



Impact Investing in the Dominican Republic  
Jenna Giandoni



*Impact Investing in the Dominican Republic*

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*Impact Investing in the Dominican Republic*

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Jenna Giandoni

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***Jenna Giandoni***

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## Foreword

The Global Foundation for Democracy and Development (GFDD) and its sister organization Fundación Global Democracia and Desarrollo (Funglode), are dedicated to promoting research and awareness in areas that are crucial for sustainable development both in the Dominican Republic and the world. GFDD and Funglode put together panel discussions, educational programs and support research that enables new perspectives, contributes to public policy and promotes transformative initiatives on a national and international scale.

The foundations are honored to present the publication series Research and Ideas, which offers the results of research projects that address critical international issues from local to global points of view.

This edition of the series showcases the work of GFDD Fellow Jenna Giandoni titled Impact Investing in the Dominican Republic, which presents an analysis of the opportunities and challenges associated to impact investing in the Dominican Republic, placing it in the context of selected businesses within the renewable energy and sustainable agriculture industry, while proposing options for the future development of this innovative source of financing for sustainable development.

This work embodies months of rigorous research and data analysis and provides practical recommendations on the topic of impact investment. We hope it will contribute to a better understanding of the world, empowering readers to act in more informed, efficient, and harmonious ways.

**Yamile Eusebio**

Acting Executive Director

GFDD



## Preface

The Organisation for Economic Co-operation and Development (OECD), whose mission it is to promote policies that will improve the economic and social well-being of people around the world, emphasizes that new approaches are needed for addressing social and economic challenges, including new models of public and private partnership which can fund, deliver, and scale innovative solutions from the ground up.

Impact investment is one such innovative tool that has evolved over the past decade as the result of many factors, including a growing interest by individual and institutional investors in tackling social and environmental issues at the local, national or global level. The economic crisis of 2008 has further highlighted the tremendous economic, social and environmental challenges facing countries across the globe. Governments are searching for more effective ways to address these growing challenges, and recognizing that private sector models can provide new innovative approaches.

Considering these factors, and to promote understanding of the development opportunities tied to impact investment in the Dominican Republic, one of the fastest growing economies in Latin America, GFDD Fellow Jenna Giandoni, recipient of an MBA and Master of Science in Environmental Management & Sustainability degrees from Illinois Institute of Technology, has focused her research on this topic. She has produced a study which considers the potential role that impact investment could play throughout the country by analyzing a selection of businesses primarily operating in the environmental sector, within sustainable agriculture and renewable energy.

Ms. Giandoni's field work through the Fellows Program was conducted over a three-month period, from January to March 2015. During her time in the country, she carried out numerous interviews with a diverse group of experts to get the most updated information for her research. Ms. Giandoni also received very insightful guidance in the drafting of her study from two external supervisors, Roberto Herrera, Country Manager in the Dominican Republic of InterEnergy Holdings and Miguel Villar, former Vice Minister of Agriculture for the Dominican Republic.

The recently adopted United Nations Addis Ababa Action Agenda of the Third International Conference on Financing for Development, welcomes the growing number of businesses that embrace a core business model that takes account of the environmental, social and governance impacts of their activities, and urges all others to do so. It specifically encourages impact investing as an innovative source of financing for sustainable development. This is particularly relevant in the light of recent findings by the United Nations Conference on Trade and Development, which estimates that achieving the United Nations Sustainable Development Goals, its international development agenda for the next 15 years, will cost between US\$3 trillion to US\$5 trillion annually in developing countries alone. With today's level of investment this shows we are headed towards a shortfall of some US\$2.5 trillion.

We therefore hope that this report on impact investing in the Dominican Republic will encourage debate on innovative tools for financing sustainable development and the transition to a green economy not only in the Dominican Republic, but also in other developing countries.

**Marc Jourdan**

UN Programs & Outreach Manager

GFDD

*Impact Investing in the Dominican Republic*

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Jenna Giandoni



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This report was strengthened by the support of my professors at Illinois Institute of Technology. Dr. Weslyne Ashton provided feedback during my time researching in the Dominican Republic. She supported my efforts by advocating for me and giving me the opportunity to spend the semester abroad. Dr. Ashton arranged logistical planning throughout the semester to coordinate with my colleagues in Chicago and offered insightful feedback and productive brainstorming sessions. She inspired me to always incorporate holistic environmental design into business strategy. Dr. Guenter Conzelmann also provided brilliant feedback specific to the energy sector and shared his expertise in energy and power systems.

Industry professionals within the field of impact investing were extremely helpful throughout my research, especially considering the limited availability of impact investing data in the Dominican Republic. Specifically, Professor Lawrence Pratt with INCAE Business School provided detailed insight regarding impact investing in Latin America.

Finally, this report could not have been possible without the trust and support of the many local businesswomen and businessmen, NGOs and the public sector in the Dominican Republic who shared their knowledge. This helped me better understand the business climate including the challenges and rewards of working in the Dominican Republic. Specifically, I am very appreciative to Francisco Méndez and Luis Tolentino of Fundación REDDOM; Dr. Carlos Hasbun with USAID; Bari Domínguez with EGE Haina, S.A.; Bertram Schwind

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## Acronyms

NGO	Non-Governmental Organization
FDI	Foreign Direct Investment
GIIN	Global Impact Investing Network
CGAP	Consultative Group to Assist the Poor
IFC	International Finance Corporation
IDB	Inter-American Development Bank
OPIC	Overseas Private Investment Corporation
USAID	United States Agency for International Development
SIDS	Small Island Developing States
CCRIF	Caribbean Catastrophic Risk Insurance Facility
ASOPROLECA	Asociación de Productores de Leche La Cabrita
FCB	Fundación Central Barahona
UNDP	United Nations Development Programme
STD	Sexually Transmitted Disease
HIV	Human Immunodeficiency Virus
CIL	Civil Innovation Lab
MW	Megawatt
LCOE	Levelized Cost of Electricity
GHI	Global Horizontal Irradiance
PV	Photovoltaic
GEDER	Grupo Empresas Dominicanas de Energía Renovable
GHG	Greenhouse Gas
CIM	Construction, Installation, and Maintenance
O&M	Operations & Maintenance
EGE Haina	Empresa Generadora de Electricidad de Haina
IRIS	Impact Reporting and Investment Standards
ROI	Return on Investment



## Introduction

The companies discussed in this paper were identified through my research and outreach while working as a Fellow in the Dominican Republic, in conjunction with connections established through the supporting organizations, Global Foundation for Democracy & Development (GFDD), based in Washington, D.C. and Fundación Global Democracia y Desarrollo (Funglode) based in Santo Domingo, Dominican Republic (DR). The identified businesses represent a larger array of companies, that could benefit from impact investments, primarily operating in the environmental sector, a sector widely neglected in traditional investment strategy. These businesses serve as a glimpse into the world of renewable energy and sustainable agriculture in the Dominican Republic, while offering insight into the potential of impact investing throughout the country.



## Background of the Dominican Republic

The Dominican Republic is located on the eastern two-thirds of the island of Hispaniola, bordering Haiti. It is 48,442 km<sup>2</sup> (18,704 mi<sup>2</sup>) with a population of 10.4 million people (CIA World Fact Book, 2015). The economy primarily relies on the agriculture, mining, trade, and services industries with \$106.24 billion GDP(2013), with GDP growth averaging 5.5% annually between 1991 and 2013 (worldbank.org, 2015). The unemployment rate is 15% overall, while those between the ages of 15 and 24 experience a 29.4% unemployment rate (CIA World Fact Book, 2015).

The Dominican Republic is considered a middle-income country with the largest economy in Central America and the Caribbean (worldbank.org, 2015) and according to the Inter-American Development Bank (IDB), for the last 20 years, the DR has been the fastest-growing economy in Latin America (International Financial Consulting, 2011). In 2015, the annual United Nations Economic Commission for Latin America and the Caribbean ranked the DR as the largest foreign direct investment (FDI) recipient in the Caribbean; investments are distributed evenly across sectors to include manufacturing, tourism, natural resources, etc. (Pérez Ludeña, 2015). According to the World Bank's Group Doing Business 2015 report, "the Dominican Republic along with Jamaica and Trinidad and Tobago featured among the countries that implemented the most reforms in Latin America making it easier for local entrepreneurs to do business" (worldbank.org, 2015). As these entrepreneurs confront challenges of varying degrees in this small, developing nation, impact investors encounter an opportunity to provide solutions while gaining socially, environmentally, and financially—a triple bottom line approach.



## Impact Investing

Before appreciating the potential of impact investing, specifically in the DR, one must consider the Global Impact Investing Network (GIIN) generally-accepted definition of impact investments: “investments made into companies, organizations, and funds with the intention to generate measurable social and environmental impact alongside a financial return. Impact investing includes investments that range from producing a return of principal capital to offering market-rate or even market-beating financial returns (...) Impact investors actively seek to place capital in businesses and funds that can harness the positive power of enterprise.” (Veris Wealth Partners, 2015). Beyond the definition, it is important to understand fully the evolving field of impact investing and the types of impact investments that exist. As outlined by Marguerite H. Griffin of Northern Trust, impact investors fall into three main categories: *impact first*, *investment first*, and *catalyst first* (Griffin, 2013). *Impact first* investors are driven by maximization of impact, whereas *investment first* investors are primarily interested in market-rate or premium returns on their investment. *Catalyst first* investors are “investors who seek to give or invest in collaborations to build the impact investing industry and infrastructure” (Griffin, 2013).

*Impact first* investors would be more interested in potential investments that are smaller in nature, thereby generating less and potentially fluctuating revenue and profit margins. Additionally, because these investments are smaller scale ventures, it would benefit investors to pool these and similar impact investments into an investment fund to minimize costs associated with due diligence. In fact, according to a CGAP report, more than 300 impact investment funds exist today and that number will inevitably grow considering the rising interest in impact investments (El-Zoghbi & Gonzalez, 2013), and the expected \$30 trillion transfer of wealth over the next several decades into the hands of millennials, who have a different approach to investing (Emerson, 2014). Impact investments are available across all asset classes including mutual funds, exchange-traded funds, private equities, cash and cash equivalents, and fixed income (Investing to Curb Climate Change: A Guide for the Institutional Investor, 2013).

Overall, impact investment funds—those that generate social and environmental impact in addition to financial returns—perform on par and better in some cases as compared to their traditional investment counterparts. A recent Cambridge Associates and Global Impact Investment Network (GIIN) study introduced the first benchmark to provide financial performance data (Matthews & Sternlicht, 2015). The comprehensive report includes 51 private investment funds that were launched in 1998 to 2010, and found market rate returns and above for the impact funds as measured against comparative non-impact investment funds.

As impact investment funds increase, investments in emerging markets and developing countries will continue to grow. Many organizations such as the International Finance Corporation (IFC) have begun to make impact investments in developing countries such as the Dominican Republic. The IFC issued 5-year 10.5% Taino Bonds in December 2012 (Investing for Impact, 2014). Pension fund investors purchased the impact bonds and the proceeds were used to expand low-income housing and increase access to finance for micro, small, and medium enterprises throughout the DR. This represented the “first domestic placement by an international triple-A rated issuer in the Dominican Republic” (Investing for Impact, 2014). Other organizations and financial institutions, such as the Overseas Private Investment Corporation (OPIC), have stated the intent to follow suit with future investments in Latin America and Caribbean nations, specifically in the environmental sector (Littlefield, 2015).

### **A. Importance of Impact Investing in the Environmental Sector**

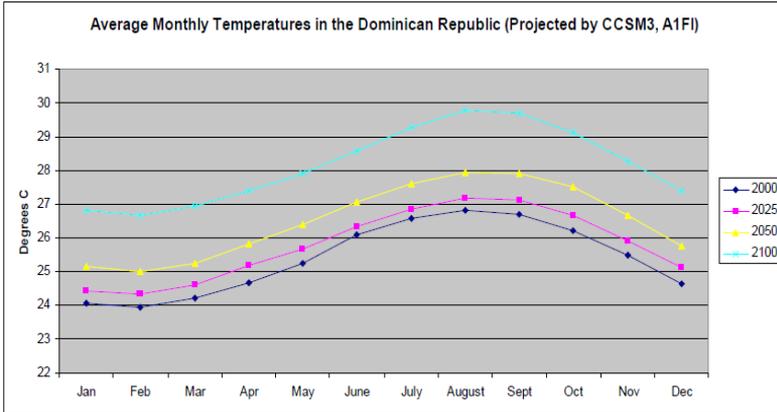
Although the business environment is conducive to entrepreneurial endeavors, oftentimes these entrepreneurs encounter difficulties accessing financial support in order to scale and replicate their businesses. There exists a lack of investment, specifically in the environmental sector, albeit there are numerous companies in which to invest. Environmental entrepreneurs, such as those operating in sustainable agriculture, ecotourism, and renewable energy, can all have a positive impact on the environment. These businesses have an environmental focus incorporated into their business model, recognizing the severity of climate change, and have a desire to minimize the environmental effects associated with human activity.

A United States Agency for International Development (USAID) 2013 report outlined the vulnerability of islands such as the Dominican Republic to climate change, serving as a warning for policy makers and the private sector that have historically neglected environmental considerations, especially in the business sector (Dominican Republic Climate Change Vulnerability Assessment Report, 2013). This neglect has led to environmental degradation on a global scale and resulted in devastating effects in the world's most impoverished regions.

Hurricanes, for example, are expected to increase and as populations grow, the result of these impacts could have overwhelming effects on local populations and the international community. According to reports by the journal *Nature* and the United States Department of Energy, "stronger hurricanes in the [Caribbean] region are likely to grow even more intense as a result of global warming" (Parish, Ganguly, & Steinhaeuser, 2008).

Sea level increases are also of great concern to Small Island Developing States (SIDS) such as the DR, as they continue to grow both economically and at the infrastructure level. As sea levels rise, areas that were once dry are now under water in the Dominican Republic (Lewis, 2015). Local fishermen observe the effects of climate change annually as they watch mangroves disappear and flooding increases as ocean water slowly creeps inland. Mangroves are necessary for the local ecosystem and serve as protection for spawning grounds where fish can lay their eggs and mature. Furthermore, mangroves store carbon and, through a process of carbon sequestration, can reduce greenhouse gas emissions. Additionally, inefficient farming practices in relation to fertilizer usage throughout the country lead to increased runoff into the waterway system, ultimately killing the coral reefs that serve as protection for smaller fish. These effects impact the entire fishing industry in a country that heavily relies upon the balance of the ecosystem for economic sustainability.

In addition to stronger hurricanes and increased sea levels, higher temperatures are predicted in the Dominican Republic as demonstrated below in **Figure 1: Average Monthly Temperatures in the Dominican Republic**. Even though the nature of seasons in the DR is not expected to change, this alteration in monthly temperatures could have drastic effects spanning across countless industries including but not limited to agriculture, energy, tourism, health, and infrastructure development.



**Figure 1:** Average Monthly Temperatures in the DR (Parish, Ganguly, & Steinhäuser, 2008).

Considering the abovementioned effects of climate change in the Dominican Republic, which would similarly be felt on other island nations and countries around the globe, it is imperative to invest in companies that incorporate environmentalism into their business model. Instead of simply considering profit as a measure of investment success, environmental considerations should be taken into account, as well. Through this type of impact investing, it is possible to mitigate the effects of climate change and minimize if not eliminate further damage in the environments we live in and on which we rely.

## Case Studies: Potential Impact Investments in the Dominican Republic

A series of sustainable agricultural businesses were examined for the purposes of impact investing research in the Dominican Republic, ranging in scope from dairy, tilapia, and cacao businesses to a supporting non-governmental organization. In the renewable energy sector, GEDER solar company and Los Cocos wind farm were examined. The research methodology included publication research, interviews, surveys, and structured outreach. Upon identifying businesses and organizations to be included in the research, data was collected through interviews, surveys, and recorded conversations during site visits, via phone conversations, and through email communications. Because the potential investments outlined in the following case studies meet the expectations set forth by all three types of impact investors: impact first, investment first, and catalyst first investors, all firms highlighted would be strong candidates to receive impact investments.

### A. Agricultural Sector in the Dominican Republic

Agriculture in the Dominican Republic accounts for 11% of GDP and according to the World Bank, 15% of total employment operates in this sector (World Bank, 2015). Smallholder farmers make up 72% of total farmers and 28% of total agricultural land (World Bank, 2015). Although a United Nations Food and Agricultural Organization study explains 24% of Dominicans are undernourished, the main agricultural crops produced are cash crops meant for export (Business Year, 2015). Sugarcane is the nation's most important commercial crop, producing approximately 630,000 tons per year and the DR is one of the top ten major producers and exporters of cocoa in the world, exporting 69,000 metric tons annually worth \$214 million (Business Year, 2015). Other cash crops including coffee and tobacco are also destined for export. While the country continues to struggle with food insecurity issues, it also strives for economic growth. Illustrating signs of improvement, in 2013 the Minister of Agriculture, Luis Ramón Rodríguez, commented that the, "country's rice, banana, and egg production rose 100%, beans rose 76%, and beef, chicken, and pork production rose by 98%, 96%, and 88% respectively" (Business Year, 2015). In order to maintain this progress, further development of sound agricultural policies and investments will be necessary to minimize food insecurity throughout the Dominican Republic.

In addition to food insecurity, environmental and climate change concerns affect other aspects of the agricultural sector in the DR, as well. Droughts, hurricanes, and flooding leave this small island nation in a highly vulnerable state. These environmental disasters have wreaked havoc on the DR's GDP. For example, in 1998, Hurricane George caused economic losses equivalent to 16.1% of GDP, hitting smallholder farmers the greatest. According to the World Bank, "with the exception of the banana industry (...) agricultural insurance is non-existent in the region" (World Bank, 2015). Access to agricultural insurance for farmers, in particular small-scale producers, would prove to mitigate a portion of the inherent risk working in a sector heavily dependent on environmental stability. Over the past decade, financial institutions have assisted developing countries, such as the DR, overcome the difficulties associated with natural disasters. For example, in 2007 the World Bank launched the Caribbean Catastrophic Risk Insurance Facility (CCRIF). CCRIF provides countries assistance with early reconstruction efforts following a natural disaster, and the World Bank has specifically worked with the Dominican government to better respond to small farmer needs following disasters. They are also working on designing agricultural insurance policies to alleviate hurricane and rainfall risks (World Bank, 2015).

Organic farming is another strategy used to decrease certain risks associated with the agricultural sector. The major organic crops in the DR include banana, cacao, coffee, mango, lemon, and coconut primarily meant for export and although vegetables are mainly grown for the domestic market they are exported on a smaller scale (UN Food and Agricultural Organization, 2005). Small farmers make up approximately 90% of organic producers in the DR and according to the International Fund for Agricultural Development (IFAD), "the relationship between farmers' associations and marketing firms is strong with contracts that entail not only marketing but also the provision of technical assistance and credit." IFAD continues, "Direct contracts with foreign buyers were the most successful, whilst long-term contracts provide a safe market and stable prices" (International Fund for Agricultural Development, 2004). It is necessary for organic farmers to maintain and increase access to these comprehensive contracts that include marketing, technical assistance and credit, to compete in the global market. Four businesses and one supporting organization are outlined below to highlight the Dominican Republic's organic agriculture sector and its relevance to the field of impact investing.

**a) Asociación de Productores de Leche La Cabrita (ASOPROLECA)**

**Figure 2:** ASOPROLECA goat facility (Photo: Author).

Asociación de Productores de Leche La Cabrita (ASOPROLECA) was established four years ago after receiving financial assistance and capacity building from various non-governmental organizations (NGOs) and foundations such as the *Fundación Central Barahona* (FCB). ASOPROLECA is a small group of women-managed dairy farmers in Pescadería, located in the southwestern region of the country in the Barahona province with an approximate population of 3,000 people (Plan Desarrollo del Distrito Municipal, 2014).

When ASOPROLECA first organized itself as a new business, there were 33 interested goat owners in the town (Pérez, 2015). Interested parties were asked to contribute RD\$200 (US\$5) to become involved in this business endeavor. After contributing the requested amount, 21 owners continued with their efforts. At the time of inception, the land area that was to be used for cultivation and the goat farm itself needed to be cleared (Pérez, 2015). Trees and wild plants covered the land and because the group lacked any machinery to clear the property, it was done by hand. Soon thereafter, people believed their efforts would not yield financial results (Pérez, 2015). However, the business prospered and has continued to grow while sustaining the livelihood of business members.

ASOPROLECA currently consists of 27 passive members and 11 active members (López, 2015). The passive members are available should an active member become sick or have personal matters to attend when they would otherwise be working. Active members are recruited from the pool of passive members and are required to provide a monetary contribution should they be selected from the passive member pool. In the beginning, ASOPROLECA required that active members purchase two goats in order to be included in the project. Active members have more responsibility and earn money from ASOPROLECA business operations. Members meet bi-weekly to organize and plan through any upcoming changes or potential improvements. These meetings also offer members an opportunity to voice questions and concerns that may arise regarding business operations or structure.

Members work on the goat farm twice per week to clean and process the milk. Even though the milk processing room (shown in Figure 3) has air conditioning meant to maintain a reasonable temperature during processing, the air conditioner is rarely used due to intermittent electricity in the region. At times, electricity is only available from 9:00am to 1:30pm (López, 2015). Electricity returns a few hours later but cuts out again at 2:00am. ASOPROLECA farmers explain that this cycle continues for approximately 2 weeks and then changes for the remainder of the month with electricity available from 1:00pm until 6:00pm. Electricity returns again at 11pm for a few hours. Although



**Figure 3:** ASOPROLECA milk processing room (Photo: Author).

this is the general schedule established by observation, interviewed community members assert that this potential schedule is subject to change at any given moment (López, 2015).

Overall, it is extremely difficult to manage a processing room. Ideally, the room would be temperature-controlled to properly process milk, minimizing spoiling and other negative outcomes. Temperatures are very hot in the room and after milking goats in the morning on processing days, farmers must process the milk in late afternoon and early evening, all dependent on electricity availability. A local organization donated milking machinery but due to electricity unreliability, ASOPROLECA has been unable to implement the more efficient milking method.

In total, ASOPROLECA owns 120 adult goats, of which approximately 30 are still nursing. After 3 months, the kids are no longer confined in the lactating stables to receive milk from their mothers and are allowed to integrate with other goats (Pérez, 2015). Lactating mothers are mixed with their young throughout the day for feeding and are enclosed in the evening to prepare for milking the following morning. Although some goats provide more than others in terms of milk, each goat can provide between 2 and 3 liters with a maximum of 3.5 liters each time they are milked in the morning (Pérez, 2015).

On the opposite side of the lactating stable, there is an equal sized area split into three sections. Each section has the capacity for 50 goats but ASOPROLECA usually maintains 20 goats in each of the divided areas to avoid overcrowding. This effective goat management technique has allowed ASOPROLECA to prevent viral and parasitic problems that would otherwise necessitate antibiotics (Clifford-Rathert, 2008). The male goats are monitored and numbered with neck collars to keep related goats separate from each other during mating season, ensuring genetic variation.

Farmers built an additional stable to accommodate more goats but it has proven difficult to purchase more goats in the Dominican Republic. The preferred pure breed which produces higher quality and quantity of product is not available in the country and is typically imported from a goat breeder in Spain. Due to the high cost of transportation and shipping from the specific breeder abroad, ASOPROLECA has been

unable to expand production. Each goat can be purchased for RD\$15,000 (US\$335) (Pérez, 2015). Those that are sold and rated at an even higher quality are sold for RD\$20,000-25,000 (US\$445-555). If ASOPROLECA imports their goats, they must pay an additional RD\$90,000 (US\$2,000) to cover transportation costs (Pérez, 2015). Protection of this valuable investment, in both time and money, is fulfilled by a night watchman to ensure security of the goats on ASOPROLECA property.

Proteins and nutrients are available for the goats through mineral blocks, and are located throughout the stables. These blocks provide salt, trace minerals, and nutrients. A healthy diet is necessary to maintain optimal health and nutrition levels to ward off diseases and produce quality milk.



**Figure 4:** Goat feeding from mineral block (Photo: Author).

Feed costs are minimal because the goats mainly eat food and plants from the surrounding property and their waste is used as fertilizer for the soil—creating a closed loop system. ASOPROLECA owns approximately 200 *tareas* or 31 acres of land on which they plan to expand the growing area to include more food and plants for the goats and community, furthering the closed loop model that currently exists with the goat farm. The type of water system available for the goats is hygienic and controlled so as to avoid water-borne diseases in the goat population.



**Figure 5:** ASOPROLECA sample containers  
(Photo: Author).

ASOPROLECA is aware that most companies in the industry use chemicals, hormones, and antibiotics aiming to increase profits, yet ASOPROLECA farmers are disinterested in pursuing this type of farming. They believe in a more sustainable approach to animal welfare and human health, recognizing the long-term benefits associated with an organic product. Their product is 100% pure and they do not use antibiotics and hormones

in their goats (Pérez, 2015). Because achieving organic certification is expensive and a lengthy process, ASOPROLECA has yet to obtain the official certification. However, they are interested in obtaining certification, recognizing it will differentiate their product even further in the market. They are in the process of learning more about the procedure associated with certification and have plans to complete official organic status in the future. Once it is obtained they will include the certification in product labeling in addition to the current business logo shown in **Figure 5**.

ASOPROLECA purchased a tractor, creating an additional revenue stream. Any agricultural farmer in the region who may need a tractor but cannot afford the purchase of such equipment for operations and maintenance can solicit the services through ASOPROLECA who has a licensed tractor operator as an active member of their business. The operator completes the required services, generating additional revenue for business. This additional income has been helpful for the company and they hope to reinvest the profits from the tractor rental sub-business to purchase more goats and expand their business operations.

### ***Challenges and Impact Investment Potential: ASOPROLECA***

A clear use of an impact investment with ASOPROLECA could be to purchase additional goats, thereby affording the opportunity to increase revenue. The demand for their product exists but ASOPROLECA is unable to meet demand from the supply side. They lack the funding to purchase more goats and expand operations. For example, ASOPROLECA had a

potential contract demanding 3,000-5,000 liters per week but they were simply unable to meet the demand (Pérez, 2015). They were unable to fulfill the contract, however, losing potential customers but demonstrated that market maturity—the leveling off of sales growth—and market saturation have yet to occur. The potential for growth is high and ASOPROLECA merely struggles with access to financing to reach more customers. ASOPROLECA farmers explained they would require at least 200 lactating goats to meet the current demand. However, they currently own less than 100 lactating goats. Owning 200 lactating goats would allow them to grow the business, secure consistent contracts, and meet the demand from buyers.

ASOPROLECA currently has a contract with one major grocery store in the capital and the remaining product is sold locally. Unfortunately, they were unable to share the exact quantity of product sold per week (i.e. yogurt, cheese, milk), which made it difficult to fully gauge and assess potential revenue and profit.

Currently, active members typically need another form of employment in order to fully provide for their families. ASOPROLECA farmers work in other professions such as the military or in local schools while others subsidize their income working in the transportation sector as taxi drivers or farming other areas of land. If they received impact investments, they could expand operations, potentially providing stable, reliable, and sufficient income for farmers.

Additionally, having consistent access to electricity would dramatically improve the efficiency and productivity of the farm. Solar panels or another form of renewable energy obtained through an impact investment could be an excellent solution for these farmers instead of relying on intermittent electricity supply.

Although ASOPROLECA continues to receive capacity building and engage in business education programs, they would benefit from further capacity building oftentimes offered through universities, NGOs, small business development organizations and governmental agencies. Small business capacity building would provide important skills to increase business management abilities. These groups could also teach data collection techniques that would provide the data required by impact investors as they measure financial, social and environmental impact.

## b) Centro de Producción Piscícola Bombita



Figure 6: Bombita tilapia farm (Photo: Author).

The community of Batey Bombita also located in the Barahona province is an area that until a few years ago experienced high crime rates and elevated levels of poverty compared with the rest of the country. Bombita has a population of approximately 1,500 people (Báez, Executive Director, 2015). With the assistance of the *Fundación Central Barahona* (FCB), the community began education improvement projects in 2011 and worked to identify the viability of various income-generating projects. FCB selected a local women's group to spearhead the projects and worked with the 25 members to establish small businesses four and a half years ago (Báez, Executive Director, 2015). Land ownership and limited skilled labor were challenges in the beginning of FCB project implementation but were substituted by perseverance and a strong desire for personal and community development.

A large reservoir, approximately one hectare in size or 2.5 acres (see **Figure 7**), is located adjacent to the community and provides water irrigation for the nearby sugarcane plantation. The owners of the plantation agreed to permit the Bombita women's group to use the reservoir for a tilapia business and Centro de Producción Piscícola Bombita was established. In the beginning, it was difficult to accomplish change in the community because they were accustomed to other types of labor such as manual labor, cleaning, ironing, and other household work. This new endeavor of running a business was challenging for the group.

FCB provided grants to initiate operations of the women's business; otherwise, the group simply did not have the funding to begin operations. This initial financial support was critical to their success. The United Nations Development Programme (UNDP) and Taiwanese sponsor donated RD\$600,000 (US\$12,600) to the business and offered capacity-building workshops for the women's group in order to increase their business knowledgebase (Báez, Executive Director, 2015). The group consists of 99 female members, 19 of whom are active tilapia farm workers and most members are single mothers of Haitian descent. The women range in age from 21-50 years old and offer a diverse set of skills. In the beginning, the older women were more skeptical and difficult to work with, however, the younger women were more enthusiastic with the business idea. Celida Marcelo is the soul and leader of the project who, according to the executive director of FCB, believed in the project before anyone else did.



**Figure 7:** Bombita tilapia farm (Photo: Author).

The tilapia farm consists of 500 fish per cage and there are between 35 and 50 cages. The farm structure covers only  $\frac{1}{4}$  of the reservoir, leaving great opportunity for growth. The fish are separated according to size as they mature. This manual separation process is tedious and time-consuming for business members. It is achieved by opening the net between cages and moving the fish to aggregate same-sized fish in one cage. This process lasts between 2 and 3 days per cage to complete. Before two piers were built, feeders had to enter the water in order to reach the cages. The piers extend from the land to the walking platforms that surround the cages. They were donated to the business group by a local engineer, saving the group approximately RD\$10,000 (US\$210) in materials and labor costs. In an attempt to minimize resources necessary

to build the cages, the group experimented with building a new frame using a less expensive PVC piping material instead of the previously used iron and wood construction. However, the material could not sustain the body weight of the women during feeding. This attempt does however demonstrate creativity and a willingness to experiment with the end goal of decreasing overall cost of materials.

When the women first began the tilapia business, they inadvertently created an additional waste stream in their community (Báez, Executive Director, 2015). Waste was created from cleaning the fish (guts, skin, etc.) but the women identified a local farm with whom they had well-established connections. The farm was able to use the waste as feed for their cattle and pigs. Although this does not generate additional income, it was an innovative way to mitigate waste generation.

Feeding is typically done in the morning and afternoon twice per day by hand, as demonstrated in **Figure 8**. On average, six women walk on the farm platforms and toss feed in the water (see **Figure 8**), a process that lasts approximately 10 minutes. Better results could be achieved if they were to feed the fish 3 to 4 times per day but because they have many chores and other time constraints, they are only able to feed the fish twice per day, which has proven to be a sufficient amount.



**Figure 8:** Batey Bombita business member tossing feed in tilapia farm (Photo: Author).

The tilapia farm inspired other businesses such as meatball (fish)-making, fish sticks, fried fish and other businesses using the tilapia product. Typical Haitian bread is made in the community and the women make fish sandwiches with the local bread to sell, establishing complementary goods within the local market. In the past, the people of Bombita bought cured, salted tilapia but are fonder of the fresh fish from the local farm. Many of the children who graduated from school are now studying at the university. Others are teaching and working in the local school or helping the women at the tilapia farm during high sales times. They help with classification of fish to separate the sizes and assist with small tasks, demonstrating community support and involvement in the tilapia business. Most of the women are also taking business-related courses such as accounting to learn more about running a successful, transparent, and viable business.

Most fish are typically sold at markets and business members have had many opportunities to build and use the skills gained through sales and marketing classes, customer service classes and other capacity building workshops. The community itself purchases the majority of the tilapia while supermarkets in the capital and throughout the country have expressed interest in becoming buyers. Normally, the tilapia business earns RD\$280,000 (US\$6,000) per month (Baéz, Executive Director, 2015) and the income generated from the tilapia farm is sufficient to support workers' families. Although the women would like to earn more, the RD\$10,000-15,000 (US\$250-330) earned per month per woman, meets basic needs and has proven to be a reliable source of income. Additionally, FCB received a donation of 1,000 chickens they then provided for the community, specifically tilapia business participants, as they had demonstrated reliability and good business practices. The women raise chickens in their backyards and each woman has at least 10 chickens producing eggs, providing additional nutrition for the family and another revenue stream.

In terms of health and safety, every month the government sends lab personnel to take samples from the fish and water to confirm health code safety and compliance. The results are shared and the water has not experienced contamination levels over the past 6 years that the reservoir has been in existence. The water flows from the channel and canals built by the sugarcane company and because the reservoir water is flowing from rivers upstream entering in a T-shaped fashion into the reservoir, it further oxygenates the water, proving beneficial for reservoir flora and fauna.

### ***Challenges and Impact Investment Potential: Centro de Producción Piscícola Bombita***

Because the tilapia business necessitates water, the dry season can dramatically affect the business. This past year the dry season was harsh and the water level was extremely low. For five months, the reservoir did not exceed 50 cm (2 feet) high and these low water levels prohibited the women from maximizing fish production. The dry season affected the entire country but more drastically the Barahona region. Compounding the problem, the government decided to repair a nearby dam during dry season. This exacerbated the effects of the drought, further depleting the local water resource for most of the surrounding communities. Once the entire water source was dried, the government concluded they ultimately did not have sufficient funds to fix the dam. This example demonstrates a disconnect between government decision-making and the private sector. As in many parts of the world, this disconnect can negatively affect local businesses and their operations.

However, the women's business proved to be resourceful during this challenging time and they identified other possible revenue streams. Five solar panels were donated by organizations, three of which were donated by the European Union (Báez, Executive Director, 2015). An opportunity existed to generate reliable electricity for an ice cream freezer, utilizing the solar panels they otherwise were not using. The women's group subsequently started a solar-powered ice cream shop, which continues to provide income to this day. The solar panels are additionally used to power 1 computer and 4 light bulbs needed to conduct administrative tasks. An impact investment could be used for other net-zero business opportunities with the purchase of solar panels as similarly demonstrated through the ice cream shop and its electricity- and income-generation.

The women's group would like to implement tilapia businesses in other reservoirs because it is easy to replicate while being profitable and having a low environmental impact. The artificial lake was built to irrigate the sugarcane and was built in an area that would not increase the level of water in the soil. In the rare circumstance this could occur, the sugarcane plantation would easily absorb the overflow. The positive impacts of replicating this business are exponential from a poverty-reduction perspective. Impact investments could be made on behalf of a tilapia farm in nearby communities where plantations exist and

irrigation is already in use. The impact investment could support this sustainable form of aquaculture while providing financial, social, and environmental benefits for the community.

In terms of replication and feasibility, there are five other reservoirs similar to the Bombita reservoir where the business would like to expand. They range in size from 0.5 hectares to three times as large as the Bombita reservoir or 3 hectares (7.5 acres) (Báez, Executive Director, 2015). There is room for investment and plenty of room for growth. They would like to mix production to include other varieties of fish including but not limited to an Amazonian fish or local trout. More research, however, would need to be conducted to ensure zero environmental impact with the introduction of these fish. The Bombita business plans to introduce wild ducks, as well, because ducks have more meat to sell. Additionally, after a preliminary market analysis, many people in the nearby Asian community consume duck (Báez, Executive Director, 2015), demonstrating an unmet need and market potential. There is no concern for the ducks attacking the fish because nets provide protection for the fish. The business group continues to test the feasibility of future projects where an impact investment could be utilized.

In addition, improvements could be made on the sales side of the business and an impact investment would prove to be beneficial for both the investor and investee. The women could benefit from a certain degree of improvement in technical issues, investments in machinery to create sub-products, and industrialization of what they currently offer the market. For production, they could generate food for the fish, encouraging growth at a more comparable rate to their counterparts in the wild, while improving their taste and acquiring more proteins and nutrition. Extraction of the fish from the water and the processing of the meat could be streamlined. Every aspect of quality assurance for the final consumer (i.e. general mechanization, feeding, classifying process) could all be improved with an impact investment.

The Bombita businesswomen are also interested in building a restaurant (Báez, Executive Director, 2015), specializing in the locally-grown tilapia; an impact investment could be used to support this growth. The restaurant would be located in closer proximity to the

main road where they would have better access to motorists passing the community, as anyone traveling to Haiti or the Barahona area passes through this intersection. The location is ideal and the scenery is appealing. A recreation area has also been proposed by the women's group to raise environmental awareness and offer kayaking in the reservoir as an income-generator while creating more jobs for the local population.

Similar to the ASOPROLECA goat farm, the tilapia business would benefit from continued capacity building that would help establish a stronger foundation as the business will become more complex while incorporating the above revenue streams. Data collection is one aspect that will be required in order to better inform impact investors and further case studies of the tilapia business.

Ultimately, a variety of impact investment opportunities exist within the Bombita community surrounding the businesswomen and their tilapia farm. The women are ambitious, resourceful, resilient, and eager. They are interested in improving and expanding their current business model with the proper training that could accompany an impact investment. The environmentally-friendly Bombita farm could easily be replicated and other environmentally sustainable sub-businesses could branch from the core.

### **c) Fundación Central Barahona (FCB)**

*Fundación Central Barahona (FCB)* is the corporate social responsibility arm of the *Consortio Azucarero Central* (Central Sugar Consortium). FCB has 52 workers and is operating in more than 48 communities in an array of projects (Báez, Executive Director, 2015) with the largest investments made in the areas of education, health, economic, and social development. They incorporate art, environment, health, sports, agriculture, tourism, and values into their sustainable projects, considering both the financial return and environmental impact of their poverty-reduction programs. The Foundation's aim is high social impact alongside sustainability. They have been able to sign agreements with community organizations to develop the most rural areas in the region. They improve communities by building roads, repairing canals and drains, providing natural disaster assistance and machinery, and other needs to increase overall community development.

One area of expertise includes the legalization of community groups and businesses i.e. Bombita tilapia business and ASOPROLECA as highlighted above. The Foundation helps these businesses gain access to funding from the State and other organizations. FCB offers pro bono legal counseling and pays for the legal process to become established as a legal entity through the government, formalizing their business. Once they have obtained the required legal status, the businesses acquire the strength to manage the funding of a project. FCB has established agreements with different NGOs, universities, and organizations with a vested interest in sustainable community development. Successful projects that the Foundation has supported range from water purification plants to improving farming practices.

After organizations are established as a legal entity, FCB continues to facilitate the management of the group through continued capacity building and other workshops that help to strengthen the organizations, members, and communities. Capacity building includes but is not limited to taxation reporting, Ministry of Finance navigation, and learning about commerce, health, and educational opportunities. The capacity building workshops are individualized and depend on the nature of the organization. FCB utilizes their network of institutions that help these businesses or organizations grow in a professional manner. From a business perspective, FCB collaborates with the State, universities, and banks to offer classes related to business and personal finance in order for participants to better understand the distinction between their personal finances and their business interests.

In terms of health projects, FCB works with the United Nations Population Fund to reduce teen pregnancy and in November 2014 they began working with the National Council for Sexually Transmitted Diseases (STD) and Human Immunodeficiency Virus (HIV) on the prevention of STDs in the area. This health-related project included both prevention and treatment (retrovirals, etc.). The rates of HIV and STDs are high in the region and the education level is low (Báez, Executive Director, 2015). The school system does not integrate HIV and STD studies, motivating FCB to continue their work with the Ministry of Education on an agreement to increase involvement in the school system. Although this process has not presented many obstacles, some school directors are more hesitant than others to allow FCB in the schools due to their personal religious beliefs (Báez, Executive Director, 2015).

Fortunately, this has not been as large of an obstacle as in other parts of the country and more broadly within Latin American and Caribbean nations as a whole.

FCB also works in the area of arts and culture. They currently have a project involving 35 children from Haiti collaborating with 35 students from the DR along with teachers from Harvard University to practice and form an orchestra (Báez, Executive Director, 2015). These children perform for 5,000 people in the DR and if they secure funding, they will continue to use music as a tool to create poverty awareness in the Barahona region. However, this type of project can total us\$50,000 (RD\$2.4 million) to cover teachers' fees and instruments.

In addition to relationship-building with USAID, FCB is establishing a public alliance with the Ministry of Industry and Commerce and the Spanish Agency for International Cooperation and Development (Báez, Executive Director, 2015). This alliance will preserve culture in the region and create development programs for artisans in Barahona who have otherwise been unable to sell their products elsewhere. FCB has been working to penetrate the market and build more partnerships on behalf of these artisans. The Foundation identified a potential market existing through an online market. For example, FCB has been working with Carlos Miranda of the Civil Innovation Lab (CIL) and Relief 2.0 who developed a website to sell art from vulnerable areas (Báez, Executive Director, 2015). CIL used products from the DR during a Boston and New York presentation, demonstrating they were able to buy local artwork and sell all inventory in the first day, requesting that FCB and their artisan businesses provide more products.

Through collaborations with Major League Baseball, FCB is using sports as a way to improve life skills among youth. Between 280 and 350 youth per year are selected to participate in this five-year baseball program which plans to reach 3,000 students as their goal from 2015 to 2019 (Báez, Executive Director, 2015). They will teach values and incorporate school personnel and parents, requiring participants to do community service in their communities.

An FCB entrepreneurship program was also formalized together with the Ministry of Commerce, reaching more than 100 people. These participants became business consultants after participating in the

program and advised more than 400 people in the region, some of whom later built their own businesses. The Foundation donated US\$5,000 (RD\$240,000) each in seed capital to five of the groups who presented the most promising pitches and projects.

Aside from the entrepreneurship program, FCB helped to start the tilapia fish farm in 2010 as outlined in the section above. They began the project with 2 cages and the business has since evolved and expanded. In December 2012, the tilapia farm generated over RD\$100,000 (US\$2,100) per month (Baéz, Executive Director, 2015) and they have more than doubled since, exceeding RD\$280,000 (US\$6,000) per month for the 19 women members. In 2014, they began building the capacity of the women's business, preparing them to replicate their Bombita tilapia business.

Not only does the tilapia business generate income, but it also has attracted the attention of the Dominican government. In the history of the DR, no President had ever visited the Batey Bombita community. However, in 2014 the president visited the community twice and donated RD\$6.7 million (US\$150,000) allowing the women to increase the number of cages from 23 to 55 cages (Báez, Executive Director, 2015). Additionally, because of this presidential visit and the attention from various Dominican ministries, the streets were paved in 2013 for the first time since the 1920's. A public high school was constructed and more classrooms were created in the primary school. The next week, following his presidential visit, the president revisited and brought personnel from public works and the health department to identify community deficiencies and resolve these issues.

ASOPROLECA, the goat business, is another beneficiary of FCB. The Foundation began working with them to improve the economic situation in the community. However, communication has proven to be challenging and FCB has, therefore, decreased their level of involvement. According to FCB, ASOPROLECA was unwilling to accept research and information that the Foundation had shared, resulting in an overall business decline. FCB had extensively researched goat breeds to identify an optimal breed selection. According to the Foundation, ASOPROLECA preferred to rely on their own sources and purchased local goats that do not produce profitable quantities of milk or meat. However, ASOPROLECA now purchases a goat breed that is more conducive to their business

needs. The Foundation donated a milking machine but the goat business prefers to milk the goats by hand, possibly due to unreliable electricity. The machine has been stored at the ASOPROLECA facility unused for one year. FCB also provided ASOPROLECA with the appropriate forms necessary to sell their products to a larger market through a national grocery store chain. ASOPROLECA accepted these forms and is now selling in the capital. Lessons learned have been documented and both FCB and ASOPROLECA continue to operate in a manner that is appropriate to meet their individual business and foundation needs.

FCB has been involved with organic banana and plantain businesses in the Barahona region, as well. They have provided businesses with zero-interest loans that will allow these small producers to improve and increase production, ultimately gaining better access to the final customer and avoid selling their product to the intermediary. FCB has linked these businesses with domestic and international markets while not interfering in the transactions unless the farmers request additional support.

If any business (i.e. chickens, rabbits, dairy, fish, and bananas) supported by the Foundation is unable to sell their final product at local markets, FCB provides their sugarcane plantation employees as customers. More than 3,500 workers are willing to purchase these products at a discounted rate while remaining profitable for the businesses (Báez, Executive Director, 2015).

FCB also works with businesses in the agricultural tourism industry. They have worked with the University of Guadalupe, University of LaCrosse, NGOs, and students from San Francisco and New York. These students and visitors visit the sugarcane company to study international business and the origination of raw materials such as sugar. Tourists have the opportunity to additionally visit other FCB projects and deepen their knowledge about diverse business opportunities in the region. This experience offers a platform for the local community to practice their marketing, communication and language skills.

Despite the extensive involvement in many aspects of the regional community, most FCB investments are geared to education programs. From 2011 to 2013, a literacy program was established that taught more than 1,000 people, investing RD\$2.5 million (us\$53,000) (Báez,

Executive Director, 2015). Since December 2013, they have supported a government literacy program forming literacy groups. After graduation, the Foundation connected participants with schools to continue building business skills. FCB also supports a school voted as the best school in the region, elected among the 100 best schools in the country based on performance. The cost of school attendance has been subsidized because it would be difficult for the local population to afford traditional tuition rates. The sugarcane company subsidizes 50% of the school costs while tuition fees cover the rest. Tuition is based on a sliding scale and never costs more than RD\$25,000 (us\$530) per year to attend (Baéz, Executive Director, 2015). According to the FCB director, students attending similar performing schools in Santo Domingo pay on average RD\$850,000 (us\$18,000) (Baéz, Executive Director, 2015) in addition to an admission fee. Those who teach at the school in Barahona stem from around the globe, increasing a student's exposure to diversity and varying cultural perspectives.

### ***Challenges and Impact Investing Potential: Fundación Central Barahona***

FCB could play an important role as a counterpart organization if an impact investment were made in the Barahona region, conducting transparency efforts for any investments made in a community. They have been operating in the Barahona region for over a decade and are well-connected with both international and domestic aid agencies. It is their focus on financial sustainability that sets FCB apart from traditional aid organizations while not sacrificing poverty-reduction goals integrated with their overall vision of economic and social improvement. A portion of any impact investment could be allocated to FCB as a local counterpart that implements training, business management, and sustainability workshops.

### **d) Chicolala**

Cacao trees only grow 20 degrees north and south of the equator and 20-60 cacao beans are located inside cacao pods (World Standards, 2015). These beans are covered in a pulp and are fermented in this pulp for about one week at which point they are dried in the sun or in a mechanized drying facility for an additional week. Once the beans are bagged, they are transported to a cocoa producer and roasted.

The Chocolala women-only, chocolate-making business is located in Altamira in the Puerto Plata district of the Dominican Republic. The Chocolala women's business consists of 48 members with 20 active members (García, 2015) who work at the Chocolala facility located approximately 4 miles south of Chocal, a neighboring chocolate production site described in the following case study. The Chocolala organic chocolate-making business holds Tuesday meetings offering a time and space for women to meet and discuss business activities. When demand is high after a large request is placed by buyers for chocolate, wine or other products, more women are required to work and the 20 active members report to work in order to meet chocolate demand. However, with fluctuations in demand, consistent work is not always available for all members. Women do not earn a salary but receive an incentive, paid monthly with members compensated equally. All 48 members are encouraged to engage in Tuesday meetings and offer assistance when any of the core 20 members are unable to attend work due to personal scheduling conflicts (García, 2015). For example, if a mother stays home with a sick child on a workday, one of the 28 members is asked to fill her place for the day. Additionally, if a mother is unable to provide food for her family in a particular week, the women's group will assist with food donations. The women's group, therefore, not only has created Chocolala, an income-generating business, but offers a social support network for single mothers in the community, as well.



Figure 9: Chocolala main facility and office space (Photo: Author).

Chocolala does not currently have a license to sell directly to the market and must rely on distributors to channel their product through the supply chain. Distributors are also not permitted to sell the product directly to supermarkets, however, because Chocolala is still organizing to obtain this type of sales license. For now, distributors can only sell directly to restaurants, at events, and in households.

Women spend time manually sorting through corn seeds, selecting the pieces that are suitable for the toasting pot. The kernels will be toasted to prepare them to be ground into flour. This flour is mixed with sugar to create *gofio* which is a topping that can be added to chocolate or used in coffee and other drinks. Women also sort through roasted cocoa seeds, to ensure the shells have been fully removed by the machinery.



**Figure10:** Chocolala member sorting cacao beans and shells(Photo: Author).

The Chocolala facility has been in Altamira for 20 years and was initially a small manufacturing plant but President Danilo Medina visited last year and the women saw an opportunity to expand business. Medina provided an RD\$12 million (approximately US\$270,000) one-year interest-free loan with 5% annual interest thereafter (García, 2015). Similar loans were made to other chocolate producers, as well, through the Special Fund for Agricultural Development (FEDA). With this loan, the women's group was able to purchase machinery, increasing chocolate-making efficiency and enlarging the facility.

Revenue is generated from chocolate product sales and monthly sales include the following: 5,000 *tablas* (9 *tabletas* packets on each *tabla*), 300 pure coco butter packages, 480 bottles of cacao wine, 500 bitter chocolate bars, and 200 jars of chocolate covered beans (García, 2015). Sugar prices can fluctuate and currently cost RD\$2,200 (US\$46) for one sack. In the recent past, one pound was RD\$5 (US\$0.11) and now it is RD\$20 (US\$0.42) (García, 2015). These price fluctuations present difficulties with budgeting but can be considered in the budget plan in order to avoid any production disruptions and financial shortfalls. Operational costs are expensive and unpredictable with the highest cost attributed to electricity. Electric bills per month are approximately RD\$4,500 (US\$95) plus an additional RD\$2,000 (US\$42) every 22 days to refuel the generator located on the roof of the building (García, 2015). Chocolala relies primarily on the electric generator than on standard electricity because the public electricity is too intermittent and disruptive to complete their work.



**Figure11:** Chocolala products (Photo: Author).

The cacao seeds are brought to the facility by the 1 *quintal* (220 pounds) per delivery from a local organic cacao farm costing RD\$6,700 (US\$142) for 1 *quintal* of cacao (García, 2015). The women clean and toast the seeds and can store them for up to one year if necessary. With a portion of the FEDA loan, Chocolala purchased a machine that peels the shell from the bean and the women use the discarded shells as agricultural mulch material on the adjacent farm.

### ***Challenges and Impact Investment Potential: Chokolala***

The major challenge for the women's Chokolala chocolate business is unreliable electricity. If Chokolala had reliable electricity, the business would be much more efficient due to increased machinery utilization for production. The business is interested in expansion and is researching reasonable loans that would allow Chokolala to both enlarge the facility and purchase more equipment, allowing for further expansion of the company. Having a reliable electricity source, through access to renewable energy or another dependable form of electricity generation, would be beneficial for this growing business as they continue to expand.

As with the dairy and tilapia businesses, Chokolala could also benefit from capacity building and improved data collection techniques. Although they have built institutional knowledge of most pertinent data, a mechanism must be in place in order to demonstrate potential results for impact investments.

An impact investment would assist Chokolala with growth and allow the women to reach financial sustainability while continuing to incorporate environmental sustainability in their business model. They have a proven track record of meeting required payments on previous loans and are a reputable business within the community. Chokolala is prepared to accept additional funding through an impact investment that could yield positive results for all parties involved.

### **e) Chocal**

Chocal is positioned about 200 feet from a cacao farm that provides Chocal and other cocoa producers with seeds used to produce chocolate. When this farm harvests and collects the cacao seeds, they bring them straight to the fermentation building where seeds are left to ferment for a total of 6 days. Seeds are covered in banana leaves and topped with a seed sack in order to keep the seeds protected from pests. After 6 days, the seeds are manually transferred by cart from the fermentation boxes to nearby drying tents (see **Figure 12**) for 4-5 days to fully dry and then sell to Chocal. Each fermentation process contains approximately 5 quintales or 500 kilograms (1,100 pounds) of seed. Gumercindo Crisostomo provided a tour of the cacao nursery and processing facility along with an orientation of the area.



**Figure12:** Chocal's seed drying tent  
Photo: Author).

Chocal began in 2007 and employs 28 women ranging between 18 and 35 years all of whom were founders of the business (Crisostoma, 2015). To become a member, a small donation must be made to the group in an amount that varies depending on the financial ability of the new member. USAID worked with Chocal to build the business and offer workshops related to a chocolate-making endeavor, a project that lasted 3 years. In 2013, the Dominican government provided Chocal with a RD\$12 million loan (us\$253,000) at 5% interest, similar to the Chokolala loan, to further develop the business (Crisostoma, 2015). Chocal, however, has begun to repay the loan on a bi-monthly basis costing RD\$350,000 (us\$7,400). Each

day, 28 people are required to work at the chocolate production facility on a schedule that fluctuates between working half days and full days. Workers earn different wages, depending on the amount of time they have spent with the organization but state that the salary is sufficient to live.

The business taxes last year cost Chocal RD\$9,000 (us\$200) and the largest cost every month is attributed to electricity which totals RD\$15,000 (us\$335). An additional RD\$3,000 (us\$70) every three days or RD\$30,000 (us\$700) (Crisostoma, 2015) per month are paid in gasoline costs to power the generator which is used often to substitute unreliable electricity.

Chocal sells cacao wine but the quantity and cost are affected heavily by seasonality and depend on the availability of the fruit used for flavoring. They sell 100 pounds of *bombones* per week at RD\$60 (us\$1.30) per *bombon* (60 grams each), 2,000 seasoned *bolas* at RD\$30 (us\$0.63) and 2,000 unseasoned *bolas* at RD\$40 (us\$0.85). Chocal also sells 20,000 units of candy bars per month at RD\$45 per bar (us\$0.95). Total monthly revenue therefore averages RD\$1.6 million (us\$33,800).

Additional operational costs would need to be verified with financial statements to confirm revenue.

Chocal has no official contracts with any large supermarkets but when a store experiences demand for the product, they contact Chocal allowing them approximately one week to deliver the final product. Markets primarily focus demand on chocolate bars and wine is only sold locally, not in stores.

### ***Challenges and Impact Investment Potential: Chocal***

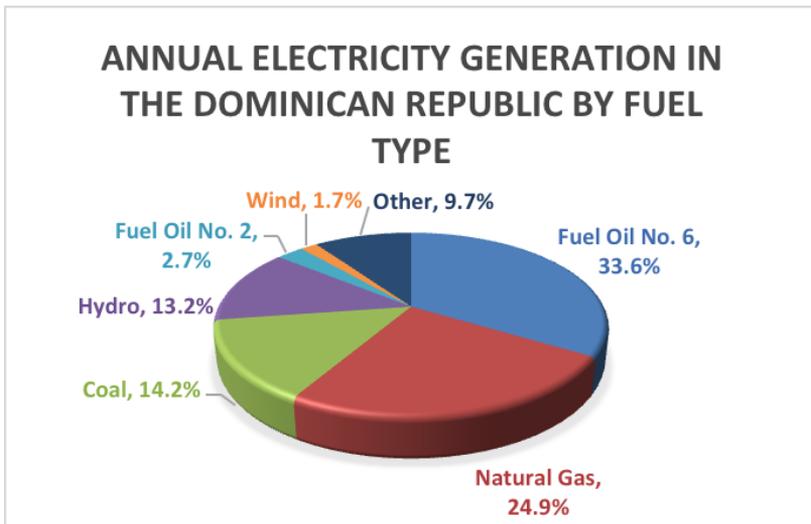
The main challenge the women explain relates to the lack of promotion and marketing experience and education. Workers believe that if they had further training in marketing and promotion, they would be able to access more buyers and better promote their products. They would like to create commercials advertising their chocolate products and brand. Additionally, Chocal is interested in purchasing a vehicle to transport product because their current vehicle is of low quality and unreliable. If they received an impact investment, they would also build a classroom area to receive visitors or groups where they could teach the chocolate-making process and business.

Chocal could benefit from further capacity building to learn the metrics used for measuring social and environmental impact, however. Collecting this data would allow them to better understand and promote their impact beyond the financials of the business. Through their experience working with USAID, Chocal has demonstrated their ability to manage contract compliance. This skill set establishes Chocal as a reliable candidate who could navigate the details of an impact investment and they have identified numerous ways in which an impact investment could be used.

## **B. Energy Sector in the Dominican Republic**

As shown in **Figure 13: Annual Electricity Generation by Fuel Type**, the Dominican Republic generates electricity using the following energy sources: oil products (60.6%), natural gas (20.2%), coal (14%), hydro (4.7%), and combustible renewables and waste (0.5%), while the economy consumes approximately 115,000 barrels of oil equivalent per day (Sucre, 2015). According to the Latin American Energy Organization (OLADE), the Dominican Republic has approximately 3,600 MW of installed capacity for electricity generation with peak

demand of 1,800 MW (National Renewable Energy Lab, 2015). The DR uses over 70% of oil imports for energy production and spends RD\$5.2 billion (US\$109 million) on fossil fuel imports, almost 9% of its annual GDP (Killeen, 2015). This excessive spending is not sustainable and the Dominican Republic continues to strive for greater energy independence while balancing economic growth. Philip Killeen of the Worldwatch Institute explains, “Comparing relative installation costs, operational lifetimes, utilization rates, fuel costs, and maintenance needs, Levelized Cost of Electricity (LCOE) modeling tools show that, by transitioning to renewable energy, the Dominican Republic can save more than RD\$25 billion (US\$528 million) in energy sector spending through 2030. Doing this also would reduce average electricity costs for consumers by 40%, despite the country’s rapidly expanding consumer market.” (Killeen, 2015).

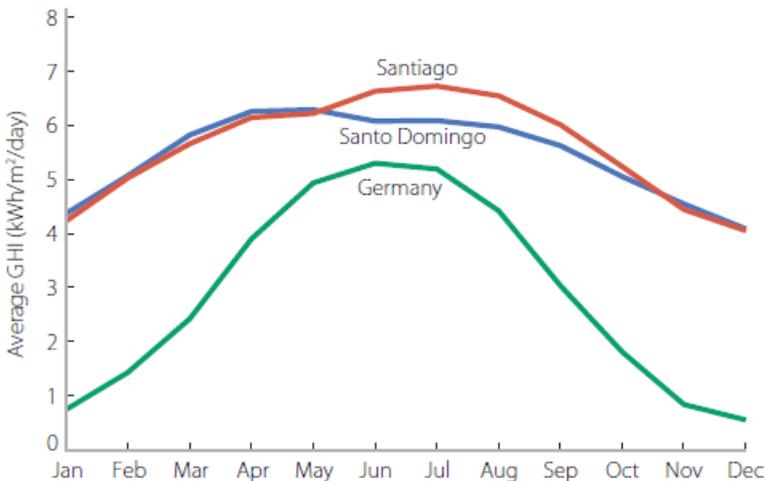


**Figure13:** Annual Electricity Generation by Fuel Type (Konold, et al., 2015).

Another energy sector concern is the country’s fossil fuel reliance on the PetroCaribe oil import agreement (Permanent Secretariat of SELA, 2015) with Venezuela which highly subsidizes oil for its 10 members of the Caribbean community. The oil import agreement allows countries to access loans in order to purchase oil that would otherwise be too expensive in the market. Countries can access loans extended for up to 25 years at interest rates as low as 1% while the cash saved is earmarked

for various purposes, typically social development programs (The Economist, 2014). However, due to economic strife in Venezuela, access to lenient loans through PetroCaribe is diminishing, leaving many countries in the Caribbean, the Dominican Republic included, vulnerable to market price fluctuations (Bourne, Alexander, Conrad, & Jhinkoo, 2015). These concerns and over-reliance on fossil fuels have created an opportunity for renewable energy growth in the country and the region.

Additionally, specific laws have been adopted that promote the advancement of the renewable energy sector. Enacted in 2007, Law 57-07, *Law on Renewable Sources of Energy Incentives and its Special Regimes* (República Dominicana, 2016), includes many incentives such as tax credits, tax exemptions, and low-interest loans for community projects. According to a recent Worldwatch Institute report, “the Dominican Republic’s National Energy Plan, National Development Strategy 2030 (Law 1-12), and Climate Compatible Development Plan, set important targets for renewable energy (25% share in the overall energy mix by 2025) and greenhouse gas emissions (25% reduction by 2030)” (Konold, et al., 2015). Continued political will and financial investments in the energy sector, specifically solar and wind technologies, could lead the way to meeting the country’s increasing energy goals and demand.



**Figure14:** Average Dominican Republic GHI compared to Germany (Konold, et al., 2015).

### a) Solar as a Renewable Energy Source

Solar capacity is growing rapidly in the Dominican Republic in large part due to the financial incentives outlined in Law 57-07, the Law on Renewable Sources of Energy Incentives and its Special Regimes. It is these types of policies that encourage sector expansion and motivate businesses to invest in a particular industry. Large installations have been set up throughout the country on public and private properties such as homes, hotels, and government buildings. The potential for solar photovoltaics (PV) is immense considering that the global horizontal irradiance, GHI, ranges from 5-7 kilowatt-hours per square meter per day (kWh/m<sup>2</sup>/day) throughout most of the country and reaches 8 kWh/m<sup>2</sup>/day in some areas as outlined in **Figure 14**. Considering Germany has nearly half of the world's installed solar PV capacity yet they only have a few locations above 3.5 kWh/m<sup>2</sup>/day (Konold, et al., 2015), the DR is in a prime location for solar installation expansion. The Dominican Republic has tremendous potential to become a solar PV leader in the Caribbean and solar companies such as GEDER, are focused on growing solar capacity throughout the country, further developing solar as a renewable resource.

### b) Grupo Empresas Dominicanas de Energía Renovable



The Grupo Empresas Dominicanas de Energía Renovable (GEDER) is an association that has been working in the renewable energy sector of the Dominican Republic since 2007. Their management board has more than 40 years of combined executive, sales, and consulting experience in the industry and has worked with senior levels of both the private and public sectors. They opened their energy consulting services in 2009, based in the capital, Santo Domingo, and continue to advance solar projects throughout the Dominican Republic (GEDER, 2015). An overview of GEDER projects include 550 MW of planned solar projects in strategic regions around the country. GEDER is also working in collaboration with regional government officials to train and employ the local population at GEDER solar facilities.

### c) Environmental, Social and Financial Results

GEDER projects span coast to coast and include environmental, social, and financial successes. Cost savings for the customer are related to

solar projects and GEDER will begin to share data in the near future regarding specific amounts. Overall, it is expected that solar projects in the Dominican Republic could decrease the RD\$1 billion (US\$21 million) spent by the government on subsidies and that the cost to the consumer would decrease, as well. In terms of jobs created in both construction, installation and manufacturing (CIM), and operation and maintenance (O&M) jobs, solar creates 0.8 to 1.2 annual jobs per MW whereas natural gas, similar to oil, creates 0.13 annual jobs (Makhijani, 2011). Therefore, solar has the potential to create more jobs annually in the Dominican Republic, further benefiting society by decreasing unemployment rates which have to date reached 15% nationwide (CIA World Fact Book, 2015).

### ***Challenges to Solar Project Implementation***

Although the Dominican Republic has advanced solar facilities throughout the country, challenges remain. Despite the adoption of Law 57-07 in 2007, the DR has experienced bureaucratic hurdles that have hindered a more rapid expansion of the solar industry. For example, in 2011, green energy funds that were intended to promote renewables were scheduled to be created under Law 57-07 but had not been established. As with any new and growing industry, human capital is also of concern. However, GEDER and other solar companies are collaborating with elected officials to provide training and skills workshops to build the foundations for a lasting solar industry in the Dominican Republic (GEDER, 2015).

### **C. Wind as a Renewable Energy Source**

Wind as a renewable energy source has grown in popularity in part due to the major infrastructure changes that have occurred surrounding the expansive wind farm in Los Cocos. Other companies are conducting feasibility studies to determine the possibility of building future sites (Báez, Executive Director, 2015). The vast coastline and wind generation in the interior of the country, as demonstrated in **Figure 15**, make the Dominican Republic an excellent candidate for wind farms both on land and offshore. As demonstrated in the following case study, wind farms can provide a long-term solution to many of the energy challenges faced by the Dominican Republic.

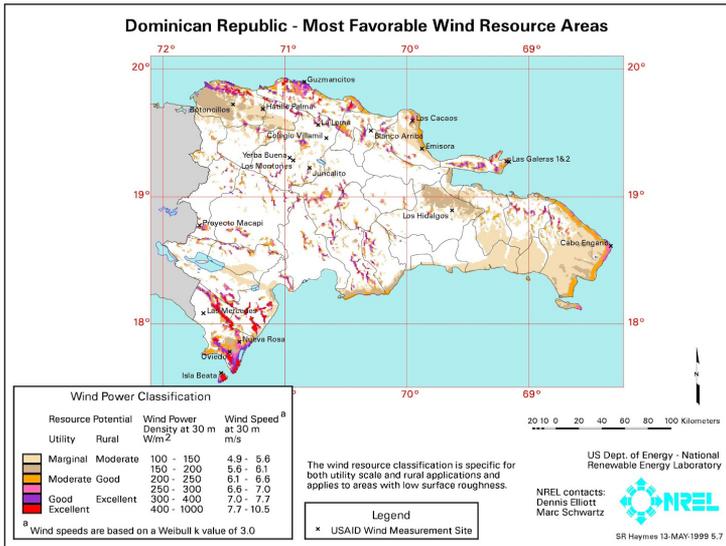


Figure15: Dominican Republic - Most Favorable Wind Resource Areas (Elliott & Schwartz, 1999).

**a) Empresa Generadora de Electricidad HAINA: Los Cocos Wind Farm**



Figure16: Los Cocos Windfarm (Photo: Author).

The nation’s largest power generation company, Empresa Generadora de Electricidad HAINA (EGE-HAINA), built the Los Cocos wind farm in the southwest region of the Dominican Republic. It includes 40 wind turbines generating 77.2 mw of energy. Project construction began in March 2010 and was completed by January 2013. An additional 49.5 mw of installed capacity is scheduled to come on line in 2016 just north of the Los Cocos wind farm in Larimar. The Los Cocos wind farm generates 220,000 MWh of electricity per year through the nation’s first 77.2 mw grid-connected wind farm. The total cost of the farm was US\$180 million (RD\$8.5

billion) and the project displaces 160,000 tons of CO2 equivalent annually, exceeding environmental expectations (Los Cocos Wind Project-Dominican Republic, 2014).

## **b) Environmental and Financial Results**

The environmental benefits and social benefits of the wind farm have been immense. EGE-HAINA has improved potable water systems in the local community and continues to provide maintenance for recreational space for community members. They have also donated computers to the local school system, and continue to advocate for the development of the region. On the social front, job creation is another benefit of this renewable energy source. Indeed, wind farms typically create 0.84 jobs in construction, installation and manufacturing (CIM), and 0.33 operation and maintenance (O&M) jobs; whereas natural gas, similar to oil, creates 0.13 annual jobs total (Makhijani, 2011). Economic savings for the consumer are substantial, similar to solar. In some markets, wind power can cost between 4 and 7 cents per kWh making it competitive with fossil fuels (Konold, et al., 2015).

### ***Challenges to Wind Farm Implementation***

The main challenges to wind farm implementation surround infrastructure and lack of development throughout the entire country. EGE-HAINA contributed large amounts of money to implement their project with the support of government and outside donors. Not only did roads need to be repaired in many parts, but roads also needed to be constructed along with the building of a large port in the southern part of the DR bordering Haiti. Property rights were a significant issue in the local community, as the current site was previously used as farmland. Farmers continue to be paid for monetary losses and this will occur indefinitely. Like solar, technical capacity must increase in order to expand the wind farm industry. Continued training is necessary in order to maintain the technical equipment and general maintenance required by a wind farm. Additionally, a 50 MW and a 30.6 MW wind farm project has been on hold for some time due to limited financing availability and disagreements with the state-owned transmission company (Konold, et al., 2015). The farms were to be located in the northwest of the country and just southwest of the capital. Funding was expected from the Inter-American Development Bank and the European Investment Bank, but because the projects have been on hold for a lengthy period of time due to financing issues and disagreements with the state-owned transmission company, the projects are considered a failure (Konold, et al., 2015). Although challenges to wind farms in the DR exist, as financing becomes more readily available and as local companies are incentivized, wind power along with other renewable energy generation could reach its potential.

## Conclusion and Recommendation

The companies outlined above represent the sustainable agriculture and renewable energy industries. These industries could benefit from impact investments that would not only yield a financial profit, but would have positive environmental impacts, as well.

The sustainable agriculture sector has shown great potential, especially for smallholder farmers, and is expected to grow in the coming years. In fact, the IDB has begun to execute a US\$22 million grant throughout the country to increase smallholder farmers' net income per hectare by 12% over the next ten years (Business Year, 2013). Specific to the energy sector, according to a recent Worldwatch Institute report, wind, solar, biomass, geothermal, and hydropower energy potential are so abundant in the Dominican Republic that a combination of these renewable energies could result in meeting 85% of the energy demand through 2030 (Konold, et al., 2015). Impact investment strategies provide an environmental and financial approach that would lead the way to sustainability for this small island nation, in both the growing organic agriculture and renewable energy industries.

Beyond access to capital, one of the main challenges developing businesses face is the collection of data, as we have seen with the tilapia, chocolate, and dairy businesses. In order to fully attract potential investors and grow their businesses, the companies and projects must focus on data collection, both financial and operational, through the utilization of accepted metrics. Impact investors should continue to familiarize themselves with these metrics that businesses can use to quantify their environmental and social impact alongside traditional financial measures.

Most financial institutions engaging in impact investing have increased their usage of performance metrics established by IRIS, managed by the GIIN. In fact, in 2010 only 2% of impact investors used IRIS metrics whereas in 2013, 52% were using these industry-accepted metrics (Saltuk, Perspectives on Progress: The Impact Investor Survey, 2013). IRIS provides 400 comprehensive performance metrics that include cross-sector and sector-specific indicators measuring both qualitative and quantitative social and environmental performance. The sector-specific indicators are used to measure the following sectors: agriculture,

environment, housing, education, financial services, water, energy, and health (Using the Impact Reporting and Investment Standards (IRIS) To Track Social and Environmental Portfolio Performances Across the Opportunities for the Majority Portfolio, 2012). With this increased metrics knowledge base, investors will need data collection and reporting practices to improve.

To aid in this data collection challenge and other obstacles, university assistance could be offered in conjunction with the recommendation for impact investments supporting Dominican environmentally-sustainable businesses. Many impact investment candidates on a smaller scale lack the specific business acumen that could allow them to flourish. There are countless universities collaborating with triple bottom line businesses and MBA students are offering services to start-ups and small enterprises that complement their educational experiences. University students offer expertise on a consulting basis and these experiences serve as an opportunity for students to gain first-hand experience, through utilizing the skills gained in their respective programs, thus creating a symbiotic relationship. MBA students and others with similar backgrounds could offer necessary training on the topics of financial statement design and analysis, calculating return on investment (ROI), and the importance of data collection pertaining to financial, environmental and social impact.

Using metrics offered by Impact Reporting and Investment Standards (IRIS), discussed above, would encourage businesses to track data such as but not limited to GHG emissions reduced/mitigated, landfill diversion, water and electricity usage, waste disposed/produced, fertilizer run-off, etc. The more relevant data these businesses collect, the more likely impact investors will be attracted to their operations.

The potential for impact investing in the Dominican Republic and around the globe is growing rapidly. It was recently reported in a J.P. Morgan and GIIN report that 1,276 asset managers have signed onto the UN Principles for Responsible Investment and these signatories represent combined assets of over US\$45 trillion (Saltuk, El Idrissi, Bouri, Mudaliar, & Schiff, 2014). This serves as an indicator that more asset managers are becoming involved in impact investing. Whether this trend is related to the change in customer values or an increase in access to information regarding the impact of investments remains unclear. According to a Veris Wealth Partners report, however, the

growing interest in impact investing can be attributed, for example, to the “increasing realities of climate change, pandemics such as HIV/AIDS and obesity, and the increasing disparity in wealth” (Veris Wealth Partners, 2015). Additionally, a recent Deloitte study collecting input from almost 8,000 millennial generation respondents in 29 countries around the globe found that, according to Barry Salzberg, CEO of Deloitte Global, millennials are “just as interested in how a business develops its people and its contribution to society as they are in its products and profits” (Deloitte Global Brand and Communication, 2015). Impact investing provides an alternative to traditional portfolio management and investment selection that allows for businesses to address critical issues facing society.

The traditional investment approach solely focuses on financial return of investments while ignoring the importance of factors such as social and environmental concerns, oftentimes leading to potential negative impacts in all areas of the investment. Impact investing, on the other hand, is a bright alternative that investors can use if they are interested in a positive environmental and social outcome in addition to achieving financial returns.



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## **Jenna A. Giandoni**

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Jenna A. Giandoni graduated with her MBA and Master of Science in Environmental Management & Sustainability degrees from Illinois Institute of Technology where she learned to create a business case for environmentalism. As a GFDD/FUNGLODE fellow, Jenna focused her research on impact investing as it is applied to environmentally sustainable businesses in the Dominican Republic. Her field work through the Fellows Program was conducted over a three-month period, from January to March 2015.

Jenna's passion for fusing the environmental and business fields inspires her in an impact investing career. While she was in the DR, she conducted comprehensive research on the challenges and successes of companies using an environmentally-focused business model, and the role of the public, private, and non-governmental sectors to efficiently mobilize capital for environmentally and financially sound businesses.

Jenna holds a Bachelor of Science in Psychology and a Minor in Political Science from Old Dominion University. She has over 10 years of work experience and has served with the Peace Corps in Latin America and Eastern Africa, focusing in the areas of strategic planning and community development. Throughout her professional life, she has gained a deeper understanding of the necessity to promote environmental protection in order to achieve long-term economic growth throughout the world. Jenna complemented her MBA and msc degrees with an Advanced Certificate in Emerging Markets & Country Risk Analysis from Fordham University, which included travel to South Africa to research and analyze the country as an emerging

market. Later, her work in international development finance with Enclude in Washington, D.C. allowed her to support field-based projects surrounding country economic and investment climates in the areas of small business development, microfinance, sustainable agriculture and the housing market. She currently advises as an Energy Consultant with SolarCity. Throughout her career, Jenna has managed grassroots projects collaborating with senior levels of government, executives, and nongovernmental organizations on programs related to homeless prevention, HIV/AIDS, economic development, education, gender issues, and environmental sustainability.

## GFDD

[www.globalfoundationdd.org](http://www.globalfoundationdd.org)

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GFDD is a non-profit, non-partisan organization dedicated to the advancement of global collaboration and exchange relevant to Dominican professionals, general audiences and institutions in the homeland and abroad by implementing projects that conduct research, enhance public understanding, design public policies, devise strategies, and offer capacity building in areas crucial to social, economic, democratic and cultural sustainable development.

GFDD promotes a better understanding and appreciation of the Dominican culture, values and heritage, as well as its richness and diversity, in the Dominican Republic, United States and worldwide.

GFDD creates, facilitates, and implements wider scope international human development projects, building on its own experience, expertise and strong national and international networks.



GFDD



## Funglode

[www.funglode.org](http://www.funglode.org)

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Fundación Global Democracia y Desarrollo (Funglode) is a private, nonprofit, and pluralistic organization devoted to conducting high-level research, and committed to academic excellence and the promotion of culture and art.

The organization formulates public policies aimed at strengthening democracy, and fostering respect for human rights, sustainable development, creativity and the modernization of the Dominican Republic. Through the design of policy proposals and strategic action plans aimed at creating interdisciplinary solutions to national problems, Funglode seeks to become a knowledge center with a large range of world-class academic programs and exchanges with internationally renowned universities and research centers.



FUNGLODE



## Fellows Program

[www.drfellowsprogram.org](http://www.drfellowsprogram.org)

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The Fellows Program, an extension of the internship and academic exchange program InteRDom, was developed in 2009 to respond to the desire of GFDD and Funglode to develop a community of scholars that contributes to the Foundations' growing body of research on matters of international concern that directly impact the Dominican Republic. The Program complements the overall mission of GFDD and Funglode to promote academic exchange, generate scholarship, and influence the creation of public policy related to economic and social development both at the national and international levels.

Through the Fellows Program, GFDD and Funglode seek to generate scholarship on issues at the forefront of the United Nations' agenda in order to give voice to national and regional concerns and offer viable solutions to domestic and international challenges.

The Fellows Program provides opportunities for MS., MA., and PHD candidates interested in conducting high-level research in the Dominican Republic on issues related to sustainable development. The final output of the investigation is a comprehensive report, which includes empirical data. Fellows do their research in coordination with GFDD and Funglode staff, National Academic Advisors, and their university professors. Fellows who produce exemplary work have the opportunity to present their findings before the United Nations community on behalf of GFDD and Funglode.





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