# Expansion Plan for Ener-G Tech Investment

## IQP Proposal: Advancing energy efficiency initiatives in Central America by aiding the growth of a Costa Rican energy service company

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10/2/2012

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## Chapter 1: Introduction

Over the last twenty years, Costa Rican public policy has increasingly focused on an environmental agenda. The Costa Rican government has set an initiative for the country to become carbon neutral by the year 2012, meaning that the country as a whole produces net zero carbon emissions. Therefore, a major goal is to reduce the amount of carbon-emitting fuels burned for power generation. Renewable energy sources such as hydroelectric, biomass, wind, and solar power are often seen as the primary solution to this problem. However, another very effective approach is reducing electricity consumption through energy efficiency improvement projects, commonly undertaken by private energy service companies (Byer, 2009). In the U.S. and Europe, the energy service company (ESCO) industry has been the dominant model for the delivery of energy efficiency services since the 1980s (Goldman, 2008).

In Costa Rica and most of Central America, however, the ESCO industry is less established than it is in the United States. Ener-G Technology Investment is an energy service company in San Jose, Costa Rica. Founded in 2000, the company concentrates on energy service performance contracts (ESPCs), meaning that they are contracted by clients to undertake all aspects of an energy-efficiency upgrade for the client's facilities. Ener-G provides the initial energy audit and installation, and the client pays the investment back over a specified period of time. The payments are based on the energy bill savings that result from Ener-G's implemented changes. Once the agreement is terminated and the investment is returned, the clients gain ownership of all of the installed equipment. The typical technologies installed include lighting, air conditioning, water heating, heat exchangers, and appliances. In order to be eligible for the Ener-G Tech Investment program a client must consume more than 30,000 kilowatt hours of energy per month or 7,200 gallons of hydrocarbons annually. These guidelines result in maximum savings for the clients and shorten the pay-back period.

Ener-G Tech Investments is still a relatively new company with a small clientele, but their intention is to expand within Costa Rica as well as to nearby Central American and Caribbean nations (C. Music, H. Friedlander, personal communication, September 5, 2012). Ener-G Tech Investments aims to restructure its business model to facilitate expansion through franchising, a common business practice that allows a proven model to expand quickly by operating from several locations, owned by different franchisees (Hillstrom, 2002). To fully

understand the company's structure and performance, we will analyze Ener-G's current business model and operations history. Using the analysis of Ener-G, as well as research and information the team gathers from interviews, we will design a business plan outlining the new business model and the steps required to implement the expansion. We will also investigate financial options for start-up funding required in the steps defined in the business plan.

To accomplish our goals, we will conduct research into the nature of energy service companies, franchising, business plan creation, and financing. Investigation into franchising and business planning will help us form a scalable model for expansion. Detailed descriptions of the common components of a business plan are essential in order to produce a thorough plan. A major barrier in any franchising effort is the great amount of startup funding, so we will investigate financing opportunities available from larger, transnational energy investment companies. Some investment companies, especially in Europe, have been investing in the Latin American electricity sector since the late 1990s, and have seen the profits and growth that come from these areas. Ener-G will have to convince these investors of the value of energy efficiency projects, since the majority of them focus on electricity generation, electricity distribution, and renewable projects (ECLAC, 2010). In addition, funding opportunities for small and medium enterprise (SME) expansion that are available for Costa Rican companies will be a valuable research topic. Because the company's energy efficiency work is relevant to Costa Rican environmental policy, they have access to loans that are primarily for environmental companies (Krupp & Horn, 2008).

The executives at Ener-G want to open their market for international clients who face the same needs as those in Costa Rica. The relatively uncharted landscape of the ESCO industry in Central America and the Caribbean could be advantageous because of the lack of competition. However, clients' lack of knowledge and trust regarding energy service companies may prove to be an obstacle. A challenge in the designing of the business plan is establishing appropriate sites for the new franchises. The locations will have to be chosen carefully to maximize potential profit, taking into account the average energy costs, energy savings interest, and other factors that contribute to the success of the franchise.

In sum, the goal of this project is to support regional energy efficiency efforts in Central America by designing a business plan for Ener-G Tech Investments, a successful Costa Rican energy service contractor. The three major objectives required to accomplish this goal will be to

validate the performance of the current business model, design the new franchise structure and business plan, and suggest financial options for funding the franchise start-up.

# Chapter 2: Background

In order to set the background for the project, we researched key concepts and information pertaining to our goal. To establish an understanding of Ener-G's work, we investigated the operations of the company as well as the energy service company industry as a whole. For information about business expansion, we reviewed business strategies for franchising service companies, the components of a business plan. The financing options for energy projects are also important research areas, since upfront capital investment will be needed to begin the expansion process. Lastly, since Ener-G plans to expand to other nations in Central America and the Caribbean, we gathered general information about the market for energy efficiency projects in these areas.

## 2.1 Energy Service Companies

A key factor in efforts to reduce fossil fuel consumption is reducing electricity consumption through energy efficiency upgrades. As a result, entrepreneurs have found potential for profit in the energy service company (ESCO) industry. Generally, an ESCO is a private service company that implements a broad range of energy solutions. Most commonly, and in the case of Ener-G, this takes the form of reducing customer energy consumption and costs by installing and maintaining energy-efficient technology. Project financing is determined by Energy Service Performance Contracts (ESPCs), agreements with customers in which the ESCO's investment in the project is returned from the savings generated for each customer over a 6-10 year time period. Although each ESCO operates differently, in general, ESCOs are in charge of arranging the finances, installing and maintaining the energy efficient equipment, and monitoring and confirming the generated energy savings (NAESCO, 2011).

What makes ESCOs different from energy efficiency firms is the idea of performance based contracting. The amount of money that each ESCO makes from their clients depends directly on the amount of energy the client saves, which is a positive driving force for both the client and the ESCO. This type of performance based contracting forces the ESCO to accurately determine the energy savings for each project, correctly install equipment, and make sure the equipment continues to function. Along with reduced maintenance during the contract period, training is also included for the customers to ensure proper equipment maintenance after the contract expires (NAESCO, 2011).

Before beginning a project, the ESCO performs a site analysis to discover the best areas for improvement and collect background research on the client. The changes ESCOs make are generally in lighting alternatives, heating and air conditioning, improved motors, and energy management systems. Once the company analyzes the site, a contract is made between the client and the company that accounts for the financing of the project through savings. For this reason, the contract that ESCOs create must be accurate so the company can have a high expectation of profiting from the investment. Contracts tend to account for a grace period, in case their prediction for energy savings are lower than anticipated, ensuring the company has enough time to gain back the initial costs.

In the U.S. ESCO revenues were estimated at about $4.1 billion in 2008 and were projected to increase to $7.2 billion by 2011 (Goldman, 2010). ESCOs tend to be small to medium-sized companies. Small companies have between one to five employees and generate $1-5 million annual sales, while medium companies have between 20-50 employees and generate $5-30 million annual sales. Most ESCOs focus on medium- to large-sized clients, in order to make each project worth the investment. Around 60% of sales tend to come from local governments, schools, and universities. The typical initial investment from each US ESCO for a project is around $350,000, so large clients are the main target of ESCOs (Vine, 1999).

Few studies have been done on the international ESCO industry, but a notable study comes from Edward Vine at the Berkeley Laboratory (Vine, 2005). In 2002, a questionnaire for 38 countries was created and sent to experts on ESCO activity. The questionnaire addressed many topics including the introduction of ESCOs to each country, the number of active companies, the existence of ESCO associations, and the sectors on which the ESCOs focus. Of the countries included, many came from Europe and the rest came from Asia, Africa and South America. Although not all countries were included in this survey, the results of this study give an approximate view of the ESCO industry worldwide.

Part of the survey included questions about ESCO development, which involved project value, number of companies and when the first ESCO was created in each country. From the results, it is clear that the ESCO industry is still in early stages in many countries. The general trend in the data was that most countries reported ESCOs created in the 1990s, although a few were created in the early 1980s. The data show that there are many ESCOs in countries other than the U.S. with considerable activity. The results show that in 2001, the estimated total

amount of ESCO activity outside of the U.S. was between $560 and $620 million. This amount of activity corresponded to approximately half of the revenues in the U.S (Vine, 2005).

Expanding a small energy service company can be a difficult process due to many barriers, and one of these is the difficulty of obtaining financing for projects. Small ESCOs face the problem of limited access to capital and high cost when looking for financing options. Although project cost varies depending on the client, a typical up-front cost is between $0.5 and $1 million (Goldman, 2002). Smaller enterprises are at a disadvantage in obtaining financing compared to larger enterprises, which is reflected in increased interest rates for smaller enterprises. Projects compete for limited capital with more traditional investments like power plants and industrial expansion. Lack of understanding and interest in energy performance contracting often results in investments with unclear risk involved (Vine, 2005). Another barrier to company growth is access to the energy efficiency equipment. In some regions, the appropriate technology may not be available. Additionally, energy efficient technology may not be as affordable for the company in the new location. Often the technology must be imported, resulting in additional taxes for the company (Vine, 2005).

## 2.2 Business Expansion through Franchising

Franchising is a common business practice that allows a proven model to expand quickly by operating from several locations, owned by different franchisees. Central oversight comes from the original franchisor, who makes decisions about how the individual franchisees operate. Hillstrom and Hillstrom (2002) define franchising as "a kind of licensing arrangement wherein a business owner, known as the 'franchisor,' distributes or markets a trademarked product or service through affiliated dealers, who are known as 'franchisees'" (Hillstrom, 2002). The franchisees own their establishments, but certain operational responsibilities are shared with the franchisor depending on the terms of the agreement.

There are three slightly different types of franchising. The most common is business-format franchising, where the franchisee pays an initial fee to the franchisor and then inherits a proven business model. The franchisee then continues to pay royalties to the franchisor. Another type, trade-name franchising, involves the franchisee becoming part of the franchisor's distribution network. A third type occurs when several small businesses pool their resources to form a single operating network, enabling them to collaborate on purchasing, advertising, and

marketing (Hillstrom, 2002).

Potential business owners tend to become franchisees for various reasons. Buying into a franchise with a proven track record and good corporate image gives the advantage of instant recognition and a good reputation. Advertising is often done by the franchisor, so individual franchisees do not have this responsibility. Franchisors will occasionally provide advertising materials such as posters and brochures. A large franchise will often have the ability to purchase inventory and supplies in bulk at discounted prices, so these reduced prices are available to franchisees as well, which provides an immediate financial advantage (Hillstrom, 2002).

A notable reason that expanding businesses enter into a franchise system is that franchising, while not cheap, is still the most cost-effective way to expand. This is due mostly to the additional resources provided by the franchisees (Watson, 2008). Requiring a franchisee to pay an initial fee counteracts the cost that a business would have to pay in order to expand by itself. The ongoing royalties paid to the franchisor also help to cover any long-term costs of maintaining the franchise system. This gives franchising an economic advantage over company-owned growth.

When a business attempts to expand by setting up a franchise, they must overcome several challenges. The planning phase is often quite complicated, and the cost of planning and managing growth can put the business in danger. Particularly when the business is expanding geographically, it takes a significant investment of time and capital to successfully select a site and set up communication between the head office and the new expansion sites. Before beginning the process of franchising, a business should carefully determine where the resources will come from to fund the initial set-up stage of creating a franchise system. If a company attempts to expand faster than its resources allow, it can cause the company to become unstable or even collapse (Watson, 2008).

Employees of the parent company must take on new roles in order to communicate to the franchisee exactly what must be done during the start-up process. In the early stages of creating a franchise system, the parent company is often responsible for developing two business models at once, both the original and the new franchised model. To ensure the success of franchisees, it is critical that appropriate infrastructure, including communication and transportation, be developed early to fully support new sites (Floyd & Fenwick, 1999).

Recruiting qualified personnel is also a crucial part of the process. Often, the success of a

franchise depends on the experience and capability of the franchisees themselves. Particularly with young franchises without an extensive track record or a widely established name, lack of information about the quality of the new franchise system can make it difficult to attract the most promising franchisees (Watson, 2008). Nevertheless, it is important to establish franchisees with capable and committed oversight. Extensive recruiting will pay off after a new site is established and more selectivity in the recruitment process will lead to a more self-sufficient franchisee and diminish the necessity of subsequent monitoring .

When franchises expand internationally, they face other concerns. Markets in other countries can be different than the market in which the original company existed. In some cases, only some of a company's products will do well in a new and unfamiliar market. It has been suggested that expanding franchises should consider the breadth of their product offerings. Companies can choose to either release their entire product line in a new market, or only a subset of their product line. This forces a company to choose whether it will focus on standardization and operate the same way in all areas, or adapt to individual markets. The same choice applies to marketing strategies. If a new location is established in a country that is culturally very different, new marketing strategies and techniques may be necessary (Gabrielsson & Seppäl, 2012).

Gabrielsson and Seppäl (2012) analyzed the effects of "degree of standardization of marketing" (how consistent the advertising methods of a company are when it expands to new markets) and other contextual factors on the performance of companies that expanded either internationally or globally. The study collected data from ICT (Information and Communication Technology) franchises in Sweden and Finland as well as global corporations. All companies involved originated in small open economies (SMOPECs). The study found that "superior financial performance results from the fit between the degree of standardization of marketing strategy and the contextual factors" (Gabrielsson & Seppäl, 2012). While somewhat vague, this conclusion does indicate that marketing strategies must adapt greatly to the atmosphere of individual markets based on the most influential factors in those markets. This can vary greatly between different cultures and geographical locations.

Many countries have their own laws and regulations surrounding franchising practices. These can govern any franchises that are based in the given country, as well as any franchisee activity in the country. Often, franchises are required to use a franchisor's disclosure document (for example, a Uniform Franchise Offering Circular in the United States). This is a legal

contract between the franchisor and a new franchisee, which details all of the obligations of both parties. Franchisees will sometimes enlist the help of an attorney while going through this process (Hillstrom, 2002).

International franchising is one of multiple options for a business that wants to expand. Under the right circumstances, it can be an efficient and profitable growth plan. However, there are many factors that must be considered before the company can implement a franchising plan. It is important to have a source of funding for the expansion, a detailed plan for adaptable advertising in the new market, and a complete understanding of any legal restrictions on such an expansion. When the company takes precautionary steps to ensure that the whole process goes smoothly, a franchise can expand rapidly to multiple locations without putting the company in danger.

## 2.3 Components of a Business Plan

A business plan is a written document that details that outlines a business's future plans for success, commonly projecting three to five years ahead (US Small Business Administration (SBA), N.D.). For many reasons, creating a business plan is a standard practice for any kind of growth initiative. First, investors require a written plan before a business can be taken seriously as an investment opportunity. A firm plan shows that the details of the business have been carefully thought through, indicating to the investors a greater likelihood for success. For the owners of the prospective business, a written plan gives insight into the flaws of the concept and allows for fine tuning ahead of time (McKeever, 2011). There are many different formats used for the business plan document; a general outline of key components from the US Small Business Administration (N.D.) is listed below.

1. Executive Summary
2. Market Analysis
3. Company Description
4. Organization & Management
5. Marketing & Sales Management
6. Service or Product Line
7. Funding Request
8. Financial Projections

These components are general guidelines; the layout and content of a business plan are largely dependent on the industry and type of business. The business plan for Ener-G Tech Investments will have to be highly customized due to the unique energy service industry and Ener-G's contract-based business model, but here we describe the generic components in greater depth.

### 2.3.1 Executive Summary

The executive summary is a concise one page summary of the business plan. This section is usually the first to appear on the business plan and should grab potential investors' attention. The executive summary covers information about the company, the goal, and why the business will succeed. Some important parts include mission statement, company information, growth highlights, the services, financial information, and summarized future plans.

### 2.3.2 Market Analysis

The market analysis describes the industry and market and can include research findings as well. This section covers industry description and outlook, information about the target market, competitive analysis, and regulatory restrictions. The industry section should give general information on the industry size, historic growth, and customers in the industry. The information in the target market section includes the needs of customers, where those customers are located, and the size of the target market. The competitive analysis is an important part of the market analysis. A market analysis also includes information about the competition market share, strengths and weaknesses, barriers to entering the market, and the importance of the target market to the competition.

### 2.3.3 Company Description

The company description provides investors an understanding of the company's work and the goal of the business. This section includes a description of the nature of the business and the needs that the business is trying to satisfy. The description explains how the company's products or services meet the needs of customers. It lists the types of consumers or businesses that the company serves, and explains the company's competitive advantages.

### 2.3.4 Organization & Management

This section describes the organizational structure of the business. There should be a description of who is in charge of each position in the business, and descriptions of the responsibilities. Another important part of the organization and management section is the ownership information. This section includes names of owners, percentage of ownership, and their backgrounds.

### 2.3.5 Marketing & Sales Management

The marketing and sales section of the business plan details the strategy for creating new customers. It outlines a communication strategy for reaching out to the customers as well as an approach for securing business. In addition, this section can include details about growth strategy, such as franchising.

### 2.3.6 Service Line

The service line is a description of the services offered and the benefits to clients. The life cycle of products and a maintenance plan is also documented. This section also describes any proprietary information the service may involve, especially if this information provides an advantage over a competitor.

### 2.3.7 Funding Request

The funding request is exclusively for investors and other sources of capital. This section includes the initial funding requirement of the business plan, as well as future funding requirements over the course of the plan, if applicable. The specific use of the money is explained in detail to show the necessity of the investment. Any other financial plans should also be included in this section.

### 2.3.8 Financial Projections

The financial projections segment comes after outlining the details of the market and the business. This should include as much historical financial data as possible to show the performance and reliability of the company. Most importantly, prospective financial data should be provided for the duration of the business plan. Because this section will be scrutinized by

investors, it should include as much support from historical data and research as possible. Also, the funding request should neatly correlate with the financial projections, since any inconsistencies will be noticed by investors.

Once all of the sections of a business plan are complete they are compiled to create a comprehensive document for potential investors.

## 2.4 Financing Options for Sustainability Companies

In order to franchise, a company must invest money upfront. However, because Ener-G is still a relatively small company, they do not have adequate funds to franchise without monetary support from an outside source. Thus Ener-G either has to find a larger company to invest in them, or they have to apply for loans and grants. The executives of Ener-G have expressed interest in receiving loans, or grants if they qualify (C. Music, D. Friedlander, H Friedlander, personal communication, September 5, 2012). However, as Costa Rica is a small country there are few local opportunities to receive the necessary funding, therefore the company will have to find outside sources to obtain the bulk of the funding.

The European Union (EU) has loans for companies who are expanding internationally, some specifically for energy saving companies. The European Investment Banks, Council of Europe Development Bank, European Bank for Reconstruction and Development, Nordic Environment Finance Corporation, and Nordic Investment Bank are all working towards a shared goal, which is articulated in the European Principles for the Environment (EIB, 2006). The goal of this treaty, that the five banks have pledged to uphold, is to provide companies incentives to become more conscious of their socioeconomic and environmental impacts. Companies who apply for loans will have a much greater chance of receiving the loan if their project is eco-friendly. Eco-friendly can mean a variety of things: energy efficiency, clean energy, environmental protection, pollution reduction, or carbon neutral. There are many other factors that can qualify, or disqualify, a project from receiving funding as well (Official Journal of the European Union, 2012).

In order for any project proposal to receive funding from the European Investment Bank, or the other four banks in the treaty, the project must go through a series of stages. The first stage is the Pre-Appraisal Stage, in which the company presents their project proposal to the potential investors and the investment company checks for the following: environmental impact, legality,

social issues, labor standards, and health and safety of both community and laborers. The next stage is the Appraisal Stage, in which the project must go through the Environmental Impact Assessment and Strategic Environmental Assessment. Social standards will also be appraised, as will labor standards. Public consultation is also required so that any public grievances may be voiced and considered by the appraisal committee. The final stage is the Monitoring Stage. Once the project has received funding and is being implemented, the investors monitor the project to ensure that all the standards are being upheld (EIB, 2010a). This process becomes even more tedious and involved when there is an international barrier for countries outside the European Union. The loan process is a long one, and it could take years before all the proper steps, evaluations, and paperwork can be processed and finally accepted.

Central America is a new area of investment for the European Union; the first projects in the area were suggested earlier this year, and are currently waiting appraisal (EIB, 2012a). As this is a relatively new lending region, it is more difficult for a Central American company to receive funding because there is currently only one financial intermediary, the Central American Bank for Economic Integration (EIB, 2012b). In order for a company not in the European Union to receive EU funding, they must go through a financial intermediary – a local bank or local agency that acts as a middleman, allocating funds and collecting payments. This presents a large setback for Ener-G as they are a Central American company looking to expand to other Central American countries. Because only one other project has applied for this loan, and this project has not yet received its financing, the feasibility of this option is unknown. However, this is not the only option available to Central American countries to receive funding.

For more than a decade, there have been programs in Costa Rica and other Latin American countries that assist local businesses in expanding or franchising internationally through business deals and partnerships with international companies. One of the most prominent aid programs available for Latin American businesses is the Al-Invest Regional Aid Programme. Currently in its fourth phase, Al-Invest has grown steadily since it began in 1995 (European Commission, 2012). This program sets up business events for Latin American and European companies to meet and broker international business agreements. This program does not produce the large loans that the EIB can grant, but it does provide the businesses with global industry information and viable business opportunities and partnerships (Al-Invest III Consortium, 2008). This program is slowly evolving, and in recent years the consortium has

started to provide funding to some of the member companies, although on a smaller scale that the EU loans. The Al-Invest IV program ends in 2012, and the objectives and financing options of the fifth program will indicate the program's success in helping Costa Rican companies grow.

Financing options for a small business franchise are growing worldwide. Many countries and investment companies have found that small and medium sized enterprises can greatly boost the economy. As such, the opportunities are slowly growing, especially in the area of environmental sustainability. Some companies do well making business agreements with larger international companies who help provide funding. Others apply for loans from big investment banks to fund the franchising process. Both are suitable routes for SMEs; which route a company takes depends on how independent they want to remain and how well they qualify for loans or partnerships (European Commission, 2011).

## 2.5 Energy Sector in Central America and the Caribbean

Central America and the Caribbean are regions in a phase of rapid economic growth and increasing electricity usage. This growth creates energy-related problems such as high electricity costs and limited generation capacity. There are a variety of solutions to these problems, one of which is energy efficiency improvements. According to a study by the World Bank, energy efficiency is "the most cost-effective way of meeting future energy demand, with significant potential on both the supply and demand sides" (Yépez-García, 2011, p.20). In addition, the electricity costs in many Central American and Caribbean nations are high compared to the United States and Europe. In the Caribbean islands especially, many power plants burn expensive imported petroleum. Continental countries such as Costa Rica often utilize alternatives to petroleum such as hydroelectric dams, which are inexpensive power sources that result in lower electricity prices. To illustrate this point, industrial electricity costs in selected countries are listed below in Table 1.

| Country | Electricity Cost for Industry (USD/kWh) |
|---|---|
| Costa Rica | $ 0.079 |
| Dominican Republic | $ 0.217 |
| El Salvador | $ 0.109 |
| Haiti | $ 0.174 |
| Nicaragua | $ 0.186 |
| Panama | $ 0.144 |

*Table 1: Electricity costs in selected countries in 2007 (Adapted from EIA, 2010).*

As higher electricity prices yield faster returns on energy efficiency investments, they are a key factor to consider when planning franchise locations. Some experts predict, based on historical trends, that the energy usage of Latin America and the Caribbean in the year 2030 will be almost 2500 TWh, which is double the 2008 level. This will only exacerbate problems with limited energy supply and high cost, making energy efficiency efforts even more necessary (Yépez-García, 2011).

The energy supply profiles of selected nations are shown in Appendix C. As previously stated, many nations in Central America and the Caribbean are heavily reliant on petroleum for electricity generation. Other common sources of energy are coal, biomass, hydroelectric, and other renewables such as geothermal, solar, and wind (IEA, 2011). The breakdown of energy sources that each country uses for power generation is relevant to the success of energy efficiency projects. More expensive energy sources correlate to higher end user energy costs, and therefore greater opportunity for cost savings through efficiency upgrades. Also, nations that use a large amount of hydrocarbon fuels may have environmental policies that support ESCOs. A study by the World Bank specifically called for ESCOs as a solution in Central American countries, and many governments are aware of the success of energy efficiency initiatives in the United States and Europe (Yépez-García, 2011). Further research into the energy efficiency market in Central America and the Caribbean will be needed to make firm decisions about optimal franchise locations.

## 2.6 Case Studies

To learn about ESCO expansion and franchising, we present two case studies of ESCO expansion in the Republic of Georgia and Jamaica.

### Case Study: Republic of Georgia ESPC

A significant source of knowledge on the expansion of ESCOs comes from the work of the US Agency for International Development (USAID). In 2002, the USAID established an energy savings performance contract (ESPC) between a company located in the Republic of Georgia and an ESCO based in the United States. The association of energy engineers also aided in this project by providing assistant project managers (APMs). The company is located in an undeveloped Georgian economy and the contract was for less than $100,000. Considering these project constraints, much can be learned about ESCO expansion and the steps the USAID took to succeed as it pertains to our project. (Good, 2004)

The assistant project managers were charged with identifying the organization that would be involved in the energy savings project, and to do this, they had to consider many factors. One of the many considerations was financial history of the business. There are many businesses that do not have a solid energy payment history in the Republic of Georgia and the APMs took careful note to avoid these businesses in their selection process. Another consideration was the strength of the market in which the organization was involved. In the end the APMs chose Tolia Ice Cream, Inc. for their consistent payment history and stable market (Good, 2004).

Throughout the process, Tolia Ice Cream was hesitant to agree to a contract that would require them to make payments without having tangible results. As a response, the U.S.-based ESCO, SBRD Inc., agreed to install measurement and verification equipment for the customer. Another relief for Tolia was the guaranteed equipment maintenance provided by SBRD. These benefits also confirm work by Vine that states “customers are seeking not just energy efficiency but comprehensive solutions to issues” (Vine, 1999).

As with most larger expansion projects, financing was a major issue for the USAID project. Much of the commercial financing in Georgia has high interest rates, and little has been done to show commercial banks the need for effective lending procedures to support energy-efficiency projects (Hansen, 2011). In addition to high commercial bank interest rates, there are few in-country banks that have experience financing energy-efficiency projects (Vine, 2005).

The problem of financing the project was finally resolved by starting a revolving fund and using funding from the USAID and other efficiency project recipients.

Although the business model of our sponsor, Ener-G Tech Investment, is different from that of energy efficiency contractors, the methods used by USAID to expand an ESCO into a developing country are important to note. Care was taken to select a strong business in a stable market, and other ESCOs looking towards expansion should look for strong companies as well. The ESCO and company held a strong relationship that enabled the project to proceed because there was a mutual trust between the ESCO and company that came from the performance based contract (Good, 2004). The project is a suitable model for expansion and many of its challenges and eventual solutions are similar those that Ener-G Investment Technologies will face.

## Case Study: Jamaica

The country of Jamaica is a prime example of a location where an Ener-G franchise could flourish. In fact, a study by the Jamaica Productivity Centre about the nation's electricity performance explicitly called for the development of an ESCO industry (2010). High energy consumption is a significant problem financially, since 95% of the nation's energy is supplied by the burning of imported petroleum, an expensive and relatively inefficient power source. The end-user price of electricity in Jamaica was about 24 US cents/kilowatt-hour in 2006, which is double the Latin American/Caribbean average of 12 cents/kWh. In July 2008, prices reached a record high of 38 cents/kWh. It is interesting to note that the GDP per capita of Jamaica is significantly lower than many countries that use less energy per capita, as illustrated in Figure 1.

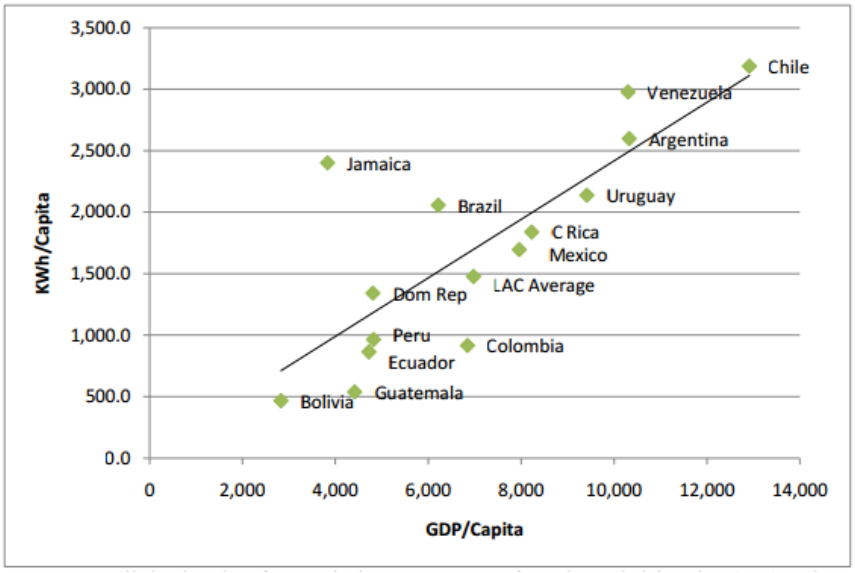


*Figure 1: Electricity Consumption (kWh/ capita) compared to GDP per capita (US$). (Jamaica Productivity Center, 2010)*

The explanation for this is that in the late 20th century, energy usage increased much quicker than economic expansion in Jamaica. Some believe much of the electricity is used in residential activity rather than supporting business and industrial efforts (Jamaica Productivity Centre, 2010). The Jamaica Productivity Center believes that the high energy prices also have stunted the growth of the economy, and cheaper energy would encourage productivity. In any case, it is clear that there is a serious energy problem in Jamaica, and one part of the solution is increasing energy efficiency. The study also found that there are significant barriers hindering energy efficiency projects, such as "lack of customer awareness, lack of confidence and trust in energy efficiency savings, low priority placed on energy efficiency, limited technical and management capabilities and inadequate legal and regulatory frameworks to protect stakeholders" (Jamaica Productivity Centre, 2010, p. xxv). These are challenges that Ener-G will face if the company is to franchise in Jamaica, but overall the Jamaican energy situation seems to provide a promising opportunity for expansion.

## 2.7 Summary

International franchising is no easy task, especially for a small or medium sized

enterprise. Many factors must be considered before any plans are made. Franchising companies must find business partners, or franchisees, who would be interested in working with them, and they need to find a supply chain for resources in the new franchisees country. Once they have found these partners, the franchising company must make arrangements to properly fund the start-up of the new locations. Because many places around the world are becoming more environmentally conscious, ESCOs would have a slight advantage over other companies. If the company is able to find a franchisee and receive the proper financing, it is not guaranteed that their business will flourish as well in its new location as the base location. The process is definitely difficult; but the environmental, social, and financial rewards can greatly outweigh the risk if all is done properly and the business model is sound.

# Chapter 3: Methodology

The overarching goal for our project is to support regional energy efficiency efforts in Central America by designing a business plan for one successful Costa Rican energy service contractor, Ener-G Tech Investments. Some of the required information will come from preliminary research, but the majority will be collected in Costa Rica through interviews and archival research. We will apply these methods to three main objectives that we have identified as essential to the project outcome. First, we will evaluate the company's current business model and performance to understand the basic company structure and operations that will carry over into the new business plan. Our second objective is to design Ener-G's new business plan based on research about franchising strategy and the intentions of the company executives. Finally, we will assess financial options for the initial expansion costs. Our methodological strategies are outlined in depth below.

## 3.1 Evaluate Ener-G's Business Model and Performance

The first task to be completed when the team arrives in Costa Rica is to determine the viability of Ener-G's current business model. We will conduct interviews with Ener-G's clients as well as examine archival documents pertaining to Ener-G and their clients. From archival research we will assess the overall profitability of the company, the project financing strategy, the partnerships with clients, the energy saving performance, and the company's total growth. There will be many energy efficiency projects to analyze quantitatively, and once all the information is gathered we will calculate the total costs and energy savings as well as the average costs and energy savings for all projects. Once archival research is complete, and we have a better idea of the company's performance and success, we will begin interviewing clients.

While archival research was predominantly quantitative, client interviewing the qualitative aspect of determining the viability of the current model. We will be interviewing Ener-G clients from the public as well as the private sectors in order to assess the customer service, performance of installed energy-savings systems, and true financial savings generated by the installed technology. These clients will be chosen because they best represent the company's total clientele, which will be decided by archival research. The team will also ask the clients for suggestions for improvement. Representatives from the client companies will provide the team with information pertaining to customer service and the engineers or other maintenance workers

will provide us with information regarding the day to day performance of the installed equipment. Because the team will be interviewing many clients, we will be conducting standardized interviews (Doyle, N.D.). Using standardized interviews will keep the conversations short and to the point, which will allow us to interview more people in less time. An interview guide will also prevent the interview from deviating and will make it easier to assess responses if all interviewees are asked the same questions. The outline of these interviews can be found in Appendix B.

In order to analyze these results, we will compile the answers to more basic questions and then sort answers into different categories of performance satisfaction, from greatly satisfied to unsatisfied. For other questions that will have open-ended answers we will be unable to sort the answers into distinct groups, but these answers will still be analyzed for major patterns or apparent themes. Once we have compiled all the data and analyzed it we will interpret the data and create a textual or visual representation of the analysis which will demonstrate the customers' satisfaction. Our analysis of the interviews will also provide insight into opportunities for improvement, which we will use as we adapt Ener-G's current model and design the franchising business plan (Taylor-Powell & Renner, 2003).

## 3.2 Designing a Business Plan

Business plans contain many components, and the content of section depends on the wishes of the company. Ener-G executives have already informed us of their long-term goal of franchising internationally, but further input from them will be needed to create a business plan that fits their specific objectives. We will work closely with the company to determine the most important factors of the business plan design and determine possible methods for solving the problems that they could face when expanding into other countries. In these areas, we will use interviews to gain information. In order to learn more about Ener-G's goals and concerns, we will speak with the company's executives and anyone who will be involved in planning the franchising process.

The interviews with executives at Ener-G will be in-depth qualitative interviews as outlined in Appendix A. The objective for these interviews will be to understand what Ener-G envisions for its future and its current plans for achieving these goals. An in-depth qualitative format for an interview will facilitate follow-up questions and personalized accounts of the company's

intentions. According to Professor James Doyle of Worcester Polytechnic Institute, there are two significant disadvantages to this type of interview. First, since they are very time consuming, we will not be able to conduct a large number of these interviews. Second, the high level of involvement of the interviewer raises the risk that the questions asked will unintentionally bias the information that we receive (Doyle, N.D.). However, these concerns are not likely to be particularly problematic in this case. The time consuming nature of in-depth qualitative interviews will not be an issue since we will only be interviewing a few people at the company, rather than a large sample of a population. To solve the potential bias problem, we will have to be sure to let the interviewee lead the discussion as much as possible. Though we will ultimately be designing the business plan based on our own findings, this approach will ensure that we incorporate the intentions and needs of the company.

In order for these in-depth qualitative interviews to be successful, we will take several steps to prepare for them. We will also use a format recommended by Doyle for an in-depth qualitative interview by first gathering information on the subject's background, then their current circumstances and concerns, then finally discussing their view of the implications of the situation. While conducting interviews, we will follow a few common operational guidelines as well. We will bring at least two members of the team, allowing one person to focus on interacting with the interviewee and the other to take detailed notes. If the interviewee explicitly allows it, we will record the interviews for reference later.

Through these interviews, we will learn more about the priorities and goals of Ener-G's franchising project. It is important to know how many franchises the company intends to set up, as well as details about each franchise such as the intended number of employees, number of clients, sources of funding for investment work, and possible locations. A thorough understanding of the factors that contribute to these decisions will enable us to generate a business plan that incorporates all of the company's wishes and provides solutions to some of the problems that they are most likely to encounter. These interviews, combined with our own research, will result in an expansion plan uniquely tailored to Ener-G's current circumstances and goals.

## 3.3 Financial Options

Even though franchising is one of the cheapest ways to expand internationally, it still requires a significant startup cost. As such, the team will investigate funding sources that are available to Central American companies. Once the business plan is created, the team will have a better understanding of the financial cost of this expansion. Some factors from the business plan that will be useful are the scope of the business, the number of franchisees and their expected contributions, and the total cost of the expansion. We will explore various sources, such as local and international loans and grants, local business partnership opportunities and funding programs for small enterprises. During this research process the team will also be periodically speaking with Ener-G's executives so that their input can be included in our recommendations. All viable funding options will be compiled into a comprehensive report. From these options we will make recommendations based on what the company wants as well as what the best options would be for a company in their position. The best options will be different for different companies, but for our comparison purposes we will recommend financial options that are the easiest to obtain, options that are least demanding financially over time on the company, provide the least financial risk to the company, and options that have been used most by companies in the area.

## 3.4 Summary

The strategies defined in this section will yield a business plan for expanding Ener-G Tech Investments beyond Costa Rica. Our methodology emphasizes three objectives: analyzing the company's historical performance, compiling research and company intentions into a business plan, and investigating financial options. Interviewing will be used extensively to obtain information from Ener-G executives about the desired franchise structure and general expansion plan intentions. In addition, interviews with Ener-G's clients will be a primary source of insight into the current performance of the company and areas of potential improvement for the new business plan. Archival research will also be an invaluable method of information collection for company performance and business model insight. The details of each franchisee's day to day operations may or may not be similar to Ener-G's current model, but the overall structure of the new franchise system will likely have to be designed from the ground up. Lastly, we will conduct research into the financial options available for Ener-G in order to facilitate the expansion initiative. These methods will provide us with sufficient knowledge and information to

synthesize a business plan. Much of this information will also be useful in analyzing the larger social impact of this type of expansion as well as its effect on the environment. We hope that through these methods, we will produce an accurate, effective report and succeed in helping Ener-G Tech Investments expand internationally.

## Chapter 4: Conclusion

The goal of our project is to support regional energy efficiency efforts in Central America by designing a business plan for Ener-G Tech Investments, a successful Costa Rican energy service contractor. The company intends to expand to other countries in Central America and the Caribbean, where they can market their service to new clientele. This investigation will accomplish this goal by completing three key objectives: determining the viability of the current business model, creating a business plan, and identifying financial options to fund the expansion. Our team will accomplish these goals by reviewing archival documents, interviewing Ener-G executives and clients, and conducting further research with interview responses. Archival research will provide insight into the company's performance and business model. After the archival research, we will begin interviewing Ener-G clients to obtain feedback on the customer service that Ener-G provides. These two pieces of information are helpful for improving the current model, and these improvements will make the business plan we propose as rewarding for the company as it is accommodating of the customers. Another important part of the project is to interview the executives of Ener-G. As this business plan will be tailored to their desires, we will need to conduct interviews with them to ensure that our suggestions are consistent with their wishes for the company's expansion.

At the culmination of this project we will present Ener-G Tech Investments with a business plan. This deliverable will be complete with internal franchise structure, a tentative timeline, financial options, and suggestions for improvement. We will incorporate the intentions of the company executives as well as the information we have gathered pertaining to the expansion process. Our business plan for Ener-G Tech Investments will benefit Central America and the Caribbean by advancing energy efficiency initiatives in the region.

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## Appendix A: Interview Guide for Ener-G Executives

We would like to invite you to participate in this voluntary interview in order to provide us with information about your wishes for the expansion plan that our team will develop for Ener-G. We are conducting this research as part of a project in fulfillment of Worcester Polytechnic Institute degree requirements. This research will be published in a restricted manner that is consistent with the content of the non-disclosure agreement that our team will sign. The purpose of this interview is to collect information on Ener-G's wishes for the business expansion plan that we will create. Any information provided will be anonymous and no individually identifiable information will be used. You may choose not to respond to any part of this interview for any reason. Do you have any questions before we continue?

1. Why do you want to expand?
    a. What is your motivation?
    b. How will this help your company?
    c. How will this help the areas you franchise into?

2. How do you plan on achieving this franchising goal?
    a. How many franchisees do you plan on working with?
    b. How many employees will they each have?
    c. How closely will their model mirror yours?
    d. How are you going to find employees?
        i. Will you be sending one of your current employees abroad?

3. Where do you plan on franchising to?
    a. What factors are important when picking this location?
    b. How does this site differ from Costa Rica?
    c. How are you going to advertise to this area?

4. What are your financial plans?
    a. How much can you provide up front?
    b. How much do you expect the franchisees to provide up front?
    c. Do you plan on obtaining technology locally or from abroad?

5. Do you have a time period for this to happen?
    a. How many projects do you plan on your franchisees having in the first two years?

6. What do you plan on doing if there is a negative public reaction?
    a. How would you deal with money lost?
    b. How would that affect your base in Costa Rica?

## Appendix B: Interview Guide for Ener-G Clients

We would like to invite you to participate in this voluntary interview in order to provide us with information about your experience working with Ener-G Technology Investment. We are conducting this research as part of a project in fulfillment of Worcester Polytechnic Institute degree requirements. This research will be published and will be available online. The purpose of this interview is to collect information on Ener-G's interactions with its business partners. Any information provided will be anonymous and no individually identifiable information will be used. You may choose not to respond to any part of this interview for any reason. Do you have any questions before we continue?

Standardized interview

1. Was the installation process what you expected based on what the company had told you prior?
    a. Did this process interfere with your daily routine?
    b. How quickly were they able to install the technology?

2. How often does your equipment malfunction?
    a. How quickly is Ener-G able to fix any problems you find?

3. Do the improvements the company periodically installs truly improve performance?
    a. Does the technology reduce the time and money you spend on maintenance?

More open-ended, state upfront that these answers will remain anonymous.

4. Are you happy with the overall performance of the technology?
    a. Does it save you the money that Ener-G projected?

## Appendix C: Graphs of Energy Consumption and Energy Sources

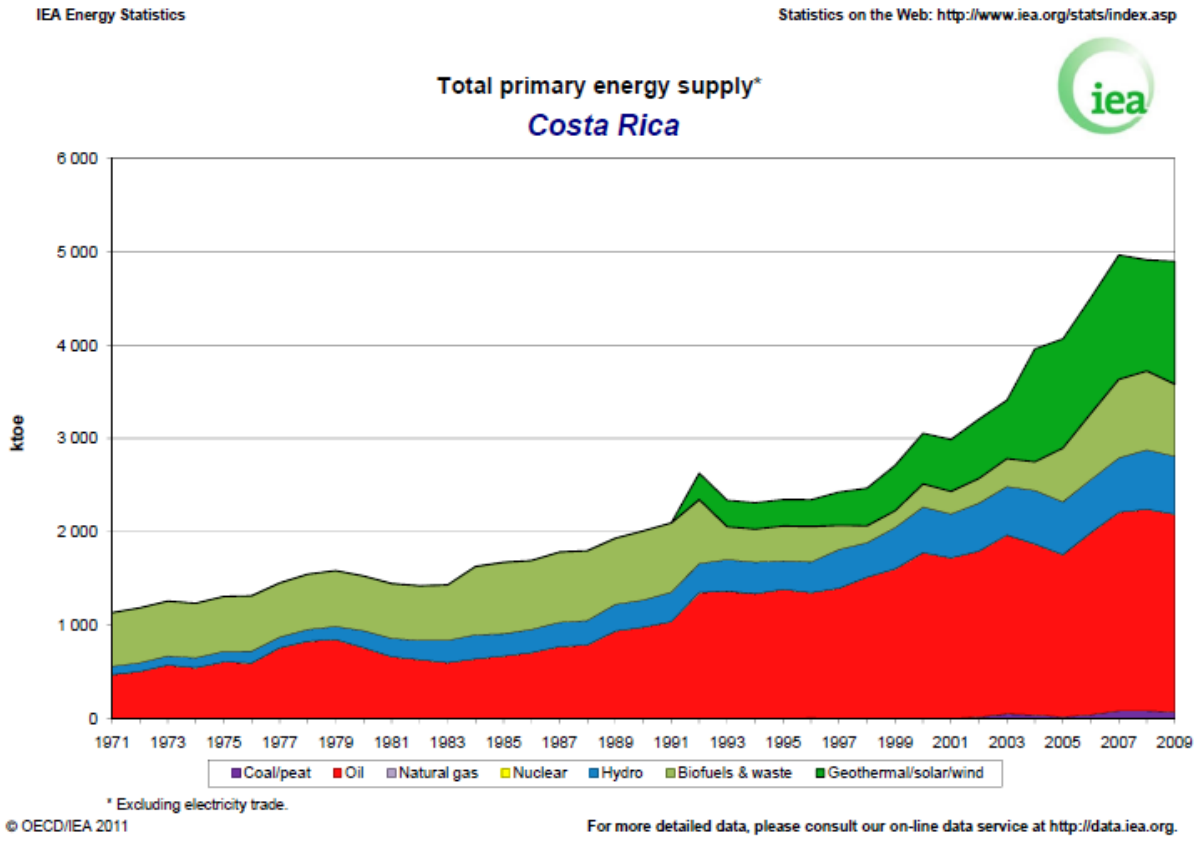


*Figure 2: Graph of Costa Rican energy consumption and sources from 1971 to 2009. 1 ktoe = 11.63 GWh (OECD/IEA, 2011a)*

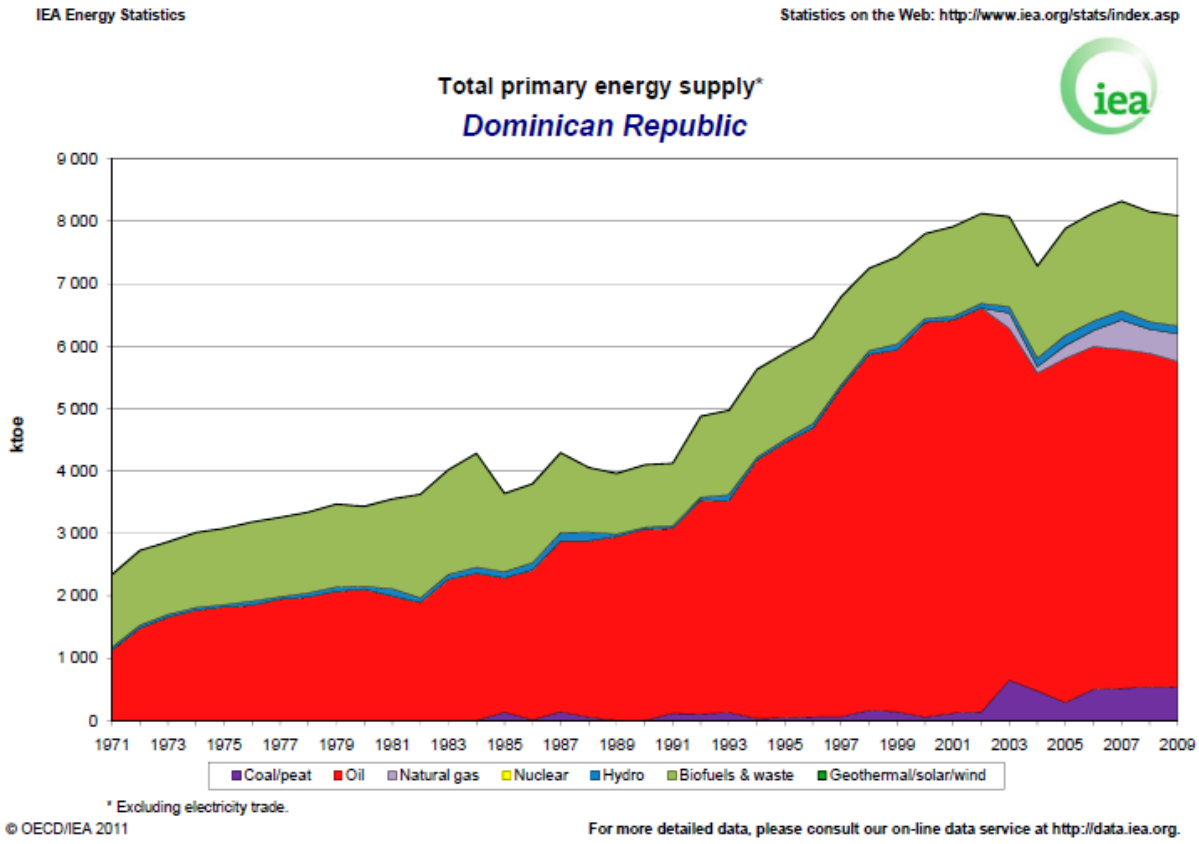


*Figure 3:Graph of Dominican Republic energy consumption and sources from 1971 to 2009. 1 ktoe = 11.63 GWh (OECD/IEA, 2011b)*

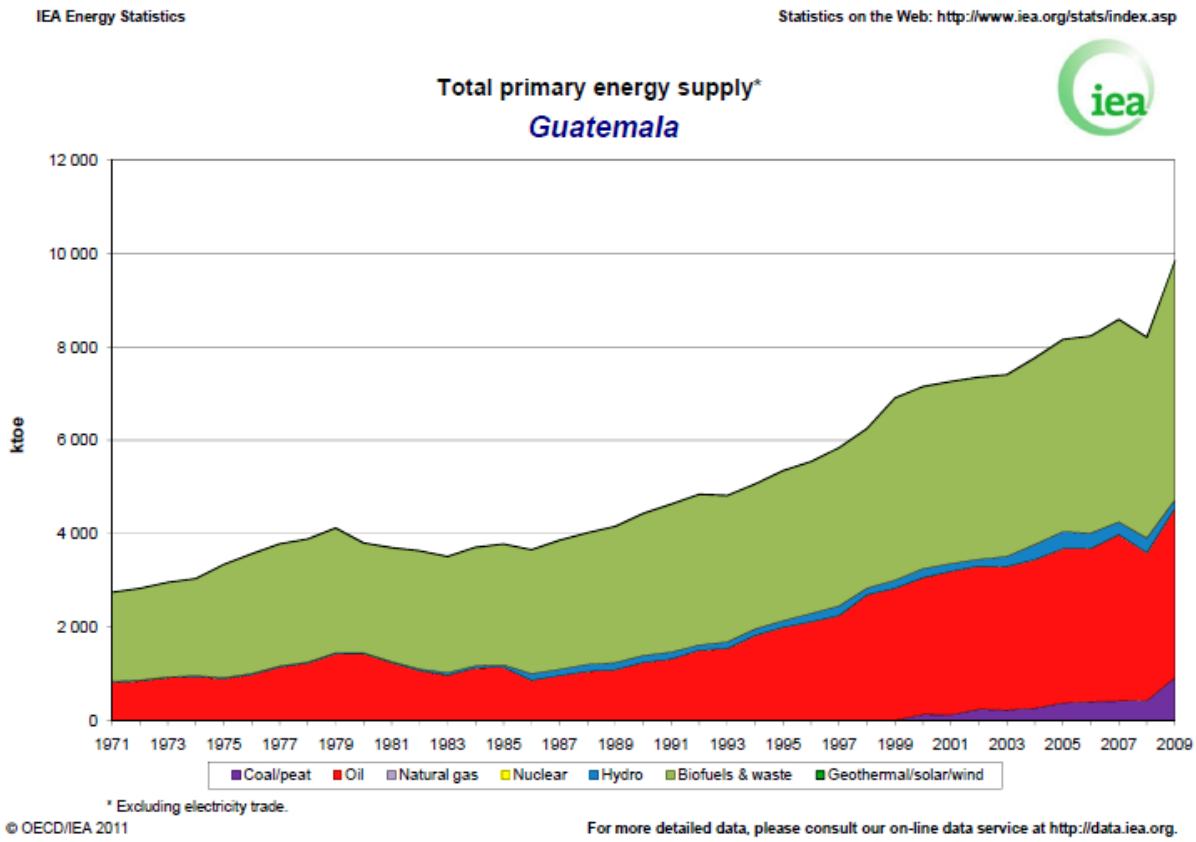


*Figure 4: Graph of Guatemala's energy consumption and sources from 1971 to 2009. 1 ktoe = 11.63 GWh (OECD/IEA, 2011c)*

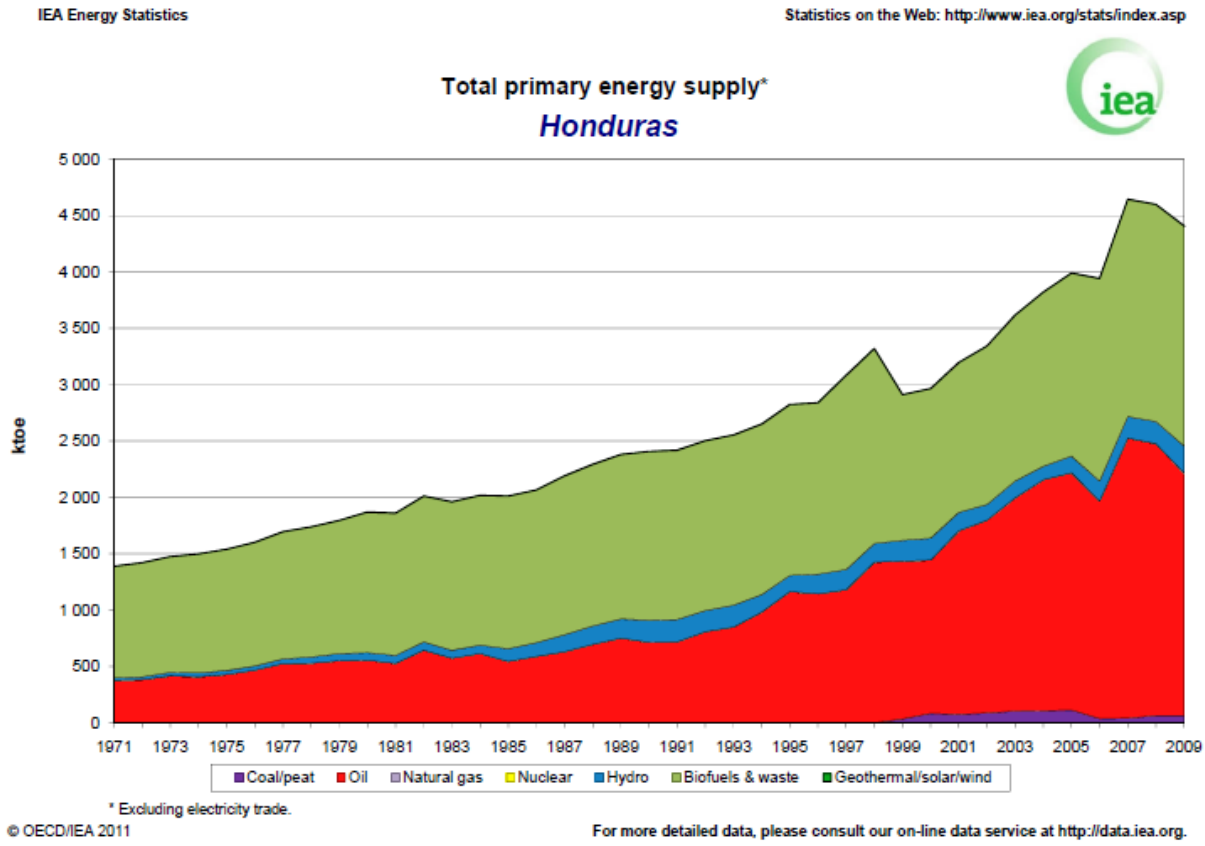


*Figure 5: Graph of Honduras' energy consumption from 1971 to 2009. 1 ktoe = 11.63 GWh (OECD/IEA, 2011d)*

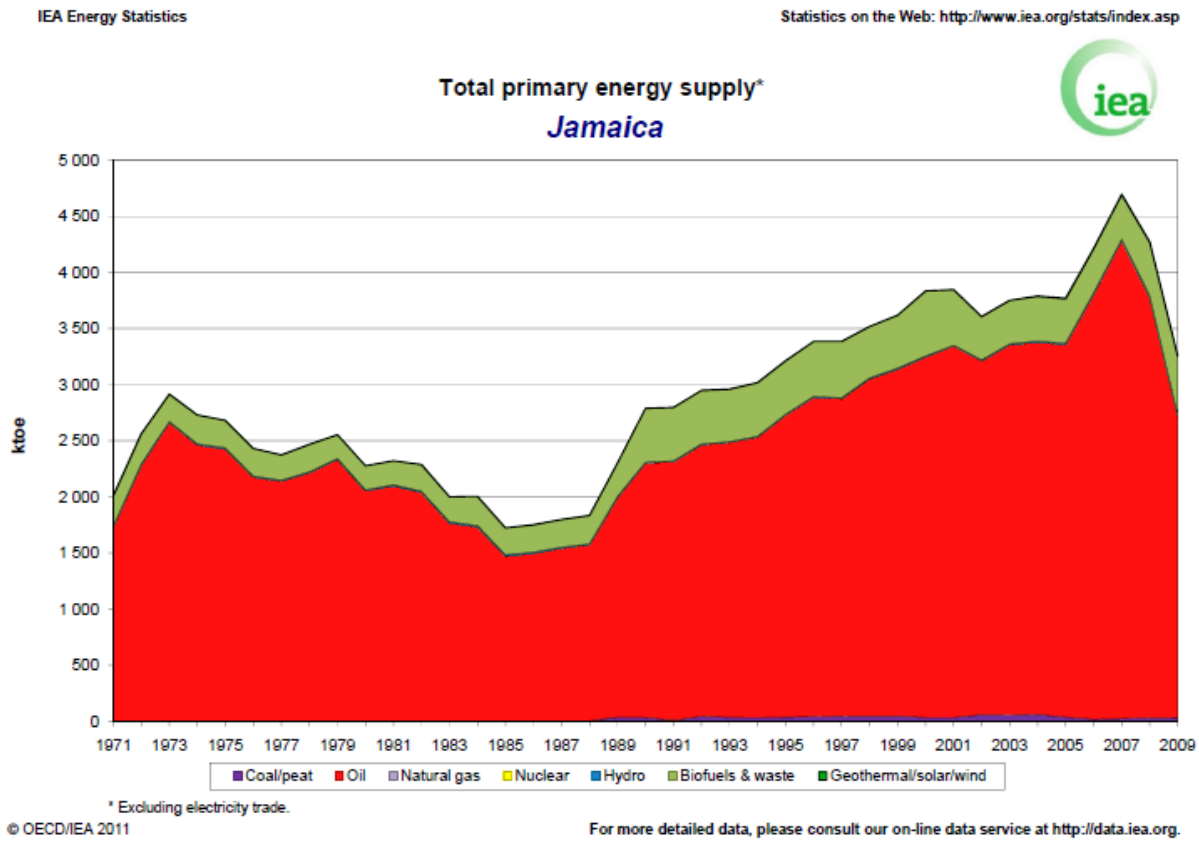


*Figure 6: Graph of Jamaica's energy consumption and sources from 1971 to 2009. 1 ktoe = 11.63 GWh (OECD/IEA, 2011e)*

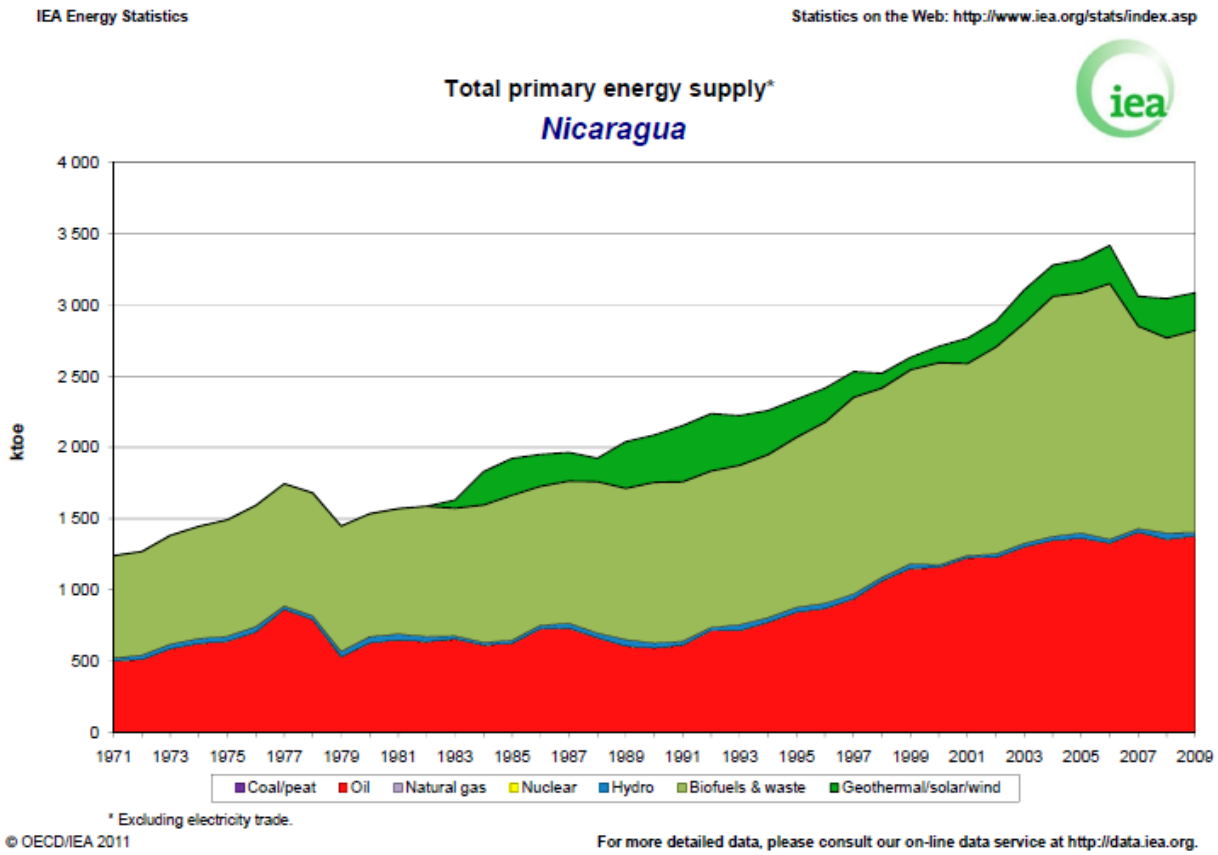


*Figure 7: Graph of Nicaragua's energy consumption and sources from 1971 to 2009. 1 ktoe = 11.63 GWh (OECD/IEA, 2011f)*