Case Study on Best Green Business Practices among MSMEs in the Food Processing Industry of the Philippines
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Department of Trade and Industry

The Department of Trade and Industry (DTI) is the executive department of the Government tasked to expand Philippine trade, industries, and investments as means to generate jobs and raise incomes for Filipinos. It acts as catalyst for intensified private sector activity to accelerate and sustain economic growth through comprehensive industrial development strategy, progressive and socially responsible trade liberalization and deregulation programs, and policymaking designed for the expansion and diversification of trade — both domestic and foreign. The DTI has seven (7) major functional groups composed of bureaus/offices that provide support to DTI’s line agencies and are involved in line operations, which deliver business and consumer services directly to the stakeholders and the public. The Regional Operations Group (ROG), one of seven groups of DTI, is responsible for the Department’s field operations in the regions and provinces. ROG initiates programs to ensure efficient delivery of business development services, including the formulation and implementation of policies, plans, and projects that can benefit micro, small, and medium enterprises (MSMEs).

For more information about DTI, visit http://www.dti.gov.ph.

Global Green Growth Institute

The Global Green Growth Institute (GGGI) is a treaty-based international, inter-governmental organization dedicated to supporting and promoting strong, inclusive, and sustainable economic growth in developing countries and emerging economies. Established in 2012 at the Rio+20 United Nations Conference on Sustainable Development, GGGI is accelerating the transition toward a new model of economic growth — green growth — founded on principles of social inclusivity and environmental sustainability. With headquarters in Seoul, GGGI has a diverse portfolio of programs in developing countries around the world. These in-country programs, together with global products and services, focus on delivering results through an integrated approach of evidence-based green growth planning and implementation aligned with countries’ development priorities. The organization also focuses on knowledge development and management activities which build a strong theoretical and empirical basis for green growth, while providing concrete options and guidance for policymakers; as well as building the conditions for public and private green infrastructure investments.

For more information about GGGI, visit http://www.gggi.org.
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The Green Business Case Study is a result of the first collaborative effort between the Department of Trade and Industry (DTI) of the Government of the Philippines (GoP) and the Global Green Growth Institute (GGGI), an international organization dedicated to developing and diffusing new model of economic growth called “green growth” grounded on principles of social inclusivity and environmental sustainability.

The case study contains assessment results of ongoing best greening efforts practiced among 12 MSMEs from selected food processing industries: coffee, cacao, and processed fruits and nuts. The study aims to promote pioneering cases of individuals sharing their stories on how their committed actions to protect the surrounding environment and resources became beneficial both financially and socially.

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Finally, it is hoped that this first endeavor will pave the way for further collaborations between DTI and GGGI.
The Global Green Growth Institute (GGGI) and the Department of Trade and Industry (DTI) of the Philippines entered into a Memorandum of Understanding in November 2015 to undertake collaborative initiatives, namely Business Case Development for Greening the MSME Operations, Mainstreaming Green Growth in the DTI Planning Processes, and Capacity Building for DTI Green Growth Advocates. We are delighted to share the first outcome of this GGGI’s cooperation with the DTI.

There are numerous cooperation initiatives on green economic development and green policies at international, regional, and national levels. But finding and documenting tangible and well-proven facts on green practices in real business activities are rather limited. This is one of the initial efforts of GGGI and the Government of the Philippines to identify, analyze, and prove that going green among businesses, especially MSMEs, is beneficial both economically and socially.

First, this study is useful in terms of analyzing current and existing situations on green practices among MSMEs and can play as an awareness tool for entrepreneurs and small and medium business owners in terms of implementing green practices in their businesses.

Second, it enriches understanding of policy-makers in promoting green practices, particularly those who work with MSMEs. We hope it will support them to reformulate their regulatory rules and promotion policies.

The cost-benefit analysis shows small investment or change in practice in fuel switch, bulb replacement, waste recycling, water catchment can save considerable amount of money for MSMEs, who operate in energy and water intensive food manufacturing practices.

I really wish the findings on good green practices among MSMEs in this study be replicated in relevant sectors not only in the Philippines, but also in countries with similar industries and conditions.

We hope that GGGI’s engagement and cooperation in the Philippines continue to yield strong contribution to green growth and economic development in the country.

Frank Rijbersman
Director-General
Global Green Growth Institute
Responding to the issues involving the environment has long been a regional undertaking and a global concern. With this, it has become a tall order to ensure that national development strategies sensibly consider key environmental principles—from formulation to execution. As the Philippines commits to sustain its continuing growth story, the full and effective integration of environmental principles to government policies remains an ongoing concern. The challenge therefore is to come up with well-thought-out action plans that are environmentally-sensitive. These would make our growth story lasting and more importantly, sustainable.

The Department of Trade and Industry (DTI) notes the efforts of the Global Green Growth Institute (GGGI) in promoting inclusive and sustainable economic growth in developing countries and emerging economies. In fact, GGGI’s green growth model finds resemblance to the agenda of Philippine President Rodrigo Duterte, specifically in effecting programs and initiatives to widen the gains of development, to narrow growth gaps and to address poverty, while striking a rightful balance between environmental sustainability and economic growth.

The case study entitled “Best Green Business Practices among MSMEs in the Food Processing Industry of the Philippines,” presents how enablers of growth can be involved in greening practices with respect to their operations. With the Philippines recognizing the MSME sector as the backbone of the economy, it is critical that MSMEs—even at their formative stage—be engaged in such an initiative as they emerge and grow. DTI aims to expand the sector’s production network to reach the global value chain by spearheading programs purposely designed to increase their capacity and know-how.

The MSME Development Plan 2011-2016 underscored the adoption of green growth strategies that led to greater resource efficiency and higher MSME competiveness. Likewise, the Philippine hosting of the 2017 ASEAN MSME Development Summit also touched on the capacity of the sector to produce goods and services that respond to the demands of the green market. Said Summit pondered on Mindset, Mastery, Mentoring, Money, Market, Machines and Model, otherwise known as the 7Ms as key towards region-wide prosperity.

At the macro-level, among the measures highlighted in the Philippine Development Plan 2017-2022 is on the provision of necessary incentives for green manufacturing to encourage companies to use energy-efficient technologies. This also aligns with the implementation of the Green Jobs Act, which aims to promote green growth, blue economy and innovation.

I hope that the findings and outcome of this Case Study will contribute in powering MSMEs through green innovation and sustainable business approaches. As this piece of literature raises awareness on the rational use of natural resources, it can also serve as a potent instrument to assess ways to realize the greater objective of improving the general welfare and the quality of life of our people.

Mabuhay!

Ramon M. Lopez
Secretary
Department of Trade and Industry
The impact of MSMEs in the Philippines cannot be overemphasized. The MSME sector accounts for 99.5% of established businesses, employs 62.8% of the total workforce, and contributes 35.7% of the country’s total value added. MSMEs play a key role in increasing competitiveness and promoting rural and global value chain development, thereby achieving inclusive growth and poverty reduction.

The growth of MSMEs is expected to continuously rise as more individuals are encouraged to establish their own business, or even formally register their enterprise, as we continue to work on providing an enabling environment for business to prosper. MSMEs contribute not only to the economic growth but also climate change adaptation and mitigation policies through implementation of resource efficient measures and inclusive business practices to respond effectively to the increasing pressures on ecosystems.

In the Philippines, there have been several developments that promote green growth and the adoption of green practices such as the Promotion of Green Economic Development (ProGED) project with GIZ aimed at improving the competitiveness of MSMEs through organization of various trainings and workshops recommending adaptation of environment-friendly, climate-smart, and inclusive strategies and measures. However, the recognition of MSMEs of the importance of green growth is somehow still wanting because most of them perceive greening their operations as expensive and detrimental to their income.

To bridge this gap between perception and reality, DTI and GGGI decided to join their efforts in implementing a business case study to document and identify readily available green measures being introduced by MSMEs by focusing in the food processing sector of the Philippines. We believe sharing stories of such best practices and bringing concrete cases illustrated in this booklet will be a valuable step in changing prevailing mindset that have been settled among skeptics. Finally, we hope that the outcome of this joint study funded by GGGI will encourage more MSMEs to go green and further facilitate collaboration among different stakeholders from the government and private sector in the promotion of programs and projects towards achieving inclusive green growth in the Philippines.

Zenaida Cuison-Maglaya
Undersecretary
DTI-Regional Operations Group
EXECUTIVE SUMMARY

This study, entitled “Best Green Business Practices among MSMEs in the Food Processing Industry of the Philippines”, was conducted with the aim of both encouraging and inspiring micro, small, and medium enterprises (MSMEs) in the country, to start engaging in greening practices in their production/manufacturing processes. Such greening practices pertain to the efficient use of energy and resource resulting to reduced carbon footprint and resource consumption while simultaneously achieving high productivity and yield.

The MSME sector makes up the backbone of the Philippine economy and with such magnitude, it is inevitable that it would leave threats to the environment products that are continually manufactured. With the ever-strengthening movement on sustainable development, it is high time to attempt converting traditional operational processes of MSMEs to greening practices.

This project revolved around the conduct of a case study for selected MSMEs from the cacao, coffee, and fruits and nuts processing industries. These selected MSMEs have started engaging in greening practices in their manufacturing processes. The pool of experts gathered empirical data through cost-benefit analysis to reveal monetary and non-monetary benefits that are realized by the MSMEs through embarking in greening practices.

The following are the key findings of the study:

- The 12 MSMEs share common value chain processes — production, processing, packaging and distribution. Greening is mostly practiced in production and processing while it is less likely to be practiced down the packaging and distribution process.
- Greening practice in this study is characterized by either investing in green technology and/or changing production/manufacturing processes.
- Organic farming or sourcing organic produce is the most adept greening practice. Most firms also engage in waste reuse and reduction, water reuse and consumption reduction, use of renewable energy, and use of biodegradable materials/reused materials for packaging and distribution.
- There is a range in the levels of intervention within the value chain among the firms. Data showed that the majority of the participating MSMEs implement greening practice with small or minimal investment (Level 1) in a particular value chain but at the same time have medium (Level 2) to high investments (Level 3) in another value chain. Only two firms recorded medium to high investments for greening practices in their production processes.
- Based on the cost-benefit analysis for some of the firms, implementing greening practices translates to savings for the firm even after bearing various investment and associated costs involved in executing these greening practices.
- Greening intervention does not always require investment. Though some interventions (bulb replacement, rainwater harvesting, change in processing) require initial investment, other green interventions involve no cost (alternative fuel from wastes (pili shells, rice husks), change in coffee roasting methods, reused materials, use of waste for fertilizing, and greywater from manufacturing to farming).
- Greening is profitable: All greening interventions analyzed have positive cost savings, positive Net Present Values (NPVs) over 5 to 10 years, above 1 Benefit-to-Cost Ratios (BCRs) and high Internal Rate of Returns (IRRs) (19%-290%).
- Greening interventions in MSMEs require leveraging support from the government, cluster associations and development partners in terms of increasing opportunity to learn green interventions, access to funds, education in fiscal and financing options; encouraging green interventions; harmonizing efforts; and facilitating access to green technology.
- Engaging in greening practices also translates into social relevance of the firms in the communities they are operating in. They can be considered as advocates of greening practices. Some have partnered with the marginalized communities and trained them on greening technology, which has provided income augmentation to the community.
- In this study, the MSMEs expressed many challenges as well. Challenges such as insufficient funds or cash which hinders scaling up, need for high quality raw materials, unpredictable weather conditions that affect supply of raw materials, and need for advanced technology to be more competitive are encountered.
- The MSMEs noted that they consider themselves successful and they attribute this to the dedicated management and leaders that run their firms.

All in all, the results of the case study show that going green is possible and, in fact, can bring monetary and non-monetary benefits for the MSMEs.

It is very important to note that time and again, challenges plague the MSMEs. It was mentioned earlier that foremost challenges encountered are on the operational aspect, scarce supplies of produce/raw materials, and need for technology related to climate change and agro-production. These can be major hindrances for MSMEs to strengthen greening initiatives as they need to address these first and hence, it is imperative for relevant government agencies to engage into innovative ways on how to address such concerns.

Despite this, it is great news that the MSMEs (featured in this case study) carry all environmental consciousness with them that led them to either advocate or invest in greening practices in their value chain processes. This shows that environmental consciousness stems from the mindset of the leaders of the enterprise.

Partnership is also a very important aspect of the growth of the MSMEs. They have noted partnerships with the Department of Trade and Industry (DTI) and other government agencies that helped them boost their sales and improve their skills and knowledge.

The experiences shared by the MSMEs in this case study also show the growing momentum of organic farming in the country. This demonstrates how far the organic movement has gone and how relevant government agencies can use this as a good take-off point to roll out greening initiatives among MSMEs.

The MSMEs featured in this case study also tell a story that even small enterprises can engage in greening practices. In one or two of the value chain processes, the MSMEs have employed greening practices. The case study also reveals that even minimal investment can bring savings to the company. Furthermore, amidst these greening practices, whether minimal or significant, the asset is growing and financial profit is positive. This is another side of the story that makes a good case to deter common beliefs that going green is impossible or is detrimental to the firm's financial bottom line.
I. INTRODUCTION

This section provides background information on today’s global developmental challenges, including population growth and resource depletion. It discusses international efforts to deal with these challenges and achieve growth and environmental sustainability through the UN’s Sustainable Development Goals (SDGs).

Further, it highlights the role of MSMEs as potential contributors in achieving the SDGs given its importance in the economy and employment sector, globally and in the Philippines. Finally, introduction of key concepts on green growth, green industry, and greening of MSMEs are provided to serve as reference of the study.

PURSUIT OF GLOBAL DEVELOPMENT AGENDA

During the last decades, we have witnessed impressive progress in human development in many parts of the world. Per capita incomes have increased, poverty has decreased, and standards of living for many people have improved. Yet, at the same time, the world is faced with unprecedented environmental challenges, which threaten sustainability and continued growth. This is because we live in a world that has limited resources but our population is growing in a much higher speed in comparison to the diminishing degree of Earth’s own restorative capacity.

In 1950, there were fewer than 3 billion people and today the global population is estimated 7.5 billion people. The United Nations Department of Economic and Social Affairs expects the global population to grow to more than 9 billion in 2050, which would triple in 100 years.¹ Our world is facing an enormous task to meet needs of resources for the growing population and the capacity to absorb the growing waste. Since 1970s, the world is facing a resource deficit or ecological overshoot, as identified by the World Footprint Network.

Today, humanity uses the equivalent of 1.6 earths to provide

¹ United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2017, esa.un.org
the resources we use and absorb our waste. This means it now takes the Earth one year and six months to regenerate what we use in a year. By 2030s, the equivalent will reach to two earths to provide resources to us.²

In response to this outgrowing challenge and to establish certain objectives to lead the required sustainability measures, the SDGs were designed and launched by 190 countries in the world in 2015. The SDGs aims to help society and business to focus on solving global sustainability challenges, provide a vision of a sustainable future and propose actionable targets for today’s major sustainability challenges, such as climate change, water scarcity, food insecurity, waste, and pollution, inequality, human rights and urbanization. The SDGs have 17 goals and 169 targets, and are not only intended to eradicate extreme poverty but also to fundamentally transform the development paradigms of developed and developing countries from 2015 to 2030. The SDGs help countries and governments to frame their national priorities, policies, and regulations according to its agreed objectives. In the end, it aims to impact societies, institutions and businesses to align their strategies, plans, operations and actions to have a more sustainable and responsible approach.

Roles and actions of MSMEs are enormous in building a sustainable world. As a group, MSMEs play a huge role in the global economy, particularly in equitable income generation, employment creation, and innovation and growth. According to World Bank, SMEs account 90% of all businesses, contributing up to 45% of total employment and up to 33% of GDP in emerging economies.³ Thus, it is impossible to achieve sustainability objectives without establishing strong MSMEs.

Four goals (SDG8, SDG9, SDG11 and SDG12) pertain to economic growth and sustainable consumption and production patterns which MSMEs can play a leading role to achieve.

OECD experts highlighted that MSMEs are major source of jobs creation across all economic sectors and geographical areas and provide income and access to public services to high- and low-skilled people (SDG8). MSMEs are key drivers of innovation, as most breakthrough innovations in recent decades have come from new and small firms, contrary to large enterprises (SDG9).

They can also help cities become more inclusive, for instance, through urban regeneration projects that emphasize MSME development (SDG11).⁴ Businesses are required to implement sustainable, responsible, and safe business and production practices, which become a necessity rather than a choice in the current business environment.

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² “Ecological Footprint”, http://www.footprintnetwork.org/our-work/ecological-footprint/#worldfootprint
In addition, MSMEs can play important contributions in the achievement of other SDG goals. For example, MSMEs can reduce income inequalities (SDG10) if they are enabled to provide good-quality jobs. Reducing the environmental impact of the product value chain by MSMEs through achieving and going beyond environmental compliance is key factor in reducing impact to climate change (SDG13).

The joint OECD, UNEP, UNECE, UNIDO, and EU toolkit on Greening SMEs notes that SMEs are important for green growth as key drivers of eco-innovation and key players in emerging green industries.\(^5\)

However, making MSMEs stronger has its own challenges. The 2030 Agenda for Sustainable Development acknowledges access to finance as one major challenge for SMEs and calls for development-oriented policies that encourage their growth and formalization (SDG8.3). It also calls for the integration of small-scale firms, in particular from developing countries, into global value chains (SDG 9.3).

Green growth sectors offer great economic and ecological benefits for SMEs and are estimated to grow considerably in the coming years. The starting point is that this economic growth can go hand in hand with environmental sustainability, which is specifically outlined in SDGs.

**WHAT IS “GREENING” OF MSMEs?**

The micro, small, and medium enterprises (MSMEs) serve as the backbone of the Philippine economy as it accounts for over 99% of the total business establishments in the country, and contributes more than 60% of the total employment and 25% of the country’s total export revenue as of 2015.

MSMEs have the power to develop profitable business models that are inclusive through the creation of good quality jobs and fair supply chains, while also reducing its impact on the environment through more efficient practices.

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This is what we call in general “greening of MSMEs” — a process of becoming aware of the enterprise’s environmental and social impact and developing strategies of generating profit while generating inclusive green growth.

This study provides an illustrative information to update readers on such exemplary business practices based on the assessment results gathered from 12 selected MSMEs in the food processing industry, which represents almost 40% of the Philippine’s total manufacturing output.

KEY CONCEPTS

Micro, small, and medium enterprises refer to any business activity or enterprise that has assets not exceeding PhP 100 million and employment size less than 200, regardless of the type of ownership.

Greening practices/interventions are defined as all activities aimed at sustainable processes of manufacturing food products through optimal use of energy, waste management and water management, and reduced carbon emissions.

Climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and adds to natural climate variability observed over comparable time periods.

Adaptation refers to the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities.

Mitigation refers to a human intervention to reduce the sources or enhance the sinks of [GHGs]. Mitigation measures or policies are aimed at, but not limited to, reducing GHG emissions.

Sustainable development refers to development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Green growth is a coordinated advancement of economic growth, environmental sustainability, poverty reduction and social inclusion driven by the sustainable development and use of global resources.

Greenhouse gases (GHGs) refer to gaseous constituents in the atmosphere, both natural and anthropogenic, that absorb and contribute to greenhouse effects but not limited to, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Cost-Benefit Analysis (CBA) is a financial technique that compares the monetary value of benefits with the monetary value of costs to evaluate and prioritize alternative options. For example, investment made into certain energy efficient technology would be assessed against its energy saving benefits over specific period of time.

Net Present Value (NPV) is the difference of discounted value of expected benefits and costs of an investment over its project (life) time.

Internal rate of return (IRR) refers to the discount rate at which a stream of costs and benefits has a net present value of zero. The internal rate of return is compared with a benchmark in order to evaluate the performance of the proposed project.

Empowerment is the process of gaining access and developing one’s capacities with a view to participating actively in shaping one’s own life and that of one’s community in economic, social and political terms. (European Commission, 1998)

Stakeholder refers to an individual, group, or organization that has something to gain or lose from involvement in the development project. Having a stake often implies an element of risk: standing to gain or lose something, and possibly having to make some sort of investment (not necessarily money), in order to obtain benefits from a project. Stakeholders are not simply ‘beneficiaries’. Those who stand to lose from a project are also stakeholders. (Vainio-Mattila, 2001)

For ease of reference, PhP/US$ exchange rate is taken as 50.00 (September 2017)
II. PURPOSE OF THE STUDY

In the pursuit toward sustainable consumption and production, the contribution of MSMEs is paramount, being the major driver of economic activities and source of employment in most countries. Despite the important role of MSMEs in fostering large-scale uptake of green growth policies, the current link between MSMEs and green growth is not sufficiently demonstrated, most notably in developing countries, where most MSMEs perceive green practices as costly and detrimental to the bottom line. The Philippines is not an exceptional case given the fact that the concept of green growth is relatively new and the perception that greening of MSMEs can foster competitiveness is just picking up.

Against this backdrop, the overall aim of this study is to identify demonstrable green business cases in the country that have significant role in generating economic benefits while protecting the environment and creating social welfare with greater implications to the achievement of SDGs.

RESEARCH OBJECTIVES AND QUESTIONS

In the context of the Philippines, the research objectives are:

Firstly, to assess existing greening practices adopted by MSMEs that have potential socio-economic benefits both in monetary and non-monetary terms. Building upon main findings and lessons learned from the results of the case studies, the second objective is to come up with relevant recommendations that can be used to develop enabling policies and favorable conditions for MSMEs in going green.

Thus, this study will attempt to seek answers to the following research questions:

1. Whether greening of MSMEs in selected clusters has potential positive economic benefits in terms of monetary values?

2. What set of criteria could be derived for assessing various types of greening practices adopted by MSMEs?

3. What are the prevailing greening practices among the interventions of MSMEs, in view of the assessment criteria developed for this study?

4. What do we learn by comparing the results from the analyses of selected cases studies to make recommendations to further promote available best practices and how could these impacts be better recognized and enhanced?

SCOPE AND LIMITATIONS

The case study on MSMEs focuses on the food processing industry and is limited to the following clusters:

- Cacao
- Coffee
- Processed Fruits (Banana)
- Processed Nuts (Pili)

Due to limited availability of quantifiable data, the study assessed the costs and benefits of applicable greening interventions of only 4 out of the 12 MSMEs, representing each cluster. In the same manner, SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis was applied to the same 4 companies to have in-depth analysis.

In order to distinguish level of analysis among the 12 case studies, the ones that have comprehensive analysis (that includes both CBA and SWOT) are referred to as main case studies, while the other 8 cases are referred to as mini.
III. METHODOLOGY

This section describes details on the methodology applied in conducting the case studies including the formulation of research framework, development of assessment criteria and basic cost-benefit analysis (CBA) tool used in quantifying monetary benefits based on data availability of selected MSMEs.

The research framework formulated for this study is provided in Figure 1.

Figure 1. Research Framework

- In brief, the research framework represents the following description:
  
  a. Key definitions and concepts on MSMEs and green business practices are yielded through review of relevant literature and policy documents for the context of this study.

  b. A set of assessment criteria (conceptual model) is developed to screen and select qualified MSMEs falling under four selected food processing clusters: cacao, coffee, processed fruits (banana) and processed nuts (pili).

  c. Case studies are conducted using an assessment criteria and other qualitative and quantitative methods.

  d. A comparison of case study results leads to the formulation of main findings and recommendations.
The conduct of case studies and selection processes that led to 12 MSMEs included in this study involved application of a set of methodological steps including development of assessment criteria, content analysis and qualitative data analysis that are commonly used in practice-oriented research projects. It should be noted that due to limited availability of quantifiable data, the study assessed the costs and benefits of applicable greening interventions of only 4 out of the 12 MSMEs, representing each cluster. In the same manner, SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis was applied to the same 4 companies to have in-depth analysis.

In order to distinguish level of analysis among the 12 case studies, the ones that have comprehensive analysis (that includes both CBA and SWOT) are referred to as main case studies, while the other 8 cases are referred to as mini.

In parallel to the abovementioned research methods, continuous consultations and feedback sessions such as on-site field visits and interviews with involved stakeholders including national and sub-national level government officials, development practitioners, and business owners were part of the holistic approach that allowed the project team to gain in-depth knowledge and practical insights of local circumstances.
A two-step selection method was applied to select the 12 MSMEs prior to technical data analysis.

Figure 2. Two-step selection method

**STEP 1. PRELIMINARY SCREENING**
- 495 → 77 shortlisted companies
- Industrial type: food processing;
- Cluster category;
- Size of companies

**PRE-ASSESSMENT SURVEY**
- out of 77 companies, 30 responded
- Questionnaires to identify potential green interventions

**STEP 2. ON-SITE FIELD ASSESSMENT**
- 18 out of 30 companies pre-qualified for field visit;
- 12 out of 18 were selected for in-depth analysis
- Interview;
- Collection of data;
- Assessment of Green Business Practices
Upon completion of the preliminary screening, the research team conducted field visits to the 18 pre-qualified MSMEs to validate the information they provided in the pre-assessment survey. Interviews were conducted to further understand and validate the firms’ greening practices and experiences associated to identify level and type of greening interventions.

Out of the 18 MSMEs visited, only 12 were selected to be part of the actual case study research. The greening practices of the enterprises were assessed in the areas of energy use, water use, waste treatment, as well as emissions. These interventions were also assessed depending on the extent of investment made and type of interventions implemented. The detailed description about levels of interventions and types of interventions can be found in Figure 3.

Beyond the scope of the project, which was limited to focus on only four types and key areas of greening interventions, the study also took into consideration social inclusion as an important element of inclusive green business.
### Types of Greening Interventions

<table>
<thead>
<tr>
<th>Energy</th>
<th>Waste</th>
<th>Water</th>
<th>Emission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of energy efficient equipment</td>
<td>Power generation by waste (biomass)</td>
<td>Wastewater treatment facility</td>
<td>Use of ethanol as fuel</td>
</tr>
<tr>
<td>Inverter type air conditioning system</td>
<td>New market need by converting waste to by-products</td>
<td>Rainwater harvesting</td>
<td>Hybrid cooling system</td>
</tr>
<tr>
<td>Motion sensing lighting system</td>
<td>Recycling into by-product for social/environmental development</td>
<td>Reusing of water</td>
<td>Use of solar power to generate electricity</td>
</tr>
<tr>
<td>Energy efficient facility design considering lighting and cooling system</td>
<td>Water-saving equipment (plunger type faucets, type 1/type 2 flushes)</td>
<td>Water measurement</td>
<td>Use of electric vehicle as transportation for the people</td>
</tr>
<tr>
<td>Use of LED lighting system in the facility</td>
<td>Monitoring and measuring electricity/fuel consumption</td>
<td>Water measurement</td>
<td>Measurement of emissions</td>
</tr>
<tr>
<td>Sharing of transportation vehicles for distribution of products</td>
<td>Basic energy saving programs (e.g. no use of lights during lunch break)</td>
<td>Water measurement</td>
<td>No burning of waste with emissions in the facility</td>
</tr>
<tr>
<td>Monitoring and measuring electricity/fuel consumption</td>
<td>Waste segregation</td>
<td>Leak detection and repair in the pipes and fittings</td>
<td>Efficient use of vehicles and other fuel consuming equipment</td>
</tr>
<tr>
<td>Basic energy saving programs (e.g. no use of lights during lunch break)</td>
<td>Measuring and improving waste production (monthly monitoring of waste produced by type)</td>
<td>Awareness in people on water saving tips</td>
<td></td>
</tr>
<tr>
<td>No use of styrofoam</td>
<td>No use of styrofoam</td>
<td>Awareness in people on water saving tips</td>
<td></td>
</tr>
</tbody>
</table>

**Box 1. Inclusive Business Practices**

MSMEs have a significant potential to also address the social inclusion as an important dimension of green growth. MSMEs are main contributors to social welfare through job creation and provision of goods and services that meet the needs of their communities. By adopting inclusive business practices, such as: a. fair and safe working conditions; b. work environments free of discrimination; c. inclusive supply and value chains, which provide fair opportunities to local communities; companies experience a more employee and partner satisfaction, a more stable business environment, and good reputations, which translate into more value and profit.
IV. CASE STUDIES

OVERVIEW

This research contains two types of case studies: the main case study, with figures obtained from the cost-benefit analysis as numerical data required for financial analysis were available from the enterprises; and the mini case study, that is more qualitative in nature and do not have cost-benefit analysis due to limitation and insufficiency of numerical financial data.

Showcased in this research are four (4) main case studies and eight (8) mini case studies. Below is a tabular presentation of the firms that participated with details on location, company size, and type of study conducted for each.

<table>
<thead>
<tr>
<th>CLUSTER</th>
<th>NAME OF COMPANY</th>
<th>LOCATION/REGION</th>
<th>COMPANY SIZE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cacao</td>
<td>Freefood Coconut Manufacturing (Company 1)</td>
<td>Davao City, Region XI</td>
<td>Small</td>
<td>Main</td>
</tr>
<tr>
<td></td>
<td>Malagos Agri-Ventures Corp. (Company 2)</td>
<td>Davao City, Region XI</td>
<td>Small</td>
<td>Mini</td>
</tr>
<tr>
<td>Coffee</td>
<td>JAC Farms (Company 3)</td>
<td>Kalinga Province, CAR</td>
<td>Small</td>
<td>Main</td>
</tr>
<tr>
<td></td>
<td>Hineleban Foundation, Inc. (Company 4)</td>
<td>Bukidnon, Region X</td>
<td>Small</td>
<td>Mini</td>
</tr>
<tr>
<td></td>
<td>Fresh Start Organics (Company 5)</td>
<td>Negros Occidental, Region VI</td>
<td>Small</td>
<td>Mini</td>
</tr>
<tr>
<td>Processed Fruits (Banana)</td>
<td>Villa Socorro Agri-Eco Village &amp; Farm Resort (Company 6)</td>
<td>Laguna, Region IV-A</td>
<td>Small</td>
<td>Main</td>
</tr>
<tr>
<td></td>
<td>Real’s Food Products (Company 7)</td>
<td>Palawan, Region IV-B</td>
<td>Micro</td>
<td>Mini</td>
</tr>
<tr>
<td></td>
<td>Bahay Kalipay (Company 8)</td>
<td>Palawan, Region IV-B</td>
<td>Small</td>
<td>Mini</td>
</tr>
<tr>
<td></td>
<td>Aloha Natural Farm (Company 9)</td>
<td>Palawan, Region IV-B</td>
<td>Small</td>
<td>Mini</td>
</tr>
<tr>
<td>Processed Nuts (Pili)</td>
<td>J. Emmanuel Pastries (Company 10)</td>
<td>Camarines Sur, Region V</td>
<td>Medium</td>
<td>Main</td>
</tr>
<tr>
<td></td>
<td>Greenminds, Inc. (Company 11)</td>
<td>Cagayan De Oro, Region X</td>
<td>Small</td>
<td>Mini</td>
</tr>
<tr>
<td></td>
<td>Rising Pili (Company 12)</td>
<td>Romblon, Region IV-B</td>
<td>Medium</td>
<td>Mini</td>
</tr>
</tbody>
</table>
Among these case studies, it was commonly observed that:

- Most common green practice among the MSMEs are in the areas of waste management, energy conservation, and efficient use of water. It is hoped that more concrete initiatives in the area of emission will be pursued as these MSMEs attain further development;

- All the MSMEs seem committed to institutionalize their respective green practices beyond token compliance, as seen in their varied levels of investments, most of which have been categorized under levels 2 and 3;

- Such investments may have been prompted by these MSMEs’ appreciation of the importance of greening the value chain processes which has concrete economic and non-economic benefits for the MSMEs themselves;

- The varying level of investments depended on priorities decided by the respective firms, taking into consideration these investments’ economic impact on the business operations and their contribution to the attainment of the specific goals of the business;

- Leadership of MSMEs has played an important role in sustaining the implementation of these green practices; quite expectedly, business owners who have professed to be staunch supporters of environment-friendly practices made sure that their respective firms adopt a similar mindset; on whether the employees of these MSMEs are able to bring home such mindset and influence their respective household is already beyond the scope of this study;

- The MSMEs — across all the clusters covered — share common basic value chain processes that include production, processing, packaging, and distribution;

- Among the relevant Sustainable Development Goals (SDGs), the green practices of the covered MSMEs were able to demonstrate their support only to:

  - as seen in some of the businesses’ conscious adoption of green architecture principles for better ventilation and more efficient lighting, and the provision itself of jobs to locals; and

  - as seen in these MSMEs deliberate efforts to reuse, recycle, and upcycle components in their production process.
<table>
<thead>
<tr>
<th>CLUSTER</th>
<th>COMPANY</th>
<th>ENERGY</th>
<th>CO₂ EMISSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee</td>
<td>2. Malagos Agri-Ventures Corp.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. JAC Farms</td>
<td>• Reduction of roasting machine’s LPG consumption [1]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Hineleban Foundation, Inc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Villa Socorro Agri-Eco Village &amp; Farm Resort</td>
<td>• Reuse of rice husks as fuel for the burners [3]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Real’s Food Products</td>
<td>• Reduction of LPG consumption [1]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Bahay Kalipay</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. Aloha Natural Farm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. J. Emmanuel Pastries</td>
<td>• Use of pili shells as fuel instead of LPG [3]</td>
<td>• Light bulb replacement (CFL bulb into LED and natural lighting) [2]</td>
</tr>
<tr>
<td></td>
<td>11. Greenminds, Inc.</td>
<td>• Adopting daily ‘Earth Hour’ [1]</td>
<td>• Implementing the car-less Monday [1]</td>
</tr>
<tr>
<td></td>
<td>12. Rising Pili</td>
<td>• Use of natural light [1]</td>
<td></td>
</tr>
</tbody>
</table>
### Best Green Business Practices among MSMEs

#### WATER
- Rainwater harvesting [3]
- Wastewater reuse through recirculating water in cistern [2]
- Reduction of water consumption using insulated tanks [2]
- Rainwater harvesting [3]
- Reuse of water from washrooms and pantry to water plants [2]
- Rainwater harvesting [3]

#### WASTE
- Use of biomass for stoves instead of LPG [3]
- Reduction in waste and resource usage [2]
- Use of biodegradable packaging material [2]
- Reuse of carton boxes [2]
- Recycling used carton boxes [2]
- Use of biodegradable sando bags [2]
- Reuse of rejected testa as organic fertilizer [2]
- Use of greywater in watering herbs [2]
- Reuse of wastewater [2]

#### Other Environmental & Social initiatives
- Organic farming
- Organic farming - using vermicomposting technology and waste decomposition of cacao pods
- Sources directly from farmers
- Organic farming - using Sloping Agricultural Land Technology (SALT)
- Indigenous People as community partners for organic farming and reforestation
- Use of waste stream
- Use of Effective Micro-organisms (EM1)
- Bokashi composting
- Use of rocket stove
- Use of aquaponics system
- Organic farming
- PILIPinas – An initiative, in partnership with different stakeholders, which aims to support pili farmers and growers
- 100% organic certified
- Maintaining environmental and social relevance with the Indigenous People communities
- Maintaining the Umanika Eco-Cultural Farm, a demo farm of bio-intensive gardening

- Reuse of solid waste [2]
- Recycling, reusing, upcycling [2]
The Philippine stands 6th in Asia and Oceania in terms of cacao production.

48,480 tons

total imports of cacao with a value of US$199.69 mln in 2015. The total cacao product export is estimated around US$24 mln in 2014.

80%

19%

1%

Davao Region  Central Visayas  Others

In 2015, Philippine cacao production stood at only 6,020 MT. Of this, 80% comes solely from Davao Region while Central Visayas takes only 1% of the share.

90%

of existing cacao farms are small, with ownership profiles ranging from one to three hectares.

The Philippines was the first in Asia to actively produce cacao beans in the latter part of 1600s in San Jose, Batangas.
CACAO
OVERVIEW

Location: Davao City, Region XI
Address: Brgy. Binugao, Toril District, Davao City
Year Established: 2009
Name of CEO/President: Petteri Makitalo
Key Products: • Coconut sugar
• Chocolate bars
• 100% tablea chocolate
Key Customers: • Less than 50 corporate/bulk customers served locally per month
• Exports coco sugar to Japan and Switzerland
Total No. of Employees: 7 full time employees; 18-25 partners/contractual employees
Total Revenue: Annual turnover:
PhP 8-10 mln overall;
PhP 14-15,000/month in General Santos City, Cagayan de Oro alone (2015)
Total Asset Value: PhP 10 mln (estimate)
Certifications: • JAS Eco Cert
• Eco Cert
• USDA Organic

GREEN PRACTICES

- Reuse of rice husks as fuel for the burners
- Sun-drying of cacao beans
- Use of biomass for stoves instead of LPG
- Rainwater harvesting
- Wastewater reuse through recirculating water in cistern
- Organic farming

The Freefood Company prides itself in adhering to the highest standards in fair trade, employment, use of organic raw material, and packaging. They are keenly aware of the role of farmers and food-producing communities in furthering the general health of societies. Their products are free from genetically modified organisms (GMOs), harmful processing agents, preservatives, food coloring, bleaching and refining agents, pesticides, and other chemicals detrimental to health.

The company works closely with organic coconut farming communities in Mindanao and local growers of indigenous cacao and nuts around the Philippines. Besides its obviously healthier and more nutritious benefits (free of chemicals and all natural), going organic also improves the quality of the soil for the next cycle of planting. This helps farmers sustain harvests for decades, and with steady food production,
creates a thriving local community. The company takes its relationship with the farmers very seriously. They have invested years in looking for the right people to come on board in Freefood. The company believes that an alignment in vision and values are needed to create a positive impact on society through their farms, produce, and products.

**COMMITMENT TO GREENING**

“We proudly wear our ECOCERT and USDA Organic labels. This shows how serious we are about our farms, produce and products, and that they have been inspected and approved by international authorities on organic certification and quality standards,”

“The company’s attitude, actions and advocacies show that it is very committed to greening. We welcome all green suggestions and we follow our own written green policies which are shared to all stakeholders. These policies include not using hazardous chemicals on factory premises or farm areas, waste segregation, and a vegetarian company policy. Our current advocacies include promotion of vegetarianism for better health and a greener planet and support of the Earth Day Network Philippines.”

Petteri Makitalo

**PRODUCTION PROCESS**

For its Coco Dolce chocolate bars, Freefood practices “bean-to-bar” manufacturing.

“The manufacturing process is very premium and traditional as opposed to mass commodity processing. For both our coconut sugar and chocolate, the process involves only natural and non-toxic ingredients sourced in the Philippines,” says Makitalo.

**Harvesting**
Cacao pods are sourced from Freefood’s partner farmers. These are grown on organically-certified farms. These are picked by hand and collected into baskets. Then, the pods are split open and the cacao beans are removed.

**Fermentation**
The beans are placed in large trays and heated by the sun. Sometimes, they’re covered with banana leaves. At this stage, the beans turn brown.

**Drying**
The beans are either dried by the sun, or with electric fans, which use up very little electricity.

**Winnowing and roasting**
The beans are refined by winnowing and roasting. Roasting in Freefood is done using biomass stoves.

**Conching**
This is a mixing process that has been around since the 19th century. During the conching process, cacao butter, cacao sap, coco sugar, and Freefood’s secret ingredients are blended together. Machines cut down the mixing time. This is done until the desired flavor is achieved.
**GREENING PRACTICES AND THEIR BENEFITS**

**ENERGY**

**Reuse of rice husk as fuel for the burners**
Freefood uses rice husks and built rice husk burners for their cooking needs. Compared to using an 11 kg LPG tank, which costs PhP 550 (US$11), a 10 kg sack of rice husk only costs PhP 5. Even if this 10 kg sack is fully consumed in a day (only 7 kg of LPG is used up daily), significant savings can still be seen at the end of the year. The company buys 2.64 tons of rice husks to use as energy source in the production process for total cost of PhP 1,320 (US$26.4). The switch to using rice husk as fuel allowed them to save on 168 cylinders of 11 kg LPG, therefore saving PhP 91,080 (US$1,821.60).

<table>
<thead>
<tr>
<th>Using Clean Fuel (Rice Husks)</th>
<th>Rice Husk as fuel</th>
<th>LPG as fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of fuel</td>
<td>PhP 5.00 / 10 kg (1 sack) of rice husk</td>
<td>PhP 550.00 / 11 kg LPG cylinder</td>
</tr>
<tr>
<td>Cost per unit</td>
<td>PhP 0.50 / kg</td>
<td>PhP 50.00 / kg</td>
</tr>
<tr>
<td>Total consumption / day</td>
<td>10.00 kg</td>
<td>7.00 kg</td>
</tr>
<tr>
<td>Cost of consumption / day</td>
<td>PhP 5.00</td>
<td>PhP 350.00</td>
</tr>
<tr>
<td>Cost of consumption / month (22 days operations / month)</td>
<td>PhP 110.00</td>
<td>PhP 7,700.00</td>
</tr>
<tr>
<td>Cost of consumption / year</td>
<td>PhP 1,320.00</td>
<td>PhP 92,400.00</td>
</tr>
<tr>
<td>Annual Savings (Financial)</td>
<td>PhP 91,080.00</td>
<td></td>
</tr>
<tr>
<td>Annual Savings (LPG)</td>
<td>1,848.00 kg</td>
<td></td>
</tr>
</tbody>
</table>

The company invested PhP 150,000 (US$3,000) for rice husk burner and allocates PhP 50,000 (US$1,000) for maintenance each year.

The investment return from energy savings in the fuel switch over five years is PhP 82,952.12 (US$1,659) and over ten years is PhP 215,504.38 (US$4,310) and Internal Rate of Return (IRR) or profitability of the investment is 19%. The benefits are 1.54 times higher than costs.

**ENERGY**

**Sun-drying of cacao beans**
Freefood spreads on mats, trays, or concrete floors, their cacao beans, which are then left to dry under the sun.
WASTE

Use of biomass for stoves instead of LPG

The biomass is made from rice husks, which is sourced from the local rice processing partners. This fuel is the waste from rice processing operations and is bought by the company at a cheaper cost. The by-product (waste) is then used for soil conditioning in the plantation. The company is currently experimenting on using the burnt rice husk as toothpaste.

WATER

Rainwater harvesting

This facility enables the company to save 144 cubic meters of water annually that is collected from rain (actual number of rainwater harvesting differs from month to month due to dry and monsoon seasons). Water harvesting saves approximately PhP 12,960 (US$260) of water costs annually, based on the municipal water price.

<table>
<thead>
<tr>
<th>Rainwater Catchment</th>
<th>Using Rainwater</th>
<th>Using Municipal Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of water</td>
<td>0.00 free sourcing</td>
<td>PhP 90.00 / cu.m</td>
</tr>
<tr>
<td>Capacity of rainwater catchment tank</td>
<td>3.00 cu.m</td>
<td>3.00 cu.m</td>
</tr>
<tr>
<td>Total amount of rainwater collected / month</td>
<td>12.00 cu.m</td>
<td>12.00 cu.m</td>
</tr>
<tr>
<td>Number of rainwater catchment tanks</td>
<td>1.00 unit</td>
<td>1.00 unit</td>
</tr>
<tr>
<td>Cost of consumption / month</td>
<td>PhP 0.00</td>
<td>PhP 1,080.00</td>
</tr>
<tr>
<td>Cost of consumption / year</td>
<td>PhP 0.00</td>
<td>PhP 12,960.00</td>
</tr>
<tr>
<td>Annual Savings (Financial)</td>
<td>PhP 12,960.00</td>
<td>PhP 12,960.00</td>
</tr>
<tr>
<td>Annual Savings (Municipal water)</td>
<td>144.00 cu.m</td>
<td></td>
</tr>
</tbody>
</table>

The company installed a rainwater catchment tank which cost PhP 5,000 (US$100) and projected to spend PhP 1,000 (US$20) for its maintenance annually. However, the rainwater catchment facility can provide around only 12% of total water. This is limited due to amount of annual rainfall. The rest of water sources are supplied from wastewater reuse and water supply from the municipality. Wastewater is reused through recirculation of water in cistern (level 2). Freefood uses diluted chlorine granules to clean the water to eliminate smell and certain substances. The reused water is used only for cleaning of processing machines.

Water cost savings from the rainwater harvesting yields savings of PhP 41,701.45 (US$834) over five years and PhP 69,852.66 (US$1,397) over ten years and Internal Rate of Return (IRR) or profitability of the investment is 187%.

WATER

Wastewater reuse through recirculating water in cistern

Average water consumption per month is less than 100k cubic meters. This is used for cleaning of machines. They do it once a week for only 25 minutes using only 5 liters each time. Freefood also uses diluted chlorine granules to clean water. This has no smell and causes no pollution.
SWOT ANALYSIS

**Strengths**

- **Freefood’s sustainable business model.** They believe in “what’s good for the farmers is good for the earth, and therefore good for society and the future”.

- **Ethically-produced and healthy products.** The recognition of Freefood’s products as premium, fair trade, and organic makes them appealing to international and local buyers who prefer goods that are produced in such manner.

- **Increasing market exposure.** The company has a growing retail presence and is part of Rustan’s Supermarket’s premium line of artisanal products, collectively known as Supergoods.

- **Good network.** Freefood has a sound local network of like-minded food producers and manufacturers.

- **Non-intensive manufacturing process.** The production of raw materials is not water-intensive, thus causing minimal wastage.

- **Responsible waste management practices.** Wastes from materials are composted to reduce amount of wastes disposed in landfills.

- **“Green” company culture.** A “green-mindset” is very much present in the employees.

**Weaknesses**

- **Limited resources.** Additional finances are needed to expand, as logistics and manufacturing equipment are expensive.

- **Lack of training.** Training for a higher level of professionalism of management is also needed.

- **Limited product offerings.** Last product research was in 2011.

- **Size of the company.** The company is small and thus has room to further increase its production capacity.

- **Limited market share.** The company is only exporting in two countries — Japan and Switzerland. There is room to expand in other markets.

- **Lack of systems to track greening.** The company has no formal method yet in place to track performance of green initiatives.

**Opportunities**

- **Growing demand.** There is rapidly-expanding local market for premium chocolates, as well as markets in Japan and Finland.

- **Market awareness of healthy and organic products.** Increasing recognition and popularity of coconut sugar’s health benefits, which is one of the reasons customers try out Freefood’s products.

- **Export-friendly economy.** Increasing dollar conversion rate for increasing revenue per unit exported.

- **Government support.** Government initiative to stimulate commercial establishments in areas outside of the National Capital Region. Government is also actively promoting and incentivizing commercial establishments to become more sustainable.

- **Accessibility of more green technologies.** Mature green technologies like solar panels are now being heavily commercialized; costs of similar technologies are expected to drop as supply increases.

**Threats**

- **Instability in the region.** Due to long-standing political situations, the peace and order situation in farm areas in the South, where Freefood’s farms are located, tend to be volatile.

- **More choices of brands in the same category.** The influx of cheap global brands divert customers away from Freefood. Also, new entrants and “copycats” are threats, as production of chocolate does not need expensive, highly-specialized equipment.

- **Unstable economies.** Volatile international markets as trade agreements are breaking down.
INNOVATIONS

The company has started a regular forum in Davao that serves vegetarian food as part of the global “meatless Monday” initiative. This is to reduce the environmental stress on the planet, according to Makitalo. “The forum promotes green practices and health. Meatless Monday or going vegetarian once a week is part of a worldwide effort that promotes a greener planet by lowering the carbon footprint. The U.N. Climate Change commission, World Bank economists and others have proven that the meat industry has the highest carbon stress on the planet and being vegetarian at least once a week is the easiest way an individual can contribute to a greener planet.”

COROLLARY ACTIVITIES

- **Seminars on organic farming.** Farm communities are given seminars which highlight the dangers of toxic chemicals. These communities have shared this information with their relatives and other communities.

- **Chocolate manufacturing seminars.** These seminars also included mention of green practices to cooperatives, “which have recorded this and shared it with their extension communities interested in cacao. We hope to improve and intensify our green advocacies as we grow,” added Makitalo.

- **Other trainings.** Employees have been trained on Good Manufacturing Practice (GMP) and 5S (with manuals), among others. They are currently applying for Hazard Analysis Critical Control Point (HACCP).

- **Corporate Social Responsibility programs.** Freefood also has been sponsoring vegetarian feeding missions for the poor by Meatless Monday Association International.

SUCCESS FACTORS

- **Commitment to high standards and complete buy-in from organization.** “We stay true to our high standards and our team passionately believes in our standards. We do not waiver from our premium product and fair trade approach which has earned us friends and the attention of re-sellers,” says Makitalo. “We feel that staying true to our values and standards of a business model has brought us to important players like Rustan’s and Human Nature and will bring us further success.”

- **Commitment to creating a “win-win” situation with farmer groups and consumers.** "We promote a win-win mindset, starting from the farmers who earn from their harvest and to the consumers who enjoy a delicious and healthy product,” explains Makitalo.
LOOKING FORWARD

Makitalo demurred that Freefood’s size and financial limitations can be challenges, and they need to raise capital in order to bring them to the next levels of production to reach bigger markets. But he noted that the company’s current climate has been exciting as their sales have been steadily growing. This is a factor that can be leveraged as the company confronts said challenges.

AREAS OF COLLABORATION AND SUPPORT

- **Inclusion in DTI’s National Cacao Cluster.** The DTI, especially on the regional and local level has been very supportive especially with consultative cooperation and trade show participation, reveals Makitalo. “The DTI has invited the company to be part of the National Cacao Cluster, a consultative body, and they have also consistently shown support by inviting the company to their trade shows, which has given the company a morale boost and encouragement to continue its activities and face the challenges of a new startup.”

- **More links to funding.** Freefood could benefit from more DTI links, particularly with local and international investors interested in good returns from fair trade and health products.

- **Formation of a business cluster for MSMEs.** Makitalo also suggested bringing players closer together by forming a MSMEs business cluster, combining representatives from the MSME sector, government, academe, finance, and concerned markets. This can be led by experts, and programs of the cluster shall be accessible via the DTI website.
Malagos Agri-Ventures, the maker of Malagos chocolates, is a member of Puentespina Group of Chocolates. Cacao growing started in 2003 when the owners, Roberto and Charita Puentespina, leased a farm with cacao trees in Malagos, Davao City. Charita rehabilitated the cacao trees and soon made tablea from her harvest. The chocolates are organically grown from Malagos’ own cacao farm and also sourced from farmers planting in the foothill of Mt. Talomo in Davao del Sur, known to be a fertile land for high quality cacao.

Malagos chocolate was produced in scale in 2012 and was commercially launched in 2013. Since then, Malagos chocolate has grown to be an internationally recognized and awarded tablea maker.

Malagos has been assisted by the Department of Trade and Industry (DTI) for capacity development and market linkage. They have attended trade fairs of DTI and has participated in trainings and consultations with DTI on food safety and packaging materials.

Malagos Chocolate was awarded best product by ASEAN Best Product Recognition awards in ASEAN Food Conference in 2013. It was a Silver Awardee in the 2015 International Chocolate Awards in Germany. It also bagged the Bronze and Silver awards in the 2015 and 2016 (respectively) in the Academy of Chocolate Awards in UK. It is also awarded a 2-star accolade (out of 3) in 2016 Great Taste Award also in the UK. Locally, Malagos won 1st runner up in the 2015 KATHA Awards Food for Best Product Food Ingredients Category.

The Malagos cacao farming and processing facility is located inside Malagos Garden Resort. It is a 12-hectare nature-themed resort that has Bird Park and Butterfly Sanctuary and is home to the Philippine orchid, waling waling, indigenous birds, and other wildlife species.

GREEN PRACTICES

- Reduction in waste and resource usage
- Reduction of water consumption using insulated tanks
- Organic farming

OVERVIEW

<table>
<thead>
<tr>
<th>Location:</th>
<th>Davao City, Region XI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>Brgy. Malagos, Baguio District, Davao City</td>
</tr>
<tr>
<td>Year Established:</td>
<td>2012</td>
</tr>
<tr>
<td>Name of CEO/President:</td>
<td>Charita P. Puentespina</td>
</tr>
<tr>
<td>Key Products:</td>
<td>Tree-to-bar Chocolates (tablea)</td>
</tr>
<tr>
<td>Key Customers:</td>
<td>Various retailers/resellers and stores in Luzon, Visayas and Mindanao and in Australia, Japan, Singapore, Thailand and the United States</td>
</tr>
<tr>
<td>Total No. of Employees:</td>
<td>46 full time employees; 12 contractual employees</td>
</tr>
<tr>
<td>Certifications:</td>
<td>• ASEAN Best Product Recognition</td>
</tr>
<tr>
<td></td>
<td>• International Chocolate Awards</td>
</tr>
<tr>
<td></td>
<td>• 2015 KATHA Awards Food</td>
</tr>
</tbody>
</table>
COMMITMENT TO GREENING

“Believing that human life and all other forms of living creatures cannot survive outside of nature, Malagos Agri-Ventures aims to promote harmony with biodiversity and ecosystems in the community we belong.”

Malagos Agri-Ventures Mission

PRODUCTION PROCESS

Below is how cacao beans are processed, step-by-step:

**Sorting**
This helps ensure quality as the raw beans are carefully sorted and cleaned of contaminants like flat and moldy beans, stones, leaves, sticks, etc. The rejected beans are used as organic fertilizer.

**Roasting**
This renders the beans safe to consume, and allows for critical flavor development of the cacao bean.

**Cooling**
This prepares the cacao for next steps in processing.

**Shelling**
Removing the shell, and separating the nib from the husk, preps the bean for grinding. The company has invested on a winnowing machine to reduce shell wastes which are, in turn, used as organic fertilizers. Current research and development efforts look at using the shell as raw material for spa products such as soap or scrub.

**Storage**
This entails storing the product in cool temperature to allow the chocolate to harden.

**Grinding**
As the nibs are ground, they get converted to cacao mass or liquor. The company has set up insulated tanks powered by electricity to maintain water heat for reuse instead of manually refilling water to be heated, as is usual practice.

**Refining**
This is where additional ingredients, such as sugar, cacao, butter, or milk — depending on the type of product being prepared — are added.

**Molding and Packaging**
The chocolates are shaped using polycarbonate plastic molds and are eventually packaged. Chocolate shavings, already considered as waste, are reused to clean and drain the tanks and machines. Research and development efforts are now looking into using chocolate shavings as cacao soap.
GREENING PRACTICES AND THEIR BENEFITS

As staunch advocates of environmental protection, the owners of Malagos ensure strict observance of greening practices.

WASTE
Reduction in waste and resource usage
Essentially, Malagos employs as much reduction in waste and resource usage as possible in the processing of cacao. Rejected beans are sent back to the cacao farm for decomposition. This is why the cacao farm and the processing facility are both located in the Malagos Garden Resort. Shells removed are also reused as fertilizer. Malagos also purchased a winnowing machine for shelling, reducing shell wastes from 30% to 20%. Currently, Malagos is studying how the shell can be used for spa products such as soap or scrub.

In the molding stage, the chocolate shavings are reused to clean and drain tanks and clean the machine, a cost-saving waste reduction initiative. The use of chocolate shavings is reportedly more cost efficient in reducing waste compared to the previous practice of using chocolates. They are now studying the use of chocolate shavings as cacao soap.

WATER
Reduction of water consumption using insulated tanks
For the grinding stage, Malagos has invested in a technology that allows reduction of water consumption. This is with the use of insulated tanks powered by electricity in order to maintain water heat for reuse instead of regularly refilling water to be heated.

Organic Farming for Cacao Beans
Using vermicomposting technology and waste decomposition of cacao pods, the enterprise is organically growing their cacao. Though it is not yet certified, the organic farming both ensure healthy cacao beans and at the same time, provides benefits for the environment through soil rehabilitation.

SOCIAL BENEFITS
Malagos sources directly from farmers. As their main suppliers, they believe that cacao farmers partake in the pride of being a multi-awarded and internationally-known enterprise.
Best Green Business Practices among MSMEs

AREAS OF COLLABORATION AND SUPPORT

Limitations and challenges faced by Malagos have been mostly due to operations, such as minimizing waste and downtime and removal of bottlenecks in the shelling and grinding processes. Though already addressed, they believe that these could still be improved. They hope that appropriate government agencies will be able to provide relevant support through seminars that focus on setting up proper operational protocols.

Malagos is likewise challenged by a lack of steady and regular supply of cacao beans. They hope that relevant stakeholders will extend support by engaging more farmers in cacao farming, especially small-scale farmers, and by helping Malagos expand sources of cacao.

SUCCESS FACTORS

Malagos measures its success by the increase in its production output and gross sales. This is attributed to a dedicated management devoted to improving operations and who remain passionate about the cacao industry.
The Cordillera Administrative Region (CAR) contributed 6.37% to the national output, with Kalinga contributing 68% to the regional output. The province’s major produce was Robusta with 3,784 MT, while Arabica output only reached 58 MT.

Coffee is the world’s second most consumed beverage and the second most traded commodity.

Forms of products include green coffee beans, roasted whole coffee, roasted ground coffee, and brewed coffee.

Top coffee producing regions (based on the Oct-Dec 2016 NFICS Bulletin):

- SOCCSKSARGEN (40.3%)
- ARMM (15.9%)
- Davao Region (10.4%)
- Western Visayas (10.4%)
- Other Regions (13.8%)

100% of Arabica is sold to specialty coffee market.
COFFEE
JAC Farms

OVERVIEW

Location: Kalinga Province,
Cordillera Administrative Region (CAR)
Address: Calagdao, Bulanao, Tabuk City, Kalinga
Year Established: 2011 (rehabilitation of farm);
lunched in June 2014
Name of CEO/President: Marietta "Brenda" Claver
Key Products: Roasted coffee
Total No. of Employees: 7 during processing time;
20 during harvesting and sorting;
2 regular employees
Total Revenue: Less than PhP 532,901.00 (2015)
Total Asset Value: Less than PhP 1 mln
Certifications:
• FDA-licensed
• Exceeded quality grade - fine
  honey-processed Kalinga robusta,
• Barista and Coffee Academy of Asia
  (BCAA) Sept. 27, 2016
Memberships:
• Coffee Industry Cluster -
Cordillera Administrative Region
• Mango Producers Association of
Kalinga
• Kalinga Coffee Council (KCC)
• Chamber of Kalinga Producer’s
Association, Inc. (CKAPI)
• Philippine Product Exposition
(Phil-Expo)

JAC Farms is a 15-hectare farm, left untilled for some time and
revived in 2011 by Marietta “Brenda” Claver. Coffee is not its
main output, as it currently grows different crops — mango,
cacao — and raises poultry and hogs. However, coffee is the
owner’s main business. She began as a consolidator, but now
grows some coffee trees on a hectare in the farm. Beans are
sourced from the farm, as well as from farmers who the owner
personally selects via interviews and farm visits. She offers
to help them rehabilitate their farms for coffee growing using
organic methods, and buys back the coffee cherries as a result
of those endeavors.

Despite it being a small enterprise and the owner hitherto a
stranger to the industry, JAC Farms has flourished under the
owner’s hands-on involvement with the growing, processing,
and promotion of Kalinga’s Robusta coffee.
COMMITMENT TO GREENING

“I believe that whatever you give to Mother Earth is what Mother Earth will give to you. I advocate sustainable development. If we do not give back to Mother Earth, the next generation will suffer. For me, it’s better to sow first before you reap. My business is processed coffee. My raw materials are green beans. I am dependent on nature — coffee trees and plants. If I do not take care of them, they will not produce berries, and my business will suffer. My mindset is to improve quality of Kalinga coffee and to encourage farmers to maintain their coffee trees. I have been working with DTI to advocate quality coffee. It should be us to first do something for nature and see the fruits of our labor in the end.”

Marietta “Brenda” Claver

PRODUCTION PROCESS

There is virtually no waste when it comes to coffee processing. After the berries are picked, sorted, and cleaned, the hull is again used for fertilizer.

Dry Method

Harvesting of beans
The harvest season in Kalinga is from December to March. Harvesting is done manually.

Drying
The cherries are spread out over wide surfaces to dry in the sun. The workers make sure that the cherries are covered at night to prevent them from getting wet.

Hulling
The beans are then passed through the huller to remove the husk. This leaves the bean exposed. The husk is dumped in a small pit and fermented with molasses to produce fertilizer.

Sorting
Beans are being sorted by size and grade. Rejects due to size, color, insect damage, or unhulled beans are set aside.

Roasting
This is a delicate process, and the owner is hands-on during all roasting sessions. Her trained ear can hear the first “pop” of the bean, which means the oil that is locked within the bean is starting to be released. Roasting is only done twice a week to save on LPG.

Resting
The beans are removed immediately from the roaster to prevent over-cooking, and are cooled. This step is as important as roasting.

Grinding
Depending on the client’s needs, JAC Farms will keep the beans whole or will grind them. There are different sizes of ground coffee, depending on what process will be used in brewing the coffee.
Wet Method

Harvesting of beans
The harvest season in Kalinga is December to March. Harvesting is done manually.

De-pulping
Instead of drying the cherries after picking, they go through a custom-designed pulping machine, where their skin and pulp are removed from the bean. The pulp from the wet process is used as mulch for the coffee plants.

Washing
The beans are then washed. This helps in separating beans — the lighter, less ripe beans float to the top, while the heavier, riper beans sink to the bottom. In JAC Farms, this is done with a sieve. The wastewater is used to water the coffee plants in the farm.

Fermentation or soaking
They are then soaked for 24 hours. Other coffee processors, depending on climate and altitude, soak them between 12 to 48 hours. This process dissolves the “parenchyma”, which is attached to the parchment or husk. The wastewater here is also used to water the coffee plants in the farm.

Rinsing
The beans are then rinsed. The water from the soaking and washing is again used to water the coffee plants in the farm.

Drying
The beans, now only left with the parchment skin or husk (or hull), is left to dry under the sun.

Hulling
They are then passed through the huller to remove the husk. This leaves the bean exposed. The husk is dumped in a small pit and fermented with molasses to produce fertilizer.

Sorting
Beans are then sorted by size and grade. Rejects due to size, color, insect damage, or unhulled beans are set aside.

Roasting
This is a delicate process, and the owner is hands-on during all roasting sessions. Her trained ear can hear the first “pop” of the bean, which means the oil that is locked within the bean is starting to be released. Roasting is only done twice a week to save LPG.

Resting
The beans are removed immediately from the roaster to prevent over-cooking, and are cooled. This step is as important as roasting.

Grinding
Depending on the client’s needs, JAC Farms will keep the beans whole or will grind them. There are different sizes of ground coffee, depending on what process will be used in brewing the coffee.
Semi-wet Method

**Harvesting of beans**
The harvest season in Kalinga is December to March. Harvesting is done manually.

**De-pulping**
Instead of drying the cherries after picking, they go through a custom-designed pulping machine, where their skin and pulp are removed from the bean. The pulp from the wet process is used as mulch for the coffee plants.

**Drying**
The beans, now only left with the parchment skin or husk (or hull), is left to dry under the sun.

**Hulling**
They are then passed through the huller to remove the husk. This leaves the bean exposed. The husk is dumped in a small pit and fermented with molasses to produce fertilizer.

**Sorting**
Sorters are then called in to sort the beans by size and grade. Rejects due to size, color, insect damage, or unhulled beans are set aside.

**Roasting**
This is a delicate process, and the owner is hands-on during all roasting sessions. Her trained ear can hear the first “pop” of the bean, which means the oil that is locked within the bean is starting to be released. Roasting is only done twice a week to save LPG.

**Resting**
The beans are removed immediately from the roaster to prevent over-cooking, and are cooled. This step is as important as roasting.

**Grinding**
Depending on the client’s needs, JAC Farms will keep the beans whole or will grind them. There are different sizes of ground coffee, depending on what process will be used in brewing the coffee.
GREENING PRACTICES AND THEIR BENEFITS

Data gathered shows that greening practices are deliberately applied in the conduct of JAC’s Farm’s business. It is demonstrated in energy use reduction and reuse of materials.

ENERGY

Reduction of roasting machine’s LPG consumption

A simple change in roasting process and schedule saved JAC PhP 7,735 (US$155) annually. Before switching, only five batches were roasted within a five-day period. This cost JAC PhP 126.00 (US$2.5) per batch. When schedules were changed to accommodate more batches on only two days a week, an annual savings of PhP 7,735.00 was seen, along with an annual savings of 1,620.67 kg of LPG.

<table>
<thead>
<tr>
<th>Process change for roasting</th>
<th>LPG Consumption After</th>
<th>LPG Consumption Before</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of batches roasted using a 11 kg LPG cylinder</td>
<td>18 batches</td>
<td>5 batches</td>
</tr>
<tr>
<td>LPG consumption per batch</td>
<td>0.61 kg</td>
<td>2.2 kg</td>
</tr>
<tr>
<td>Cost of 11 kg LPG cylinder</td>
<td>PhP 630</td>
<td>PhP 630</td>
</tr>
<tr>
<td>Cost of 1 kg LPG</td>
<td>PhP 57.27</td>
<td>PhP 57.27</td>
</tr>
<tr>
<td>LPG consumption cost per batch</td>
<td>PhP 35</td>
<td>PhP 126</td>
</tr>
<tr>
<td>No. of batches in a year</td>
<td>85 batches</td>
<td>85 batches</td>
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<tr>
<td>Annual Cost</td>
<td>PhP 2,975.00</td>
<td>PhP 10,710.00</td>
</tr>
<tr>
<td>Annual Savings (Financial)</td>
<td>PhP 7,735.00</td>
<td></td>
</tr>
<tr>
<td>Annual Savings (LPG)</td>
<td>1,620.67 kg</td>
<td></td>
</tr>
</tbody>
</table>

Through this simple process change, the energy cost of roasting process is reduced to 72% percent and overall production cost by 36%.
WASTE

Reuse of carton boxes

Reusing old carton boxes for packaging also increased JAC’s savings. Instead of purchasing new material, used carton boxes from supermarkets and malls are used to pack the coffee bags for delivering to the local customers.

While an annual cost of new cartons can cost PhP 2,850.00, only PhP 562.50 is needed for used cartons. This gives a savings of PhP 2,287.50 per year. Thus, it saves 80% of packaging costs.

<table>
<thead>
<tr>
<th></th>
<th>Used Carton Boxes</th>
<th>New Carton Boxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Boxes Purchased</td>
<td>75 carton boxes</td>
<td>75 carton boxes</td>
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<tr>
<td>Cost of box</td>
<td>PhP 7.50</td>
<td>PhP 38.00</td>
</tr>
<tr>
<td>Total cost of the boxes</td>
<td>PhP 562.50</td>
<td>PhP 2,850.00</td>
</tr>
<tr>
<td>Annual Savings (Financial)</td>
<td>PhP 2,287.50</td>
<td></td>
</tr>
</tbody>
</table>

WATER

Wastewater reuse

The wastewater from the wet process is used to water the coffee plants in the farm. Around 2,000 liters of water are used to process 1,200 kg of coffee beans.
SWOT ANALYSIS

Strengths

- **Attention to marketing.** The owner admits she is “more aggressive on the marketing side.” She is not one to stay content in serving only the local (Kalinga) market.

- **Commitment to learning.** The owner absorbs all she can about Robusta, “going online to read more on this variety of coffee, checking out videos on post-harvest activities of other countries, talk with people who have the same interest as mine,” she explained.

- **Competitive streak.** The owner believes that Kalinga Robusta is at par with the best. “The bottom line is that I can go out of my comfort zone and not fear failure. It becomes a challenge for me if I hear coffee from other areas in the Philippines are given credit due to their good qualities,” Claver says. “I have tasted the potential of our coffee and (I know) I can do or apply the training I have to enhance and bring the more flavorful taste of Kalinga Robusta,” she adds.

Weaknesses

- **Limited resources.** “As a private entrepreneur, I have limited access to government funds,” Claver stated. So she has had to shell out funds from her own pocket. “We are still doing more rejuvenation on old trees, planting more seedlings and at the same time, processing, and marketing. In short, I cannot do any full blast improvements on all.” Instead, she has paid equal — but not intense — attention to each stage, not enough to make the whole operation reach full potential. “If I stop processing, my products are affected, and I cannot risk that because they have already garnered good feedback. If I stop with either rejuvenation or planting, my problem is the source.”

- **Lack of systems to track greening.** The company has no formal method yet in place to track performance of green initiatives.

Opportunity

- **Rising demand for Kalinga Robusta.** JAC Farms’ products are reportedly getting more popular via word of mouth. The owner regularly gets calls for orders from big coffee establishments and connoisseurs from around the country. However, JAC Farms’ supply still has to meet demand. “At times we faced no big supply during a coffee season which is too bad,” Claver stated. “Still, through DTI, I encourage coffee farmers, especially those with organizations, to apply the training they had so that they can consistently produce quality coffee. Only then will I recommend them to buyers.”

Threat

- **“The focus of other growers to “sell” but not to “excel.”** Claver said she welcomes competition from other coffee processors around the country who are as dedicated to producing top quality coffee. However, she is not as enthusiastic about other coffee dealers — especially those from her own province — whose only motivation is profit. “Other provinces are also aiming to excel. Kalinga Robusta is already known, but I can see that their (other coffee dealers) focus is different. They just want to sell, while I want to excel,” she stressed.
INNOVATIONS

- **Customized huller.** Since processing is done within the farm, all the water used during the hulling and de-pulping is reused to water the plants. But to save even more water (and time during the process), the owner added a motor to the pulping machine. “By making it motorized,” Claver said, “I saved more water and cut down the processing time. If done manually, it would take hours to de-pulp five to eight sacks of fresh berries a day. It would also require more water otherwise the beans will be crushed.”

- **Hull scrub.** While the discarded coffee hulls are made into mulch for fertilizer, the owner is also exploring reusing the hulls as body scrub.

COROLLARY ACTIVITY

- **“Going green” informal campaign on social media.** According the Claver, there is a rise in information dissemination on “going green” in her province. “Many speakers from outside regularly visit and give talks on alternative ways or methods to help the environment. I see familiar faces when I attend these seminars — and yet only a few really practice or apply (the new practices).” Those who are active have begun to share their experiences and activities on social media, creating a ripple effect among the different networks. It’s small, but Claver hopes it will become significant. “People are getting conscious of their health. We see the reality that more people’s health is affected in these times because of the food they eat. So many people are now into organic food and other practices. This is a good time for JAC Farms to step up the promotion of its Kalinga coffee,” she said.
SUCCESS FACTORS

- **Good support group.** Claver credits her success initially to the full support of her family, particularly her mother-in-law, who pushed her to continue with the farm and infused valuable financial support. She added that it is also important to surround oneself with like-minded people, or people who are also interested in the coffee business.

- **Constant access to training.** Claver also credited DTI’s constant open line of communication and invitations to its various trainings and seminars. “This is important so that I keep improving,” she said.

- **The owner’s out-of-the-box thinking when it comes to acquiring raw materials and involving the community.** Initially a consolidator, Claver noted that at some point, the coffee beans brought to her were not up to her standard. She decided to take control of the quality of her raw material by going directly to the farmers to enter into a three-year contract growing arrangement. During this period, she would pay for the maintenance, fertilization, and labor of the farm. She hoped this method would help the farmers realize that with the right mindset and greening practices, they can optimize their farms and raise their standards of living.

- **Clear organization, planning, and execution.** Claver has a systematic approach to saving energy (like her scheduled roasting), reducing waste, and maximizing her product output (she also runs a coffee shop). She is also conscious that the life cycle of coffee doesn’t stop at processing, but continues until it is consumed by the cup (“from seed to cup”), and this bird’s eye view of the business has enabled her to plan and carry out needed steps accordingly.

- **The owner’s passion, eagerness to learn, and willingness to share her learnings in seminars and workshops.** “I hope others will also follow — not exactly and outright do what we do — but as long as they start something and follow through,” she says.
LOOKING FORWARD

More funding can enable JAC Farms to rejuvenate more land for coffee trees, plant new seedlings, and reach more markets outside Kalinga. "Rejuvenation and production needs more people as it requires constant weeding, application of inputs, and constant water source all-year long," explained Claver.

It can also help improve JAC Farms’ packaging. "A cheaper source of food-grade coffee pouches is ideal", she added.

AREAS OF COLLABORATION AND SUPPORT

- Technical assistance, workshops, and consultations such as Green Economic Development (GED) trainings. JAC Farms was also present during the 2015 Baguio workshop of GIZ-ProGED on "Industry Roadmaps and the AEC Gameplan". DTI Kalinga Representative Jeffrey Pasikan also mentioned that trainers’ training would also be helpful. These should not only be for DTI technical staff, but for MSMEs as well.

- Participation in trade fairs. JAC has been a regular participant in provincial, regional, and national trade fairs.
**Hineleban Foundation, Inc.**

**OVERVIEW**

- **Location:** Bukidnon, Region X
- **Address:** UPD Farm, Kalugmanan, Manolo Fortich, Bukidnon
- **Year Established:** 2010
- **Name of CEO/President:** John Perrine
- **Key Products:** Highland Arabica Coffee
- **Key Customers:** Product marketed by Kalugmanan Agri-Development
- **Total No. of Employees:** 90 full time employees
- **Total Asset Value:** PhP 8.4 mln (2015)
- **Association/s:** Regional Coffee Industry Cluster

**GREEN PRACTICES**

- Use of biodegradable packaging materials
- Sloping Agricultural Land Technology with less fertilization and land degradation
- Indigenous People as community partners for organic farming and reforestation

Hineleban Foundation Inc. was established by UniFruitti Group of Philippines, an exporter of pineapple and banana chaired by Italian John Perrine, the Chairman Emeritus of the Hineleban Foundation. It was formed out of the intention to restore the environment and provide livelihood to the Lumads and the Bangsamoro. It is now engaged in indigenous communities through its program, Transformational Business Partnerships.

Hineleban is a word that came from the Talaandig-Higaunen tribe. It comes from the root word ‘heleb’ which means “the virtue to gather others towards oneself”. The Foundation is currently working in the reforestation of six mountain ranges in Bukidnon, namely: Pantaron Range, Kitanglad Mountain Range, Mount Kalatungan, Matigsalog Range, Bumbaran Range and Wao Range while also working on the livelihood development of indigenous people situated in each mountain range.

As part of the Foundation’s advocacy on reforestation, it has a 120-hectare nature sanctuary also called Hineleban Farm. This serves as the organization’s model site for its reforestation technology. In this farm is the Hineleban coffee processing facility. Hineleban coffee is organically grown and is planted by Hineleban’s indigenous farming communities. Planting of organic coffee forms part of the foundation’s livelihood program.

Hineleban is a member of the Regional Coffee Industry Cluster. It is also active in trade and business fairs such as its participation in SIAL ASEAN 2016, an international B2B food show held in Manila and in SM Coffee Festival in Cagayan de Oro.
COMMITMENT TO GREENING

“We deliberately contribute to the promotion of sustainable peace and development to empower communities and improve livelihoods; we actively pursue the restoration of degraded environments to ensure the sanctity of ecosystems.”

Hineleban Foundation Mission

PRODUCTION PROCESS

Once delivered to the facility, the coffee beans go through the following process:

**Floating**
After putting the coffee berries (or cherries) in water, those that float are rejected and are brought to the local market for processing.

**De-pulping**
This entails removing the berries’ pulp.

**Drying**
The berries are dried using the solar dryer or the mechanical dryer.

**Dehulling**
Husk is removed once the cherries are dried, turning them into coffee beans.

**Sorting**
Another round of quality check to remove rejects. These rejected beans are sold to other market.

**Roasting and Grinding**
The beans are roasted and grinded depending on the volume of order.

**Packaging**
The end product is packaged using biodegradable materials.
As earlier mentioned, the foundation is built upon caring for the environment. The organization has attended learning activities to improve their greening practices. It attended the Coffee Summit in General Santos City and the Organic Farming Training and the Trainer’s Program with ACDI/VOCA.

Below are the organization’s various greening efforts:

**WASTE**

*Use of biodegradable packaging material*

The Foundation hopes to minimize plastic waste by using biodegradable packaging materials sourced from Taiwan.

**Organic farming using SALT for coffee production**

Hineleban Foundation employs organic farming in its coffee bean production. According to them, the Indigenous Peoples (IPs) who supply their coffee beans engage in the Sloping Agricultural Land Technology (SALT) which the Foundation also taught the community. This is a farming technology that engages in reduced use of synthetic fertilizer. SALT also aids in arresting deforestation.

In a nutshell, SALT technology encourages planting of nitrogen-rich plants that help nourish the soil, as nitrogen is a key ingredient in fertilizers. When the soil is nourished, it is expected that soil erosion would also be minimized. Nitrogen-rich plants can be harvested as firewood or charcoal, a more eco-friendly option compared to the indiscriminate use of trees for fuel purposes.

Although SALT employs organic farming, there are some stages of the coffee tree planting that use synthetic fertilizer. One is when synthetic fertilizer is used for basal application. The other is during harvest time, to prevent the fruit from siphoning the nutrients of the plant. This way, the plant can still bear fruits in the succeeding months.
SOCIAL BENEFITS

Indigenous People (IP) as community partners for organic farming and reforestation. Aside from providing seedlings and buying coffee from the IP communities as a livelihood intervention, Hineleban Foundation carries with them Transformational Business Partnership program where they capacitate the IP communities. They buy fresh coffee berries at higher prices (PhP 15 to PhP 18/kg) compared to the traders (PhP 4 to 6/kg). Selling coffee serves as a secondary source of income for the IPs since in their farms where they employ the SALT farming technology, the IPs have their primary crops. Thus, the intervention of the foundation augments the income of the farmers aside from their primary crops.

The SALT technology training in the community included the advocacy of food sufficiency, with the Foundation teaching the IPs to plant their food – veering away from their usual practice of buying their food commercially. Such training has also taught the IP communities to use nitrogen-rich plants as renewable sources of firewood or charcoal, in the process teaching them to take care of the forest.

Another component of the intervention is values formation in areas like financial literacy and stewardship of nature.

In any intervention, Hineleban has been sensitive to the cultural and political dynamics in the area.

Thus, they conducted first the Participatory Cultural Impact Assessment (PCIA) where they facilitated the consensus of the community and mediated on disagreements within the community about the intervention (e.g. agree on which family will be the first recipient of the project).

Currently, they have partnered with these seven tribes in Bukidnon, who the LGUs also support, for the Transformational Business Partnership program:

- Bukidnon – Northern Bukidnon
- Talaandig – Central Bukidnon
- Higaunon – Northern Bukidnon
- Manobo – South Bukidnon
- Matigsalog – South Bukidnon
- Umayamnon – South Bukidnon
- Tigwahann – South Bukidnon
SUCCESS FACTORS

Hineleban believes that they have been successful not only in reforestation but in encouraging the seven tribes of Bukidnon to work in unison towards the upliftment of the quality of lives of the indigenous peoples in these tribes and the peaceful resolution of conflicts that arise between and among them. This may be attributed to the strong management and staff of Hineleban who have been devoted to attaining the purpose of the organization and have been passionate about assisting the indigenous communities.
LOOKING FORWARD

Hineleban Foundation noted that their foremost challenges was the need to manage the limited resources for their operations, as it faced financial and technological hindrances. The organization noted, however, that they can still improve by adopting an Integrated Pest Management technology in their coffee farming. They wished to learn from other practitioners from the industry. They also believe that they can significantly improve their production and processing through benchmarking and exposure with other coffee producers and processors.

AREAS OF COLLABORATION AND SUPPORT

Hineleban has partnered with DTI for a coffee roasting shared service facility. However, the Foundation hopes for further assistance from the government through provision of tried and tested high quality coffee processing machinery.
Fresh Start Organics was established in 2005 by Francine and Ramon Uy, Jr. From its humble beginnings as a small company selling organic fertilizer, now known as Fresh Start Organic Blend Fertilizer and Vermicastings, it eventually expanded into a 2.8-hectare farm planted to organically grow lettuce, herbs, and vegetables.

It ventured further into the production and sale of personal care and home products such as mouthwash, hand sanitizers, soaps, and natural insect repellent.

Two restaurants carry the produce grown from the Fresh Start farm. The company is “a staunch supporter of the organic movement,” according to the website. From this movement stems three very important advocacies: good health, fair trade, and environmental conservation.

Truly admirable and worth noting were the advocacy efforts and commitment of the owners, as well as their business acumen. There may be some value in learning more about their vermicomposting, their use of solar panels (albeit newly installed), and practice of fair trade.

However, since coffee made only a small part of the whole business, data on the cost benefits of greening in this cluster was deemed negligible.
COMMITMENT TO GREENING

Their company mission states that Fresh Start is committed to the following:

1. Educating both consumers and producers about:
   a. the importance of environmental protection through sustainable farming systems and methods; and
   b. the value of supporting small farmers in their endeavor to use sustainable farming systems and methods.

2. Being an example of an environmentally and socially responsible business that is also profitable.

3. Promoting and preserving the family farming culture through organic agriculture.

4. Distributing and selling the highest quality of organic foods and other natural products.

5. Promoting locally grown food and products whose purchase will support the country’s local economy.

PRODUCTION PROCESS

Fresh Start began roasting coffee in 2010, sourcing beans from farmers who engaged in organic practices.

The business follows this production process:

**Sorting**
The beans are either sorted by hand, or through the use of a bicycle-like contraption that does not run on batteries or electricity.

**Roasting**
The beans are roasted using an LPG roasting machine.

**Storing and resting**
The beans are then stored in bins for a minimum of two weeks to release their flavor.

**Packaging**
They are then transferred to another room for packaging. They are packaged manually, using a heat sealer.
GREENING PRACTICES AND THEIR BENEFITS

While it is a large company compared to other MSMEs in this study, and its environment-friendly practices are widespread, Fresh Start itself does not grow coffee. Furthermore, its coffee roasting facilities make up a very miniscule part of the whole business.

For coffee, the following greening processes are followed:

**ENERGY**

*Manual packing of beans*

The beans are packaged by hand. No machines are used for this step.

*Minimal use of heat*

Only one heat sealer is used during the packaging stage, to minimize use of electricity.

For the farm, however, a much higher level of greening was found:

**ENERGY**

*Use of solar panels*

Solar panels, totaling 12, have been installed in the Fresh Start Organics farm. These are being used to power the water system. Including the installation of a water system (tank, deep well, pump), the total cost was PhP 1,200,000.00. Return on these investments is expected to be realized in two years. Before the installation of the solar panels, 200 liters of diesel are consumed for the water pump and for the rotator once or twice a year.

**WATER**

*Installation of 20,000 liter water tank*

A water storage and rainwater catchment ensures that the farm always has available water.
LOOKING FORWARD

As Fresh Start’s business is based on natural resources, they are at the mercy of extreme climate changes. When they experience a dip in sales or yield in their organic produce, or when coffee farmers are unable to reach demand, the high sales of their vermicompost products make up for the lack.

Fresh Start is also looking forward to better returns in order to be able to apply for more certifications and analyses of their products, as these can be costly and time-consuming.

AREAS OF COLLABORATION AND SUPPORT

The company acknowledged the support given to them by DTI, particularly in packaging. They mention that more support can be supplied through the building of greenhouses and rain shelters for the company’s more delicate crops, such as lettuce.
99% of the total banana export earnings are comprised of fresh bananas (Cavendish) and banana chips (Cardava).

Processed fruits are classified into the following:

- Jams, jellies, marmalades and processed/preserved fruits
- Juices, purees and concentrates
- Dried or dehydrated, drained glazed and crystallized fruits

There are about 35 existing banana chips processors nationwide with individual capacities ranging from 20 to 60 tons per day.

Most processing plants in the Philippines are located in the National Capital Region, Regions IV, VII, X, and XI.

Banana is the leading fruit grown in the country.

Popular varieties of banana grown in the country are Cavendish, Saba/Cardava, Lacatan, Latundan, Bungulan, and Señorita.
PROCESSED FRUITS (Banana)
Villa Socorro is located in 11 hectares of land in Pagsanjan, Laguna. It was started by Marciano Aaron, a former corporate executive, who envisioned an eco-friendly village where one could enjoy all the aspects of green living, like living on a farm, enjoying nature, and seeing how banana chips are manufactured in an environmentally responsible manner. Aaron’s prime advocacy is to provide livelihood to the community, which he does by teaching and employing eco-friendly practices.

Aaron first planted mahogany, narra, and other indigenous trees when he bought the farm in 1998. These are now all fully grown and have formed a forest with a thriving eco-system. In 2006, he retired and decided to be hands-on with the farm. As he constructed the bed and breakfast facility, he planted banana trees with the intention of having bananas as his primary source of income for the farm. The business eventually evolved into the manufacturing of banana chips — a much more viable business option.

Today, Villa Socorro processes up to 16,000 bananas into banana chips daily. He sells these to his son, who in turn is in charge of marketing and selling the chips to food chains, supermarkets, and export markets. Approximately 70% of the products are exported; 30% is sold locally. The raw material (banana) is sourced from the local farmers at PhP 1.25 per piece, without the involvement of middle managers. This has boosted the community’s standard of living and contributed to the improvement of the quality of their lives.

**OVERVIEW**

<table>
<thead>
<tr>
<th>Location:</th>
<th>Laguna, Region IV-A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>Brgy. Dingin, Pagsanjan, Laguna</td>
</tr>
<tr>
<td>Year Established:</td>
<td>2006</td>
</tr>
<tr>
<td>Name of CEO/President:</td>
<td>Marciano Aaron</td>
</tr>
<tr>
<td>Key Products:</td>
<td>Banana chips, farm resort facilities</td>
</tr>
<tr>
<td>Key Customers:</td>
<td>Via a third party/buyer: food chains (Binalot, Dells), gift shops, SM (Kultura, Snack Exchange, supermarkets)</td>
</tr>
<tr>
<td>Total No. of Employees:</td>
<td>25</td>
</tr>
<tr>
<td>Total Revenue (2016):</td>
<td>PhP 20 mln</td>
</tr>
<tr>
<td>Total Asset Value:</td>
<td>PhP 7 mln (PhP 2 mln - working capital: packaging, finished goods for inventory; PhP 5 mln - production plant: building and equipment)</td>
</tr>
<tr>
<td>Market:</td>
<td>Local and overseas</td>
</tr>
</tbody>
</table>

**GREEN PRACTICES**

- Reuse of rice husks as fuel for the burners
- Reuse of discarded banana peels as fertilizers/animal feed for the farm
- Reuse of wood from the fallen trees to build furniture
- Reuse of rice sacks to plant yam
- Rainwater harvesting

Villa Socorro is in charge of marketing and selling the chips to food chains, supermarkets, and export markets. Approximately 70% of the products are exported; 30% is sold locally. The raw material (banana) is sourced from the local farmers at PhP 1.25 per piece, without the involvement of middle managers. This has boosted the community’s standard of living and contributed to the improvement of the quality of their lives.
PRODUCTION PROCESS

**Harvesting/buying**
Banana farmers from the community drop off their harvests daily at the buying station. Villa Socorro buys each banana at PhP 1.25 per piece. Bananas are grown on organic farms.

**Sorting**
Bananas that are too small or too ripe for making banana chips are set aside. These rejects will be later made into banana cue or banana cider, ensuring no fruits go to waste.

**Washing**
The selected bananas are washed in water from the rainwater catchment. This water is collected in secondhand tanks. Rainwater has a ph level of 6, which makes it a perfect washing agent for the bananas. The water is then used to water the plants within Villa Socorro.

**Peeling**
The washed bananas are then brought to a room for peeling. Peels are gathered into a heap, to be used as compost or animal feed.

**Cutting**
The bananas are then cut into uniform sizes, using a custom-made slicing board. This is done in the same environment as the peeling, cooking, and packaging.

**Cooking**
The sliced bananas are fried in oil over furnaces that are fired with discarded rice hull. The carbonized rice hull can be made into charcoal briquettes or as abrasives in toothpaste.

**Packaging**
They are then brought into a sterile room for packaging into foil bags, and then sealed using a heat sealer.
GREENING PRACTICES AND THEIR BENEFITS

To evaluate the benefits of engaging in greening practices, below is a cost-savings comparison of selected greening measures in the firm. Selection is based on the Environmental Impact Value Chain and the Cost-Benefit Analysis.

ENERGY

Reuse of rice husks as fuel for the burners

Rice husks or hull, which is considered waste by rice farmers, are used to fire up the stoves instead of gas or electricity in Villa Socorro.

Villa Socorro spent PhP 200,000 (US$40,000) in building the rice husk burner and spends around PhP 50,000 (US$1,000) for the annual maintenance costs. Through replacement of biomass as fuel instead of LPG, Villa Socorro saves as much as PhP 154,176 (US$3,083) annually. With rice husks, the firm only spends PhP 4,224 (US$85) as opposed to PhP 158,400 (US$3,168) if it uses LPG as a fuel.

<table>
<thead>
<tr>
<th>Using Clean Fuel (Rice Husks)</th>
<th>Rice Husk as fuel</th>
<th>LPG as fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of fuel</td>
<td>PhP 8.00 / 50 kg</td>
<td>PhP 550.00 / 11 kg LPG cylinder</td>
</tr>
<tr>
<td>Cost per unit</td>
<td>PhP 0.16 / kg</td>
<td>PhP 50.00 / kg</td>
</tr>
<tr>
<td>Total consumption / day</td>
<td>100.00 kg</td>
<td>12.00 kg</td>
</tr>
<tr>
<td>Cost of consumption / day</td>
<td>PhP 16.00</td>
<td>PhP 600.00</td>
</tr>
<tr>
<td>Cost of consumption / month</td>
<td>PhP 352.00</td>
<td>PhP 13,200.00</td>
</tr>
<tr>
<td>(22 days operations / month)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of consumption / year</td>
<td>PhP 4,224.00</td>
<td>PhP 158,400.00</td>
</tr>
<tr>
<td>Annual Savings (Financial)</td>
<td>PhP 154,176.00</td>
<td></td>
</tr>
<tr>
<td>Annual Savings (LPG)</td>
<td>3,168.00 kg</td>
<td></td>
</tr>
</tbody>
</table>
Replacement of fuel is highly profitable, with the investment return from energy savings in fuel switch over five years is PhP 289,244.50 (US$5,785) and over ten years is PhP 595,152.21 (US$11,903) and IRR or annual profitability is 35%. Benefits are 1.89 to 2.34 times higher than costs incurred.

WASTE
Reuse of discarded banana peels as fertilizers/animal feed for the farm
There is no waste from bananas that cannot be reused. Banana peels can be used as vermicompost, or feed for the animals in Villa Socorro or the surrounding farms.

The table below shows the comparison of costs if one were to purchase the equivalent amount of fertilizer, or urea, for the farm. A 50 kg sack of urea can cost up to PhP 1,173, compared to no cost of banana peels. With peels from 16,000 bananas being collected daily, a monthly equivalent of 1,280 kg of fertilizer can be produced. With no cost involved in using discarded banana peels, an annual savings of PhP 360,345 can be computed.

<table>
<thead>
<tr>
<th>Banana Peel as fertilizer</th>
<th>Using Banana Peel</th>
<th>Using Purchased Fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of fertilizer</td>
<td>PhP 0.00 raw material waste</td>
<td>PhP 1,173.00 / 50 kg of urea</td>
</tr>
<tr>
<td>Total amount collected per month</td>
<td>1,280.00 kg</td>
<td>1,280.00 kg</td>
</tr>
<tr>
<td>Cost of consumption / month</td>
<td>PhP 0.00</td>
<td>PhP 30,028.80</td>
</tr>
<tr>
<td>Cost of consumption / year</td>
<td>PhP 0.00</td>
<td>PhP 360,345.60</td>
</tr>
<tr>
<td>Annual Savings (Financial)</td>
<td>PhP 360,345.60</td>
<td></td>
</tr>
<tr>
<td>Annual Savings (NPK based fertilizers)</td>
<td>15,360.00 kg</td>
<td></td>
</tr>
</tbody>
</table>

WASTE
Reuse of wood from the fallen trees to build furniture
These are used internally and can be sold in the external market. Wood from trees that were felled in recent typhoons are converted into tables, chairs, beds, and dressers for the onsite cottages, restaurant, and office, doing away with the need for importation and lessening carbon footprint.

WASTE
Reuse of rice sacks to plant yam
A current experiment ongoing in Villa Socorro is using old rice sacks used for hauling rice husks as planters for yam and other root crops. This is an alternative to banana trees, as these crops are “typhoon-proof” as they are not exposed to wind and rain, and can still provide a source of income if there is a banana shortage (e.g. yam chips, jam).
WATER
Rainwater harvesting

Two secondhand tanks onsite catch up to 1,500 liters of rain each. This is used to wash the bananas, and to water the plants in the farm.

Villa Socorro was wise to invest in two secondhand tanks to serve as its store rainwater. Rainwater is free of cost, therefore saving the company PhP 14,400 (US$288) yearly, compared to current local water tariff.

<table>
<thead>
<tr>
<th>Rainwater Catchment</th>
<th>Using Rainwater</th>
<th>Using Municipal Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of water</td>
<td>PhP 0.00 free sourcing</td>
<td>PhP 100.00 / cu.m</td>
</tr>
<tr>
<td>Capacity of rainwater catchment tank</td>
<td>1.50 cu.m</td>
<td>1.50 cu.m</td>
</tr>
<tr>
<td>Total amount of rainwater collected/ month</td>
<td>6.00 cu.m</td>
<td>6.00 cu.m</td>
</tr>
<tr>
<td>No. of rainwater catchment tanks</td>
<td>2.00 units</td>
<td>2.00 units</td>
</tr>
<tr>
<td>Cost of consumption / month</td>
<td>PhP 0.00</td>
<td>PhP 1,200.00</td>
</tr>
<tr>
<td>Cost of consumption / year</td>
<td>PhP 0.00</td>
<td>PhP 14,400.00</td>
</tr>
<tr>
<td>Annual Savings (Financial)</td>
<td>PhP 14,400.00</td>
<td></td>
</tr>
<tr>
<td>Annual Savings (Municipal water)</td>
<td>72.00 cu.m</td>
<td></td>
</tr>
</tbody>
</table>

Two rainwater catchment tanks cost PhP 60,000 (US$1,100) and requires PhP 5,000 (US$100) for its maintenance annually.

Water cost savings from the rainwater harvesting yields savings is PhP 96,240.70 (US$1,925) over ten years and Internal Rate of Return (IRR) or profitability of the investment is 22%.
SWOT ANALYSIS

Strengths

• **Track record.** Villa Socorro has been on the forefront of introducing greening practices in the province since 1998.

• **Openness to new knowledge, technology, and networking with like-minded advocates.**

• **The owner’s corporate experience.** A former executive of a multinational company, the owner has a vast background in Chemistry, which had helped him identify opportunities with his raw material, by-products, and other auxiliary materials; a managerial background, which had helped him set up orderly processes and operations; and a marketing background, which had helped him promote his products and reach a wider audience with more successful rates of return.

• **The business is natural-resource dependent.** The source of its raw materials remains abundant and readily available. With proper planning, the company can also program the natural and sustained replenishment of these raw materials.

Weakness

• **The owner’s corporate experience.** While this has been a source of reassurance for the owner, it has also served as a source of frustration. His tried-and-tested methods in the corporate world sometimes did not work in the more fluid and relations-oriented rural environment. Thus, the owner needs to do some ‘unlearning’ and retooling.

• **Natural-resource dependent.** Like any other agri-businesses, Villa Socorro is at the mercy of the climate and the weather. Measures have to be in place to enable the company to manage the impact of these natural occurrences on the business operation.

Threats

• **Climate.** Forces of nature are really beyond the control of agri-businesses like Villa Socorro.

• **Pests.** If not managed well, infestation could drastically reduce the business’s productivity.

Opportunities

• **Export market.** This can be explored when their supply of banana increases to at least 24,000 pieces a day.

• **Supplementary business that are “climate-proof”.** For example: yams, kamote (sweet potato), and ube — root crops that grow underground are not affected by strong winds and rain.

• **Rice husk converted into and used as fertilizer, charcoal briskets, abrasives for toothpaste and body scrubs, and water filters.**

• **Banana peels converted to animal feed** can be sold outside, or used to feed own animals on farm, binders for vegan burgers and vermicompost.

• **Banana by-products.** The smaller ones or ripe ones that cannot be used for banana chips can be made into:
  • banana cue
  • banana cider vinegar
  • banana wine
  • banana powder for cake mix
  Other possibilities are:
  • Banana juice can be made into enzymes.
  • Banana trunks can be made into eco-friendly cardboard and packaging material.
  • Banana leaves can be made into more durable, but biodegradable disposable plates and packaging material.
  • Banana leaves and trunks can be used as beds for mushroom growing.
SUCCESS FACTORS

- The owner’s vision and tenacity in establishing an integrative community that can be enjoyed by visitors and residents alike.
- Exposure to the benefits of greening and the owner’s willingness to learn more through networking.
- Advocacy of providing jobs and enabling farmers.

LIMITATIONS AND CHALLENGES

- Commercial viability of the product and its potential offshoots. As consumers begin to be more open and appreciative of green products, this interest is expected to grow. Products that have a lower impact on the environment are beginning to be an integral part of competitiveness. As more and more people become cognizant of the link between consumption and the environment, the pressure on companies to produce green products becomes stronger.
- Unpredictable weather patterns. Villa Socorro’s key product depends heavily on agriculture, and no other industry is more dependent on predictable weather and climate patterns brought about by climate change. Practical and sensible ways to address this challenge must be reached. This entails time, expense, and external technical help. These should not be made accessible to the owner alone, but to all the farmers in the community. This involves education and training, and establishment of certain tools such as longer-term weather and climate forecasting.
- Pests. Climate change not only brings about extreme and unpredictable weather patterns, but more plant diseases, with more prevalent pests and fungal pathogens. Smaller-scale farmers, such as those in Villa Socorro’s community, are more vulnerable if pests attack, as their main source of livelihood (banana trees) will be at risk. Research and new technologies for pest-resistant banana strains can help adapt to these changes. In extreme cases, some farmers might have to determine if bananas will be feasible in the long run, or if a diversification of crops is needed. Research can allow farmers to discover a variety of banana that can adapt better to the environment and to pests.
LOOKING FORWARD

**Increase opportunities for learning.** Hold more trainings for the community on how greening can contribute to savings and be used to create more earning opportunities.

**Provide more access to funds.** Make funding available for more technology and input from experts. This is to pursue the opportunities listed herein.

**Encourage good work and green initiatives.** Incentives can be given to businesses that implement environment-friendly practices. These incentives can also be in the form of giving them access to green technologies that they cannot yet afford (e.g. solar panels).

**Harmonize efforts.** Government agencies, LGUs, and business owners should collaborate and communicate on greening initiatives. This will increase consciousness about environment-friendly practices. A synergized approach increases chances of success, realize a wider buy-in among the community, and create a more significant impact that will be felt and enjoyed even by non-stakeholders.

AREAS OF COLLABORATION AND SUPPORT

DTI’s services helped solidify their plans into reality, such as the agency’s seminars and trainings.

It gave the company the opportunity and venue to network with other like-minded farmers and entrepreneurs.

DTI provided “shared learning” — the sharing of best practices and technology, such as laboratories in Laguna Polytechnic University that have equipment Villa Socorro cannot yet afford but are welcome to use.
Real’s Food Products had no choice but to adopt green measures, as the business has been based in Palawan where environmental laws are strict and very much adhered to. The nature of the business itself is also very environment-friendly, as it sources only naturally-grown bananas and taro — which is grown in the wild — and naturally-grown honey.

The company also has a healthy social bottom line, as it has eight regular employees who were hired from an impoverished village in a nearby island. The number of hired help depends on the demand of the season. They took turns attending ProGED workshops.

A CSR program has not been formally instituted yet, but the owner himself has started giving some of the households in the village their own “stock” of goods to sell so they could experience marketing and distribution on their own.
COMMITMENT TO GREENING

“As long as I live I will make sure that whatever I do, it will not harm our environment. Everything we do about our environment — the way we take care of it and nurture it — affects the next generation. Greening is very important nowadays, especially when we see the destructive effects of selfish businesses. My business depends on how healthy the environment is. The effects of climate change and bad farming practices affect the banana harvest, and therefore our production, and therefore, it also affects our financial freedom.”

Rey Palermo

PRODUCTION PROCESS

Real’s Food Products has observed a very straightforward manufacturing process – all done in a small room at the back of the owners’ home.

**Sourcing and sorting**
The owners buy their bananas directly from farmers. During lean season, they also buy from the market. They choose only bananas of certain size and ripeness.

**Washing**
The bananas are then washed in water from the city source. Wastewater is used to water the plants in their compound.

**Peeling**
Peels are gathered and given away as hog feed and compost.

**Cutting**
The bananas are manually cut into uniform size.

**Cooking**
The sliced bananas are fried in coconut oil over LPG burners. There is no wastage from the oil used, as it can be used twice and is absorbed by the bananas upon second fry. The oil containers are reused as trash cans for the peels.

**Packaging**
The bananas are then packaged in plastic bags, and then sealed using a heat sealer.
ENERGY
Reduction of LPG consumption
The consumption of LPG for the frying process has been reduced by lowering the oil temperature from 180°C to 120°C. This has not only reduced the consumption of LPG but also has improved the quality of the food product.

WASTE
Reuse of banana peel waste
The waste banana peels are disposed of in two ways:
1. Given to a farm as pig feed
2. Compost for plants

SUCCESS FACTORS
• The owner’s commitment to producing quality products. For a very humble product, the owners are serious about quality and taste. They have taken no shortcuts in making sure they achieve the right amount of sweetness and crunchiness, by measuring the temperature of the oil for frying. This formula and temperature have been standardized for all their products.

• The owners’ openness and eagerness to learn, invest, and adopt in more greening measures. They have regularly attended all free trainings given by DTI. They plan to invest in an e-tricycle to help distribute their product around Puerto Princesa City. They also want to eventually own their own organic banana plantation, and to have a factory where all machinery are run using solar energy. Another investment they are keen on pursuing is a new packaging facility. Sheepish about using plastic, they have experimented with the use of carton and paper packaging, but it affected product quality.
COROLLARY ACTIVITY

Furniture-making. Real’s Food discovered another revenue stream after a typhoon felled many of its trees within the compound. The branches and logs — which could have otherwise been discarded — were collected and made into tables, chairs, dressers, and hangers for use in the resort. Excess pieces were sold.

LOOKING FORWARD

- **Business expansion.** Due to the company’s small size, Real’s Food’s owners sometimes pitch in the manual work needed by their operations. This has prevented them from devoting more time to do marketing, research, and business development.
- **Raising funds.** The owners have experienced challenges in acquiring certification from the Food and Drug Administration (FDA), as this required extra expense. Plans for extra machinery for slicing and packaging, which are needed to expand operations, have also been put on hold. However, the owners are optimistic that a spike in sales this 2017 will enable them to meet these goals.

AREA OF COLLABORATION AND SUPPORT

- **Financial assistance.** The owners know the importance of getting an FDA license. Given the cost it entails, they have expressed hopes of securing financial assistance from DTI.
Bahay Kalipay is a wellness spa and retreat house. Its main business is offering wellness packages for detoxification to help customers jumpstart a healthy lifestyle. It describes itself as "a self-sustainable community of healers, artists, gardeners, teachers, and earth-conscious people from around the world — some permanent, some in transit". As such, it offers lodging, beach tours, massage, yoga, meditation, and other similar activities. While healthy food is a big part of the Bahay Kalipay experience, fruit and grains processing takes up a very small part of its business.

**OVERVIEW**

- **Location:** Puerto Princesa, Palawan, Region IV-B
- **Address:** 38E Hagedorn Road Extension, Brgy. San Pedro, Puerto Princesa, Palawan
- **Year Established:** 2006
- **Name of CEO/President:** Lisette Gregorio
- **Key Products:** Wellness retreats
- **Key Customers:** Local and foreign tourists
- **Total No. of Employees:** 12
- **Market:** Local and international

**GREEN PRACTICES**

- Waste segregation
- Conversion of biodegradable waste to compost
- Excess waste is given out to nearby farms as compost or feed
- Reuse of water from washrooms and pantry to water plants

**PRODUCTION PROCESS**

The dehydrated fruits and grains are produced in the spa's kitchen, using a small dehydrator. These are prepared for the guests, which can number up to 20 at a given time.

**Sourcing**
Organic fruits and vegetables are bought from reliable vendors.

**Dehydrating**
The prepared mixture is formed and placed in the dehydrating machine. These rid the fruits and vegetables of moisture for longer keeping.

**Storing**
They are then placed in plastic containers until consumption.

**Blending/Mixing**
They are mixed with spices, sweeteners, and herbs.
Best Green Business Practices among MSMEs

Dehydrating

The prepared mixture is formed and placed in the dehydrating machine. These rid the fruits and vegetables of moisture for longer keeping.

GREENING PRACTICES AND THEIR BENEFITS

- The owner’s steadfast commitment to a healthy lifestyle via an organic and raw food diet has served their business well.
- The owner’s ability to secure the buy-in of the community also benefited the business.
- The increasing global interest in back-to-basic diets and simpler living also augurs well for the business.

SUCCESS FACTORS

- The owner’s steadfast commitment to a healthy lifestyle via an organic and raw food diet has served their business well.
- The owner’s ability to secure the buy-in of the community also benefited the business.
- The increasing global interest in back-to-basic diets and simpler living also augurs well for the business.

LOOKING FORWARD

Focused and loyal market. The company’s strict adherence to a raw foods lifestyle — one of the few facilities in the country that does so — ensures that it attracts a certain kind of returning customer.

COMMITMENT TO GREENING

“Harmony with earth, we come from all walks of life to be here as one.”

Lisette Gregorio
Aloha House is a non-stock, non-profit, non-government organization and charitable mission located in Palawan, Philippines. It was primarily set up as a ministry base in 1998, and is accredited by the Department of Social Welfare and Development (DSWD) as a Child Caring, Child Placing, and Community Serving Agency.

The agency is proactive in supplying the staff and children in the care of Aloha Natural Farm with chemical-free nutrient dense food, hence its focus on sustainably-grown food. The owners, Keith and Narcy Mikkelson, along with their son Archie, are knowledgeable in various aspects of farm work, marketing, management, and product development.

The Aloha Natural Farm consists of 1.3 hectares of vegetables and herbs and 1.5 hectares of pasture, fish ponds, water catchment, and orchard. Located within a 2,800-square meter area are the orphanage, various livestock housing, aquaponic center, creamery and cheese cave, as well as dorms and training room for students.

While Aloha Natural Farm does not fall under the identified focus sectors for this study, it however implements various greening practices: Bokashi composting, use of a rocket stove, aquaponics, and organic farming.

<table>
<thead>
<tr>
<th>Location:</th>
<th>Puerto Princesa, Palawan, Region IV-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>Mitra Road, Sta. Monica, Puerto Princesa, Palawan</td>
</tr>
<tr>
<td>Name of CEO/President:</td>
<td>Keith and Narcy Mikkelson</td>
</tr>
<tr>
<td>Key Products:</td>
<td>EM1 micro-organisms, bokashi compost, vermiculture, retreats on sustainable agriculture</td>
</tr>
<tr>
<td>Key Customers:</td>
<td>Agriculturists</td>
</tr>
<tr>
<td>Total No. of Employees:</td>
<td>12 full time employees</td>
</tr>
<tr>
<td>Market:</td>
<td>Local, regional, national</td>
</tr>
<tr>
<td>Certification:</td>
<td>Organic Certification of the Philippines</td>
</tr>
</tbody>
</table>

**COMMITMENT TO GREENING**

“Living with a land ethic that builds people, soils, food, ecology and the planet.”

Keith Mikkelson
GREENING PRACTICES AND THEIR BENEFITS

WATER

Rainwater harvesting
Aloha Natural Farm also stores rainwater in tanks and uses it to water the plants on the farm.

Use of waste stream
The waste stream is used by Aloha Natural Farm to compost livestock feed and grey water treatment for irrigation of fruit trees. Fish are raised in a closed loop circulating system where no polluted water is released to the environment. The fish feed is generated within the farm by utilizing culled fish from grading of fingerlings, duck weed and azolla production, algae and daphnia culture.

Use of Effective Micro-Organisms (EM1)
Mixed with rice water, these microbes have been proven to improve the soil, increase plant health and yield, and help keep pests away.

Use of aquaponics system
An aquaponics system uses the water in which aquatic animals are raised, usually fish such as tilapia or catfish. The water, enriched with nutrients from their waste, is used to irrigate and fertilize crops that are grown in the same system. Roots of the crops, as well as other introduced media, help filter the water, which in turn supports the aquatic animals.

Bokashi composting
Aloha Natural Farm also uses Bokashi composting, an anaerobic process that relies on inoculated bran to ferment kitchen waste, including meat and dairy, into a safe soil builder and nutrient-rich tea for plants.

Use of rocket stove
A rocket stove is an efficient and portable hot burning stove that uses wood broken up into small pieces. Fuel is burned in a simple combustion chamber containing an insulated vertical chimney, which ensures almost complete combustion prior to the flames’ reaching the cooking surface.

SUCCESS FACTORS

• The owners’ enthusiasm and penchant for research. They take full advantage of the information readily available to them, whether it be from books, the Internet, or discussion with guests and experts who share the same philosophy.

• Willingness to share information. They train and host farmer interns and anyone interested in sustainable agriculture and permaculture design. This further widens their circles and creates a network that builds upon one another’s knowledge and technology.

• The owners’ “big picture” approach to land. To their students, they teach “more than just technique; they show the big picture. Our interns can learn value in providing quality food in a sustainable operation.”

LOOKING FORWARD

By taking care of the land and sharing their knowledge about sustainable agriculture, permaculture, and soil health, the owners of Aloha contribute to a future in which chemicals might no longer be needed — or at least used to a minimum — to fight off pests and disease.
Workers in the industry are predominantly female (58%); they handle the cleaning, cooking, and packing stages in processing pili nuts. The male workers (42%) are mainly in charge of harvest, delivery, and de-shelling.

The Bicol region plays a significant role in the country’s pili industry. The Bureau of Agricultural Statistics (BAS 2015) reports that the region accounts for more than 80% of the total number of pili fruit bearing trees in the Philippines.

The bulk supply of raw pili nuts comes from the provinces of Sorsogon and Albay (BAS 2015).

Most pili farmers attest to the fact that the pili is a low-maintenance crop. It only needs pruning from time to time, requiring minimal fertilizers or even none at all.

Known for its unique taste, pili nut kernel is processed into various food items such as glazed crispy pili, pili tart, salted pili, roasted pili, and recently, pili pulp oil.
PROCESSED NUTS (Pili)
J. Emmanuel Pastries (JEP) started as a hobby for the owner, Mrs. Lydia Lomibao. She used to have a desk job in the business district of Makati and made homemade pili tarts as “pasalubong” (gifts) for her colleagues. She soon started receiving orders. In 1995, she got married and she and her husband, Joseph, decided to take her pili tarts hobby to the next level. They used the PhP 500 pesos left from their wedding as a starting capital. JEP has since grown and in 2015, its gross sales hit PhP 43 million. It is currently a multi-awarded enterprise and is now producing 25 pili-based processed products exported to other countries. They have partnered with the DTI which has helped them through various market linkage activities via trade fairs in and out of the country, as well as trainings to improve production and operations. Among the various awards won by JEP is 2007 Gawad Saka Award as Outstanding High Value Commercial Processor; 2000 Best in Pili Packaging Contest and 2012 Best SETUP adopter by the Department of Science and Technology. The owners of the firm have also won awards for entrepreneurship. Among the most recent is the Halyao Awards of 2016 and Go Negosyo’s Inspiring Filipina Entrepreneurs 2017. JEP’s product is Halal certified.

JEP is currently at the forefront of the project coined as “PILipinas”, partnering with key government officials and selected local government units. The project aims to solidify and expand the supply base of pili by assisting pili growers and farmers. JEP provides support in trainings on organic farming and planting inputs. Through this, the pili growers and farmers will be strengthened, resulting to a stable and vibrant pili industry for Camarines Sur.

GREEN PRACTICES
- Use of pili shells as fuel instead of LPG
- Light bulb replacement (CFL bulb into LED and natural lighting)
- Use of biodegradable sando bags
- Reuse of rejected testa as organic fertilizer
- PILIPinas
- Organic farming

OVERVIEW

| Location: | Camarines Sur, Region V |
| Address: | 178 Jacana St. RJ Village, Haring, Canaman, Camarines Sur |
| Year Established: | 1995 |
| Name of CEO/President: | Maria Lydia Lomibao |
| Key Products: | Pili-based pastries |
| Key Customers: | SM Stores, Metro Gaisano and Robinsons (Luzon-wide), and five stores in Naga City and Pili, Camarines Sur; Exporting to Japan, USA and Germany; used to export to South Korea and Hongkong |
| Total No. of Employees: | 65 employees for pili pastries processing only |
| Total Revenue: | PhP 40 mln (2016) |
| Total Asset Value: | PhP 32 mln (2016) |
| Certifications & Recognitions: | • 2007 Gawad Saka Award as Outstanding High Value Commercial Processor • 2000 Best in Pili Packaging • 2012 Best SETUP Adopter • Halyao Awards of 2016 • Go Negosyo’s Inspiring Filipina Entrepreneurs 2017 • Halal Certified |
| Associations: | • Orgullo Kan Bicol • Bicol Processors and Manufacturers Association, Camarines Sur (BPMACS) |

J. Emmanuel Pastries (JEP) started as a hobby for the owner, Mrs. Lydia Lomibao. She used to have a desk job in the business district of Makati and made homemade pili tarts as “pasalubong” (gifts) for her colleagues. She soon started receiving orders. In 1995, she got married and she and her husband, Joseph, decided to take her pili tarts hobby to the next level. They used the PhP 500 pesos left from their wedding as a starting capital.

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Their processing facility and store, called House of Pili, has been a destination for educational tours from various universities like Xavier School, Ateneo de Naga University, and University of Nueva Caceres.
COMMITMENT TO GREENING

“Securing the future of our children is every parent’s goal; we go into business with this in mind. Securing the future not only of our own children but the future of the entire human race through pro-environment practices implemented now elevates our individual aspirations and further strengthens our oneness with each and every member of humanity.

It is a noble goal, difficult at first but doable; earning income while protecting the planet, ensuring the future now.”

Maria Lydia Lomibao

PRODUCTION PROCESS

With the need for volume due to their export-level production, JEP buys pili from all sources — from farmers to traders. Mostly, they buy raw dry pili without the shells.

Blanching
The raw pili is placed in hot water to soften the outer covering, called “testa,” for easier peeling. The pili shells are used as fuel instead of LPG.

Peeling
The testa is removed and reused as organic fertilizer. Current research is being done on converting rejected pili to oil as moisturizer or massage oil.

Grinding
The pili is ground. This will be used in cooking the tarts and cookies.

Frying/Roasting of whole kernel
This is for pili products that use the whole pili nut.

Sealing/Packaging
The finished products are placed in biodegradable plastic bag that bears the House of Pili trademark.
GREENING PRACTICES AND THEIR BENEFITS

Not only does JEP implement Good Manufacturing Practices (GMP) in its facility, the enterprise is also employing greening practices in processing pili.

Greening in the firm stems from the conviction of the owner who values caring for the environment. As key enabler, management has made everyone in the organization aware of environmental problems and what each of them can do as responsible stewards. They also understand that going green can save costs.

JEP is also part of the ProGED project. Its involvement in the project has enriched its knowledge on greening practices and has influenced the way JEP has approached energy conservation. It also helped the company connect with a network of like-minded people and increased their prospects for their business.

Additionally, JEP underwent greening-oriented trainings with the Department of Agriculture, Department of Trade and Industry and Department of Science and Technology.
Aside from reusing of materials such as cartons used as rugs and sacks, and pails as trash cans, below are some of the practices employed by JEP in their manufacturing process:

ENERGY

Use of pili shells as fuel for blanching instead of LPG

Despite deliberate efforts to buy raw, shelled pili, JEP still receives about 20% of its pili in-shell. Conscious of saving costs and minimizing waste, JEP has made use of these pili shells as fuel for blanching, serving as alternative to LPG. This initiative was influenced by an exposure trip to Japan for the International Center for Environmental Technology Transfer under the auspices of the Japan Ministry of Economy Trade and Industry.

A cost-benefit analysis was conducted comparing costs incurred between pili shells and LPG as fuel. Factoring into the amount of pili shells and LPG per kilogram, consumption amount per day and per month, the data showed JEP's annual savings with this greening practice to be PhP 21,813.00 (US$436.26). In addition, the company is also reducing the use of energy as such greening technology enables them to not use 80.67 kilograms of LPG in a year.

<table>
<thead>
<tr>
<th>Using Clean Fuel (Pili Shells)</th>
<th>Pili Shell as fuel</th>
<th>LPG as fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of fuel</td>
<td>PhP 3,650.00 / 400 kg of pili shells</td>
<td>PhP 550.00 / 11 kg LPG cylinder</td>
</tr>
<tr>
<td>Cost per unit</td>
<td>PhP 9.13 / kg</td>
<td>PhP 50.00 / kg</td>
</tr>
<tr>
<td>Total consumption / day</td>
<td>3.00 kg</td>
<td>3.67 kg</td>
</tr>
<tr>
<td>Cost of consumption / day</td>
<td>PhP 27.38</td>
<td>PhP 110.00</td>
</tr>
<tr>
<td>Cost of consumption / month</td>
<td>PhP 602.25</td>
<td>PhP 2,420.00</td>
</tr>
<tr>
<td>(22 days operations / month)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of consumption / year</td>
<td>PhP 7,227.00</td>
<td>PhP 29,040.00</td>
</tr>
<tr>
<td>Annual Savings (Financial)</td>
<td>PhP 21,813.00</td>
<td></td>
</tr>
<tr>
<td>Annual Savings (LPG)</td>
<td>80.67 kg</td>
<td></td>
</tr>
</tbody>
</table>

JEP projected a conservative annual growth of 2% in its production. Given this, there will be increased potential savings for JEP with the utilization of such greening technology. JEP will save 75% of fuel costs annually.
ENERGY

Light bulb replacement (CFL bulb into LED and natural lightning)

With the use of natural lighting and installation of LED lights, JEP was able to save on energy costs. In the evening, they use LED lights, carrying 5kW of electricity. The firm currently has 31 LED lights.

Employing the cost-benefit analysis, JEP has an estimated annual savings of PhP 14,403.84 (US$288) by using natural lights in the morning and using LED lights in the evening. This is computed using monthly data on hours of use, watts consumed, and electricity cost. The implementation of this technology likewise saves 1,309.44 kilowatt-hours of energy annually.

<table>
<thead>
<tr>
<th>Change to LED lights</th>
<th>Using LED Lights</th>
<th>Using CFL Bulbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of bulbs</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>Approximate kilowatt of each bulb</td>
<td>5 watts</td>
<td>25 watts (equivalent to 5W LED)</td>
</tr>
<tr>
<td>Total hours of usage</td>
<td>8 hours</td>
<td>8 hours</td>
</tr>
<tr>
<td>Total watt consumed / hour</td>
<td>0.005 watt / hr</td>
<td>0.025 watt / hr</td>
</tr>
<tr>
<td>Daily consumption</td>
<td>1.24 kWh</td>
<td>6.2 kWh</td>
</tr>
<tr>
<td>Monthly consumption (22 days of operations)</td>
<td>27.28 kWh</td>
<td>136.4 kWh</td>
</tr>
<tr>
<td>Annual Consumption</td>
<td>327.36 kWh</td>
<td>1,636.8 kWh</td>
</tr>
<tr>
<td>Cost of electricity (based on electricity bill)</td>
<td>PhP 11 / kWh</td>
<td>PhP 11 / kWh</td>
</tr>
<tr>
<td>Annual consumption in PhP</td>
<td>PhP 3,600.96</td>
<td>PhP 18,004.80</td>
</tr>
<tr>
<td>Annual Cost Savings (CFL to LED)</td>
<td>PhP 14,403.84</td>
<td>PhP 4,960.00</td>
</tr>
<tr>
<td>Investment in purchasing LED lights (1 LED = 160 PhP)</td>
<td>PhP 9,443.84</td>
<td></td>
</tr>
<tr>
<td>Cost Savings after Year 1</td>
<td>PhP 1309.44 kWh</td>
<td></td>
</tr>
<tr>
<td>Annual Resource Savings</td>
<td>PhP 14,403.84</td>
<td></td>
</tr>
</tbody>
</table>

With total investment of PhP 4,960 in replacing 31 bulbs, the company achieves its cost recovery in four months. Total annual savings of energy is PhP 14,404 (US$288). The results of CBA of the energy efficient bulb replacement showed this green intervention to be highly efficient and profitable with NPV of five years savings of PhP 20,038.68 (US$400) and NPV of ten years energy cost savings of PhP 83,546.34 (US$1,670). The invested money in replacing the lights yield profitability or IRR of 290%.
WASTE

Use of biodegradable plastic sando bags for their store, House of Pili

As per JEP, the use of ordinary plastic bags is slightly cheaper compared to biodegradable plastic sando bags. However, it is estimated that annually, JEP is investing an additional PhP 7,500.00 (US$150) in the use of these biodegradable plastics. Despite this additional investment, the following are the benefits of biodegradable plastics, based on the past studies of ASSIST in the use of biodegradable plastics.

<table>
<thead>
<tr>
<th>Benefits of Using Biodegradable Plastics</th>
<th>Biodegradable plastic bags</th>
<th>Normal plastic bags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodegradable plastics take less time to break down</td>
<td>6 months</td>
<td>10 years</td>
</tr>
<tr>
<td>Biodegradable plastics are renewable</td>
<td>Any living thing like bacteria, fungi can break it down easily</td>
<td>Approximately only 3% of plastic bags are recycled</td>
</tr>
<tr>
<td>Biodegradable plastics require less energy to produce</td>
<td>65% less energy consumed for making biodegradable bag</td>
<td></td>
</tr>
<tr>
<td>Waste reductions</td>
<td>Zero wastes produced</td>
<td>Causes 13% of the waste</td>
</tr>
<tr>
<td>Materials used for generation</td>
<td>Natural sources including crops</td>
<td>Petroleum</td>
</tr>
</tbody>
</table>

WASTE

Reuse of rejected testa as organic fertilizer

Once blanched, the testa (outer covering) is peeled off from the raw pili. The testa is composted and used as organic fertilizer to their current pili farms. This is a good alternative to chicken manure which they use as fertilizer.

SOCIAL BENEFITS

PILIPinas. In partnership with different stakeholders, this initiative of JEP aims to support pili farmers and growers. JEP provides training on pili farming as well as the planting inputs. This will not only capacitate the pili farmers and growers, this is a mechanism as well to boost Camarines Sur’s pili industry.
SWOT ANALYSIS

Strengths
JEP believes that their strength lies in being one of the leading firms in pili processing in Camarines Sur. They also have a solid management who was able to secure continuous government support. They believe that their popularity has gone beyond the local market, further contributing to the company’s stability. They have their own plantation farms. This is a strength they believe is unique to JEP, which significantly boosts their supply base. Finally, they are able to access financing, which is crucial to any business.

Weaknesses
JEP surmises that the Philippines lags behind in the research development for pili. While foreign countries’ researches on pili are already able to detect vitamins and minerals from the nut, JEP noted that the Philippines is the only country with commercial level pili production and they hope that this could be leveraged specially for research purposes.

Another weakness they consider is in their packaging. JEP emphasized that they can still improve their packaging with the use of food grade or biodegradable pouches. They wish to have packaging that will enable products to last longer and there would be no need to add preservatives.

Although JEP noted earlier that they have access to financing, liquidity remains a big concern. They still need adequate cash to sustain their day-to-day operations.

Opportunities
Demand for their product remains strong. They said that they are surprised with the level of orders that they have been getting. However, this bullish market overview is hindered by low quantity of pili supply. JEP estimated — although this claim still needs further verification — that only 1% of land in Camarines Sur is planted to pili. Hence, there is a need for more land and planting materials for pili in order to respond to the promising market needs.

JEP also suggested that incentives be given by the government for farmers and landowners to plant pili. JEP noted that they know one city in Bicol Region providing five years realty tax holidays for landowners who will plant 100 pili trees per hectare of land.

Aside from this, the pili quality according to JEP, still needs to be upgraded. Farmers need to be educated further on proper pili planting. Meanwhile, storage remains a problem as there is no proper storage for pili products to protect them from pests and for proper aeration.

Threats
JEP considers the continued practice of exporting raw pili as a threat. This is already considered illegal, yet is still rampant.

Also, the EM1 benefits of pili have not been fully exhausted; this is another threat. For now, pili is only positioned as a snack food in the export market, when pili has a lot of use (e.g. vitamins, oil) and these need to be known in other countries.

Another threat is the seeming inadequacy of government support to push pili production. They hope the pili value chain to be more pronounced and polished. They likewise hope to have a price control system for pili, like what National Food Authority is doing for rice.

COROLLARY ACTIVITIES
During the peeling stage, JEP also incurs rejected pili nuts. These are rather in small quantity and the company is now studying how to further process these, such as converting it to pili oil to be used as moisturizer, or for massage and spas.
SUCCESS FACTORS

JEP believes that while their successes are still modest, they are still worth noting and celebrating. They emphasized that the key to success has been their “never give up” attitude. They also said that their drive to continually acquire knowledge, their openness to change, and their ability to build relationships and partnerships paved the way to JEP’s success.

AREAS OF COLLABORATION AND SUPPORT

It was observed that though JEP processes a large volume of products in a month, these are all packaged in plastics. To enhance further the firm’s inclination towards greening, relevant agencies or stakeholders can help them through trainings or linkages on how to achieve biodegradable packaging of products. In fact, this was already raised by JEP during the interview—a food grade, biodegradable packaging that will lengthen product freshness to cut down the need to add preservatives.

The history of support extended by government agencies is also commendable, which contributed greatly to where JEP is right now. The insights of JEP as a prominent pili industry player should be carefully studied and considered by concerned relevant agencies:

• Stronger pili research and development
• Provision of storage facility for pili to maintain quality
The idea of starting an enterprise came from the initiative of Mr. Rey Lomarda, Greenminds President, and his friends who were former technicians from an organization that manufactured effective microorganisms. The plan was for them to produce and sell microbial inoculants, which are microbes that serve as input for organic farming. However, it was difficult for them to sell these to the consumers because such products were being sold through distributors and were not readily available over the counter. Thus, the initiative did not push through with his friends.

However, Lomarda, being a farmer himself, has cultivated a passion to improve crop selling. He has personally experienced how meager the selling prices of such crops were. He then decided to take a different route by forming a non-government organization (NGO) to help the farmers, rather than running a profit-seeking entity.

Exposed to the perennial problem of logistical challenges and very low prices for crops, Lomarda came up with an idea of planting a crop that is still not in the mainstream — meaning, there are still no traders installed that systematically dictate crop prices. Under this setup, he believed that he would be able to command prices. Thus, peanut farming was born.

Risks were high because the market was still not developed or known (e.g. no buying stations for peanuts); he proceeded with his plan banking on the mindset: "If we create the market, we set the price."

GREEN PRACTICES

- Adopting daily 'Earth Hour'
- Use of greywater in watering herbs
- Implementing the car-less Monday
- 100% organic certified
- Maintaining environmental and social relevance with the Indigenous People communities
- Maintaining the Umanika Eco-Cultural Farm, a demo farm of bio-intensive gardening

OVERVIEW

<table>
<thead>
<tr>
<th>Location:</th>
<th>Cagayan de Oro, Region X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>Turquoise St., Golden Village, Carmen, Cagayan de Oro City</td>
</tr>
<tr>
<td>Year Established:</td>
<td>2000</td>
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<tr>
<td>Name of CEO/President:</td>
<td>Reynaldo Gil Lomarda</td>
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<td>Key Products:</td>
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| Certifications:    | • OCCP Certified  
                      • Halal Certified |
COMMITMENT TO GREENING

"Going green is not a fad or ‘Flavor of the Month’ as the market wants us to perceive it to be. It is but a long time need that we chose to ignore until we realized that it is almost too late. We may appear weird, crazy, and downright ‘stupidly noble’ in our literally and figuratively uphill battle to make a difference, but then again we believe it will be all worth it in the end."

Reynaldo Gil Lomarda

PRODUCTION PROCESS

When the peanuts are delivered to the processing facility from the farm, the shell is already removed. Initial sorting and quality check is done in the farm to ensure that good quality nuts are delivered to Greenminds.

Select and Weigh
Sorting of discolored de-shelled peanuts.

Roast or Fry
Determining the cooking option based on target volumes.

Cooling
Lowering the temperature to check the quality.

Adding flavor to peanuts
Enhancing product taste depending on desired positioning.

Quality check
Final checking of good quality peanuts.

Label, Pack, and Weigh
Using a rechargeable weighing scale, product is packed using polyethylene.

Seal
Securing the packaging through an electric-powered sealer.

Delivery
Bringing the finished products to the customers by using a multi-cab.
GREENING PRACTICES AND THEIR BENEFITS

Care for the environment is embedded in the organization, with Lomarda at the helm. Thus, even at its inception, the enterprise has been very much aware of employing greening practices.

At their office, they practice various environment-friendly practices such as:

1. Using grey water when watering their herbs (herbs are one of their products and this is grown as well in their office);
2. Demonstrating aquaculture by using catfish and plants — a practice they have and is planning to share to IP communities;
3. Maintaining a demo farm of bio-intensive gardening;
4. Implementing the “car-less Monday” policy and scheduling deliveries only on Fridays to reduce carbon footprint;
5. Adopting the “Earth Hour” advocacy every noon break, turning off all their equipment that use electricity except for the refrigerator (this practice has resulted in savings of PhP 88/kWh).

100% organic certified

Primarily, Greenminds’ strength in environment-friendly practice is in its engagement in 100% organic farming for its peanut produce. They have aimed for zero waste in their organic farming practice. They are certified by the Organic Certification Center of the Philippines (OCCP) in their peanut production.

SOCIAL BENEFITS

Maintaining environmental and social relevance with the IP communities. Greenminds is primarily an organization with the purpose of helping the marginalized IP communities:

Vision: Rural and Indigenous Peoples communities that are self-reliant enough to provide for their peoples’ needs
Mission: To establish and facilitate the development of sustainable rural communities
Core Values: Excellence, Integrity, Positivity, Innovativeness, Non-Discriminatory

Currently, Greenminds is helping 2 IP communities:
• Matigsalong Manobo in Brgy. Sinoda Kitawtaw, Bukidnon
• Higa-unon in Brgy. Kiabo, Malitbog, Bukidnon

There are around 64 Manobo families and 25 Higunon families who have partnered with Greenminds.

Greenminds has been helping these IP communities generate steady income by buying the peanuts from them. Also, Greenminds has been training the IPs on organic farming technology as well as on value formation. They also provided employment opportunities to the IPs both in their Cagayan de Oro office and in their training center within the IP community, in the Umanika Demo-Farm. This training center has showcased greening practices such as organic farming and use of solar panels.

Before Greenminds’ partnership with the IP communities, the IPs’ income-generating activity was limited to their employment as farm laborers, planting corn and sweet potatoes. They practiced conventional farming for corn using synthetic fertilizers and pesticides. With the intervention of Greenminds, the IP farmers were able to augment their income. Greenminds reported that compared to their previous average income of PhP 1,500 per month, the IPs can now earn PhP 2,500 average income from peanut alone.

Organic peanut farming has likewise helped the IP farmers in lowering their farming costs. Aside from the cost of seeds, the cost of other inputs lessened as well, through time, in organic farming (e.g. vermicast as the soil becomes healthy again). These translated to additional savings. The president noted that the IPs in Bukidnon have gained a sense of pride having their organic farming practice certified by OCCP.
SOCIAL BENEFITS

Maintaining the Umanika Eco-Cultural Farm. As part of Greenminds’ greening advocacy, it has established the Umanika Eco-Cultural Farm in Malaybalay, Bukidnon. This has served both as a demo farm for greening practices as well as a training facility. The farm features the use of solar power, rainwater catchment tanks, vermicomposting, organic medicinal/culinary herbs production, chemical-free poultry egg production, sloping agricultural land technology (SALT), and indigenous vegetables and forest species.

They are currently employing three IPs in the farm and have trained 850 people as of December 2016. Trainings given in the farm were on basic vermiculture and vermicomposting, organic peanut production, and value-adding methods for agricultural produce. Through the farm, Greenminds also provided training on social preparation and approaches and strategies for community development.

SOCIAL BENEFITS

Organic farming training for a tribe in Vanuatu Island. Partnering with an international NGO, Greenminds’ approaches and strategies with the IPs in Bukidnon have been replicated with the Naulasuwatu tribe in Vanuatu Island in the Pacific. Greenminds also trained them on organic farming and values formation. These interventions have helped the Vanuatuan farming community to also sell their homegrown peanuts in their area. Before, the tribe used the peanut only for personal consumption. After the intervention, the peanuts are now sold at markets, hotels, groceries, cruise ships, and international airports.
Greenminds believes that they are successful as they have made changes in the lives of the communities they partnered with. They also consider themselves successful as they have sustained and survived their enterprise for the past 17 years. They summed their successful experience thus, “we think outside of the box and (we) are insanely optimistic.”
LOOKING FORWARD

Greenminds shared that they used to be relatively unknown and cash strapped. They had been continually plagued by such challenges but they have been able to overcome, time and again, because of these strategies: Diversify, Collaborate, Sustain.

AREAS OF COLLABORATION AND SUPPORT

Greenminds has benefited from Department of Trade and Industry (DTI) trade fairs, helping them in market link-ups. They have likewise attended DTI trainings to improve their operations.

However, they believe that they can further expand their wings if relevant stakeholders will support their products and avail themselves of their training package. They also hope for opportunities that are innovative and partners that are willing to take risks with them.

Being more specific with their product, they wish to mobilize their future plans of using peanut shells as fuel in drying pods, and as raw material for the production of high grade organic fertilizer. Relevant stakeholders can also help them further by introducing new technologies for efficient mechanization of their operations, enhancing their product development initiatives, and enabling easy access to inoculants.
Rising Pili's main business is the cultivation, harvesting, and selling of sprouted pili nuts still in their shell. Its product carries the name The Cracking Monkey. It's a novel and attractively-packaged food product; the pili nuts are packed in reusable cotton sacks.

The Cracking Monkey is also the only pili nut product in the market that features a unique and patented way of cracking the nut shell by using a pre-cut notch and stainless lever that comes free in every bag.

Rising Pili is currently selling worldwide to exclusive distributors in countries such as the Philippines, Korea, Hong Kong, Vietnam, Germany, Switzerland, France, Italy, Austria, Belgium, Luxembourg, Netherlands, Azerbaijan, Japan, China, Israel, and Turkey.

### OVERVIEW

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<td></td>
<td>• Certified and appointed by the BOI (Philippines Board of Investments)</td>
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<td>• Kosher certified</td>
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### GREEN PRACTICES

- Use of natural light
- Reuse of solid waste
- Recycling, reusing, upcycling
- Reuse of wastewater

- Energy
- Waste
- Water
- Social Benefits
**COMMITMENT TO GREENING**

“After many years in different businesses we have learned the most valuable lesson in life: business must be sustainable...as entrepreneurs and business people, it is our absolute responsibility to create value in a responsible way. When creating a brand or a product we need to ask ourselves three basic questions:

1. If our product/brand succeeds, how will that success affect the planet?
2. Are we ‘Solving for the Future’? Or just generating revenue today?
3. How can our success contribute to the betterment of humanity, and not just our gain?”

Lozada family, founders, main owners, and general management of the company

**PRODUCTION PROCESS**

From the harvesting of the pili nuts from organic farms from Bicol and Romblon, to the light processing (washing, cleaning, stamping), and packaging, minimal impact on the environment is observed.

- **Delivery**
  Pili nuts delivered via ship or truck to plant.

- **Washing and sorting**
  Very little water is used in the washing. The wastewater is used to water the plants in the compound.

- **Cutting**
  Nuts get scored via a specially-designed machine, with a small motor that only takes up 4.1 watts. Before, the machine was run using cycle power (e.g. someone is operating the bicycle that generates the needed electricity) but efficiency had to be increased so they switched to using an electric motor instead.

- **Stamping**
  Nuts get stamped with natural pigment.

- **Packaging**
  Nuts are packaged in reusable cloth bags, stamped with the logo in natural pigment. They come with a nut cracker made out of recycled cutlery. No plastics are allowed at any point in the production.

- **Distribution, Selling, Marketing**
  Trucks and shipping vessels are used to transport the nuts to their different destinations.
GREENING PRACTICES AND THEIR BENEFITS

Aside from the greening practices listed below, the company also sources pili nuts from farmers who use responsible and 100% organic farming methods. Rising Pili also observes good labor practices. Most of its workforce comes from a barangay in Agojo, an island across Tablas, to give the residents other means of livelihood. The plant they work in, although not air-conditioned, is well-ventilated, clean, and spacious. The employees have three breaks — one in the morning, an hour-long lunch break, and another in the afternoon.

On the first floor of the plant — where the processing and sorting happen — workers are not confined to just one task. According to the Plant Manager, this is so the workers would not get bored and feel "stuck." The rotation of tasks has also ensured that they are proficient at each station.

**WASTE**

**Reuse of solid waste**

Pili nut shells are used as wood chips for kindle. They are also ground to be used as compost and fertilizer.

**Recycling, reusing, upcycling**

The cloth bags used for packaging are reusable. The nut cracker is made from recycled cutlery. Excess cloth from packaging is made into larger bags, wallets, or other merchandise for marketing. The 3G paper used for labels are made into sandpaper (along with pili nut dust).

**ENERGY**

**Use of natural light**

The plant does not use any generator. They also maintained minimal use of electricity. The use of "green architecture" principles is evident in the factory and warehouse which have windows that are wide enough to let in a lot of natural light.

**WATER**

**Reuse of wastewater**

After the pili nuts are washed, the water is used for the plants around the facility.
Best Green Business Practices among MSMEs

SUCCESS FACTORS

- **Clear organizational direction.** The owner’s steadfast belief in the “green lifestyle” and the owner’s “practice what you preach” style of management has made a positive impact on the organization. The impact of a clean environment on one’s health are the prime advocacies of the owner. Junk food and soda are not allowed in the premises. A plan for a company cafeteria serving all-healthy food has been announced. The company’s Sales Manager was even inspired to start her own micro business of ginger tea and malunggay candy.

  Despite the high demand for their product, the owner values smooth operations more than stressed-out employees. There are no formal trainings on environment-friendly practices or healthy living. Everything is taught to them by the owner, who also has encouraged them to take home some nuts and add these to their diet.

- **The owner’s “Solve for the Future” values.** Instead of giving into more affordable and logically-accessible solutions (e.g. sourcing cheap material from China), the owner stuck to these self-imposed rules regarding packaging:
  1. It must decompose in landfills when discarded.
  2. It must not emit any nasty chemicals (BPA, etc.) and contaminate the food it contains.
  3. It must be reusable.
  4. We must be able to produce it ourselves.

- **The organization’s long-term interpretation of “thinking globally, acting locally”.** Large investments were made to strictly adhere to these criteria of food processing:
  - keeping the processing of foods at a minimum
  - use of biodegradable packaging
  - full application of the “farm-to-table” concept
  - hand-crafting of food products
  - a processing plant that resembles nature’s way, using more people and less machines
  - being responsible for our environment

LOOKING FORWARD

- **Growing popularity of product.** The significant investments made by stockholders are certain to be recouped, as the product is growing more and more popular on both local and foreign shores.

- **Replication of warehouse, factory, and business practices outside of Romblon.** Due to the location of Tablas Island, accessibility by air and sea poses a problem from December to early February. Choppy seas and limited air travel during this period significantly slow down distribution of the product. Branching out and building similar headquarters in other localities where the climate is more friendly can serve as a business expansion move, and a source of technology and knowledge transfer for more communities who can also engage in pili nuts business.
V. CHALLENGES AND SUCCESS FACTORS

Evidently, while the consciousness to adopt green practices is present among all the enterprises featured, the differences in their implementation have been shaped by the challenges each of them uniquely faced.

Among the categories of green practices being observed by the agribusiness firms studied, all seemed to have invested more on measures to manage effectively their operations’ energy consumption as well as the minimization of waste. A few have established systems to make “green” the way they use water. And still more limited are the firms that have really invested on managing their emissions.

The framework used in categorizing the green practices of the covered businesses was limited only to the level of investment. It is good that in the face-to-face interviews the owners of these firms themselves pointed to the long-term benefits of such investment.

Based on the cost-benefit analysis for some of the firms, implementing greening practices translates to savings for the firm even after bearing various investment and associated costs involved in executing these greening practices.

Only four of the firms studied indicated the social benefits of their greening practices. It is likely that these set of benefits are apparent only to those whose green mindset have already gone beyond the typical environment-friendly initiatives.

Apart from the greening strategies each of the interviewed establishments cited, the interview also yielded several challenges:

1. MSMEs, particularly micro-businesses, are often unclear about what it means to operate in environment-friendly and socially sustainable ways, how they can do it, and at what cost. Most, if not all, are still dependent on their respective owners and leaders to take the initiative. It would be wise to offer and make available more trainings and seminars about the benefits of operating in environment-friendly and socially sustainable ways.

2. Due to the MSMEs’ small size and limited resources, they are lacking in skills and knowledge to institutionalize more sustainable processes. Any support from government — whether it be in the form of free trainings, seminars, workshops, or written materials — would be helpful to introduce this kind of information to MSMEs.

3. Even if the MSMEs were willing to adopt environment-friendly practices, their limited budget and unique local environments obliged them to invest in other priorities, e.g. communication or good internet connection, to grow their businesses. They were also hindered from getting relevant training or certifications since these required expenses. Incentives, grants, loans, or financial support from government agencies or in partnership with the private sector can assist MSMEs in expanding their business.

4. Some of the MSMEs adopted eco-friendly measures because it was already part of their culture (e.g. the coffee growers in Kalinga already practiced organic farming methods, not employing chemical pesticides or fertilizers, but using fallen leaves as mulch to naturally fertilize their coffee plants), or because it was required by local government (e.g. firms in Palawan) — and not because it was a conscious, deliberate move in favor of green growth. Government agencies and other concerned groups can help these MSMEs gain a broader and deeper understanding of the benefits of eco-friendly measures through a focused and sustained information and educational campaigns.
VI. RECOMMENDATIONS AND WAYS FORWARD

Adopting green practices and sticking to them, as well as exploring more ways to make these practices appreciated and replicated by the whole company, requires a long and dedicated process.

But initial efforts like documenting the extent of these practices are already observed among MSMEs is a concrete step towards helping policy makers identify opportunities. These are opportunities wherein interventions, both from government and private sectors, are most needed.

Clearly, more has to be done in terms of establishing baseline data on the green practices of MSMEs. Once fully covered, the effort can then proceed from documenting to monitoring developments, influencing more widespread practice, and recognizing concrete gains.

RECOMMENDATIONS TO MSMEs

Greening a business can start with very basic measures. It does not always require considerable investments to be green and to position themselves as ‘green’. As the food processing industry is highly energy, water, and waste intensive, a number of greening measures that the study suggest are evident in these areas:

WASTE

Proper segregation of biodegradable and non-biodegradable waste. Simple color-coding or proper labeling of trash bins can help kick this off.

Reuse of certain waste as compost, animal food, fuel, or other functions. Freefood uses cacao peels and coconut husks for compost, while rice husk is used as fuel for the burners. Villa Socorro uses its discarded banana peels for vermicompost, or animal feed even as it used old rice sacks as planters for yam and other root crops. In JEP, the outer peels of the pili nut are composted and used as organic fertilizer, which they say is a good alternative to chicken manure.

Use of biomass for stoves. In this study, it was found that rice husks, made into charcoal briquettes, is a favored fuel for stoves. The by-product is then used for soil conditioning. JEP, meanwhile, uses pili shells as fuel for the blanching process of their operations.

This study also recommends that firms do their own research — whether through the internet or networking — to discover more ways on how to reuse, recycle, or upcycle their material. One case in point is Villa Socorro, which regularly holds dialogue with students from the University of the Philippines Los Baños on the by-products of banana and banana peels. Some of the innovations that have arisen in the conversations included banana cider and binder for vegetarian burger patties. Freefood, meanwhile, is currently experimenting on using the burnt rice husk as toothpaste. At the same time, the concerned local government units can help connect MSMEs with research-based institutions for possible technology transfer. The LGUs can also work towards organizing the MSMEs so that they can share best practices and collaborate towards addressing relatively bigger concerns like climate change.

ENERGY AND EMISSIONS

Use of natural lighting and LED lights in the production facility. In Rising Pili, the factory is constructed in a way wherein natural lighting is maximized, therefore cutting down the need for electric lights. JEP also uses natural lighting and LED lights, enabling them to save on energy costs.

Sun-drying of raw material. Companies like Freefood and JAC harness the energy of the sun to sun-dry their cacao and coffee beans, respectively.

Efficient scheduling of energy-consuming activities. Sometimes, just a tweak in one’s planning can save energy. JAC reduced its LPG expenses by roasting 16 to 20 batches for two days instead of one or two batches every other day. This saves time and gas as the roasting machine needs four hours of pre-heating before the process.
**Simpler, but more efficient technology.**
In Aloha Farms, a rocket stove is used. It is a small, portable stove using wood chopped into small pieces. According to research, rocket stoves uses 18 to 35% less fuel compared to the traditional stoves.

**WATER**
**Wastewater reuse.** Whether through simple or complex means, use of wastewater can save a company tens of thousands of pesos. A basic example is Rising Pili, which reuses the water used to wash pili nuts to water the plants around its factory. A more complex or expensive method is the use of Freefood’s recirculating cistern or Villa Socorro’s secondhand tanks and rainwater catchment. Aloha Farms uses a closed aquaponics cycle in its fishponds, which is used to water plants that provide feed for the fish. Malagos has invested in a technology that allows reduction of water consumption during grinding stage of its cacao beans. This is with the use of insulated tanks powered by electricity in order to maintain water heat for reuse instead of regularly refilling water to be heated.

**MACHINE INNOVATIONS**
**Custom-made machines.** Through observation and research, a few of the companies presented here have come up with their own innovations to save time and energy in their respective processes. Brenda Claver of JAC, for instance, made her own revisions to the pulping machine by adding a motor.

**SOCIAL BENEFITS**
**Fair trade.** Firms like Fresh Start, Hineleban, Freefood, JAC, Rising Pili, Villa Socorro, and Malagos source directly from the farmers and deal directly with the indigenous tribes in their areas of production. This cuts out the middleman and provides direct benefits to the communities that in turn take pride in their produce and place in the firm’s value chain.

**Green jobs.** MSMEs can provide green jobs by ensuring livable wage and benefits, skills enhancements and opportunities for mobility, non-discrimination practices such as equal pay and appropriate health and safety measures.

**Hiring local.** Instead of bringing in employees from the city or faraway provinces, all of the companies in this report have been able to give opportunities to the people in their immediate communities. This has helped raise the communities’ standard of living as a whole—exposing them to more awareness about green practices, that they in turn can share with their families and own communities.
WAYS FORWARD

Learnings from this study provide the data to establish a baseline, at least for the provinces where these MSMEs are located. Both the public and private sectors — the LGUs, concerned NGOs, government agencies, financial establishments, interested private groups and individuals — in these areas can collaborate in building on this information to ensure that the necessary interventions are given to MSMEs. Among these support are as follows:

- **Increase opportunities for learning.** Hold more trainings for the community on how greening can contribute to savings, and be used to create more opportunities for earning.

- **Provide more access to funds.** Make funding available for more technology and input from experts. Funding — either from incentives or loans, or green finance mechanism — allow smaller businesses to invest in renewable energy, environment-friendly options for packaging, and certifications from government agencies, manpower, and training. This was an oft-repeated request among the respondents in these case studies.

- **Provide sound fiscal advice.** Aside from greening measures, clear fiscal advice should also be made available to small business owners. These individuals would benefit most if banks were upfront and transparent with green financing options. Small business owners are not financing-savvy, so they need options and leads that are easy-to-understand regarding investment loans, interest rates, and other technical banking terms.

- **Providing more education about financing options.** “Despite better efforts by DTI, the main challenge and barrier to growth facing the MSME sector in the Philippines is finance,” opines Petteri Makitalo of Freefood. “In the Philippines, 50% of MSME’s fail within five years of being established and 90% of these failures are due to poor cash flow and lack of marketing support. Some 80% of Filipino entrepreneurs state that a bank is not helpful since there is no lending in the Philippines for business without ‘solid collateral.’ This makes running a business possible only for persons with wealth. Startup costs are also high due to the regulatory environment costs, and can reach PhP 20,000 for permit alone.” Makitalo suggested that DTI strengthen and promote more their programs for MSMEs to level up business skills, and link them to avenues for financing and marketing. “They are already on this path but more needs to be done with regards to finance and markets,” he reported.

- **Encourage good work and green initiatives.** Incentives can be given to businesses that implement environment-friendly practices. These incentives can also be in the form of giving them access to green technologies that they cannot yet afford (e.g. solar panels).

- **Harmonize efforts.** Government agencies, LGUs, and business owners should collaborate and communicate on greening initiatives. This will increase consciousness about environment-friendly practices. A synergized approach increases chances of success, a wider buy-in among the community, and create a more significant impact that will be felt and enjoyed even by non-stakeholders.

- **Effect policy changes.** Tighten up government regulations and incentives and penalties to enforce environmental compliance among small businesses. These incentives can be in the form of giving access to green technologies, and not necessarily cash funding.

- **Agree on ways to measure concrete impact of green practices.** All these greening initiatives, especially the main case studies where the researchers were able to compute the cost-benefit analysis, showed quantifiable returns. While most of these numbers are already encouraging at double figures, there is still need to institutionalize a system to continually measure the impact of these initiatives. And the system could be something that maybe adopted across all MSMEs, with allowance, of course, to nuances per area. By doing so, the chances of these double figures being improved, or at least maintained, will be high.
REFERENCES


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