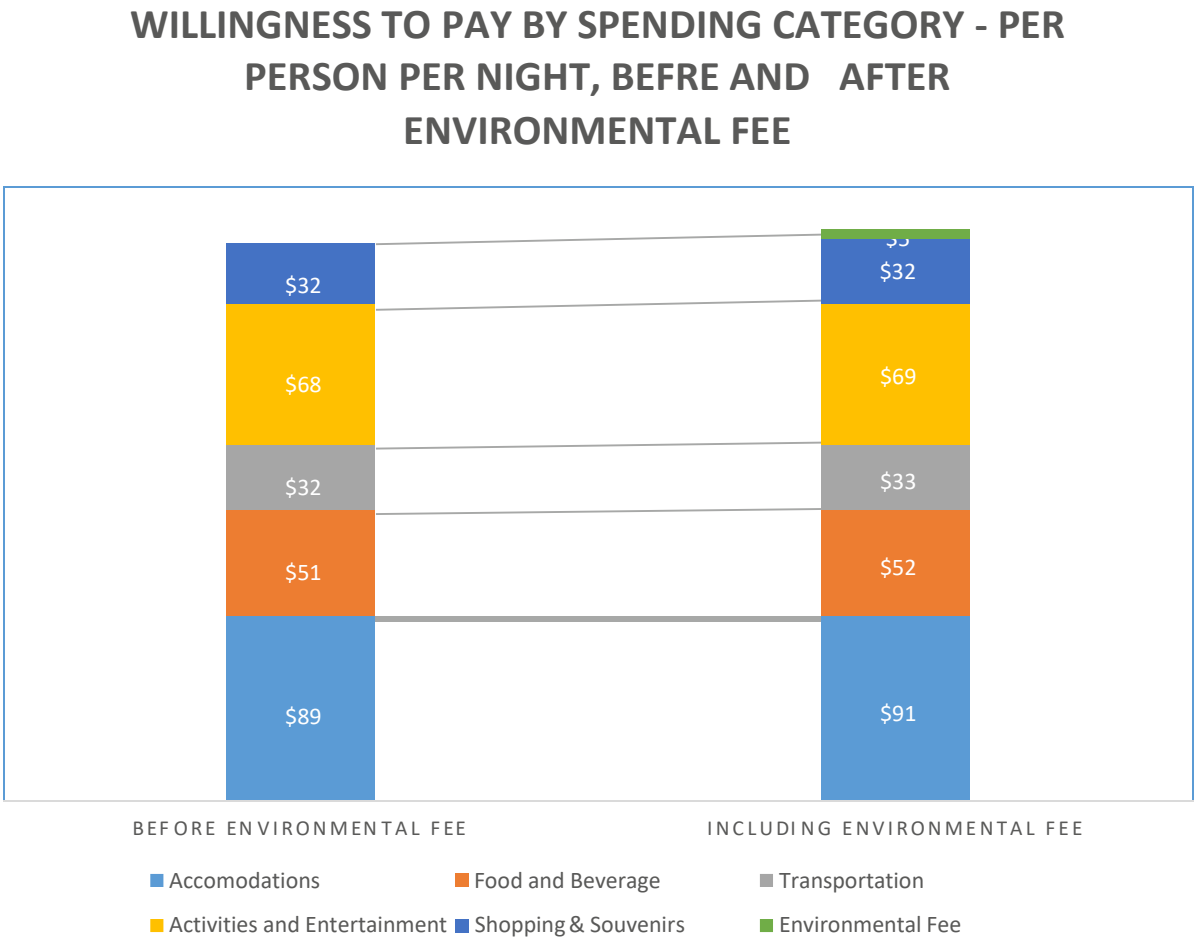
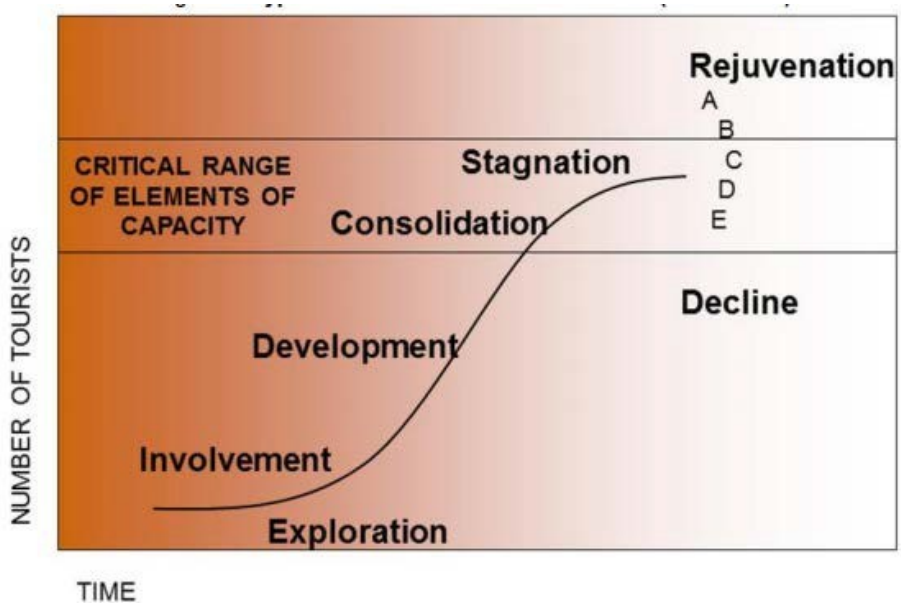


Table 9: Richard Butler's Resort Life Cycle Model (1980)



(Butler, 2014)