



ST. JOHN ALLEY

Spring 2018
Riley Dunn



ABSTRACT:

Transportation is one of the key pillars that establishes a society. Our relationship with the roads that take us to and from our destinations has changed drastically since the advent of the automobile. This fact is reiterated many times in *City Comforts*. "It seems we love the journey as much as reaching the destination. Transportation is a pleasure as well as a need" (Sucher). No matter what form it manifests itself into, though, connectivity is what holds a town together.

Alleys have long been overlooked as a necessary design strategy, but something very few people fully understand. Michael Martin, Associate Professor at Iowa State University, discusses their importance in his article, *Back-Alley as Community Landscape*. Principally a utility corridor, they need to be simultaneously hidden from passersby while also evoking inclusivity among residents. They are, at the core, contradictory to themselves. The balance of all three of these elements--utility, hiddenness, and revealingness--is where creativity comes into play and can yield a landscape conducive to whatever setting is present.

At Kalu Yala, growth in a sustainable fashion is the mission and this project is a catalyst through which that goal can be realized. Outlined in the following pages are the tools needed to fully understand the complex systems being implemented and how they all feed into each other. A deeper analysis is taken of the vegetative elements and what plants will do to offset the carbon impacts of construction. If carried out properly, as the ending timeline shows, the St. John Alley will provide exponential benefits to Kalu Yala and the eventual homeowners living here.

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PURPOSE:

As Kalu Yala exists today, it is a melting pot of great minds and a haven for intellectual experimentation as an institute. It fosters creativity in the most complex forms while using the simplest materials at hand. All this is negated however, without expanding that knowledge and influence into a true community.

Starting construction on both the first additional dwelling unit (ADU) and the alley this semester is exciting, as it will jump start the availability of further development. It also helps Kalu Yala gain credibility as less of a closed group of people doing cool things in the jungle, and rather a community working hard to solve real-world problems at a local scale...in the jungle. This project is one of the first strides in the marathon that is building a town. At times, the finish line may seem ever-elusive but seeing such a major effort come to fruition gives confidence to everyone involved.

The goal of constructing a carbon negative road follows Kalu Yala's overall mission of building in the most sustainable way possible. Choosing to be conscious of where materials are coming from, what it takes to get them here, how they are installed, and what their overall lifespan is makes a huge difference. The landscape plan and design considerations delineated in this report also pays tribute to the wide scope of this entire project.

MASTER PLAN:



Kalu Yala master plan by Moule & Polyzoides overlaid with an aerial photo shows a general lot plan layout. The outlined area will be discussed in further detail.



Watercolor plan by previous Kalu Yala student, ??, in Spring 2016 with the ADU currently under construction highlighted. The full extent of the St. John Alley can be seen, as well as the Charleston-style houses, and the pedestrian walkway on the front side of the lots.

EXISTING CONDITIONS:

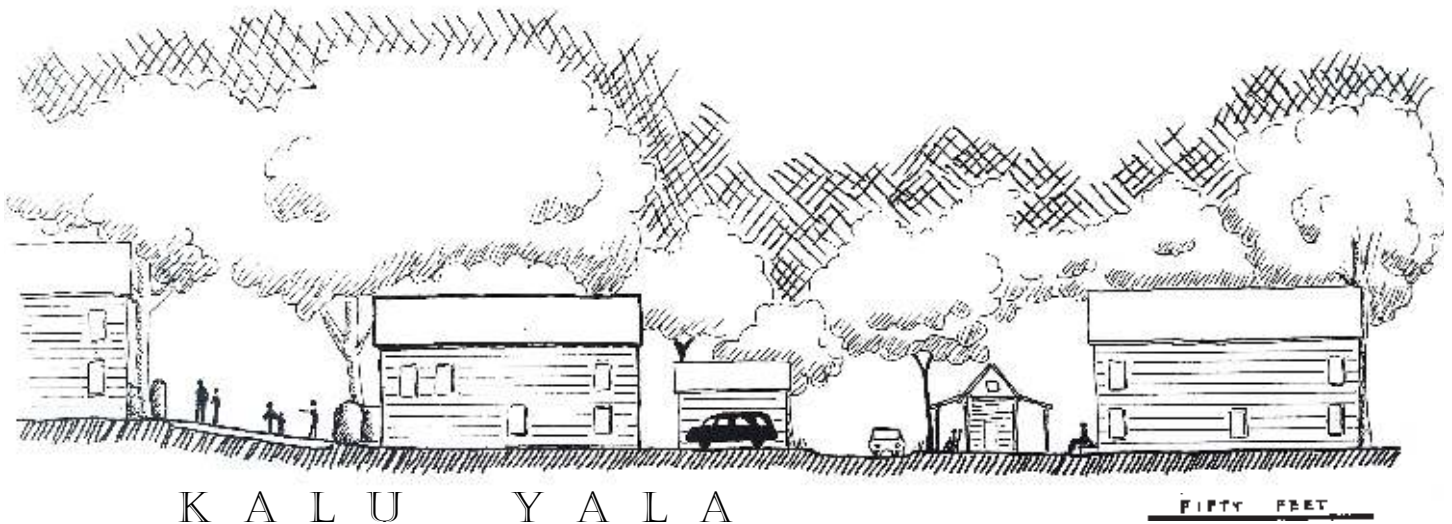


This aerial photo is from Spring 2018, courtesy of David Turner. Specimen trees were marked prior to breaking ground. They will be protected during construction and provide immediate shade for the alley.

HISTORIC COMPARISONS:

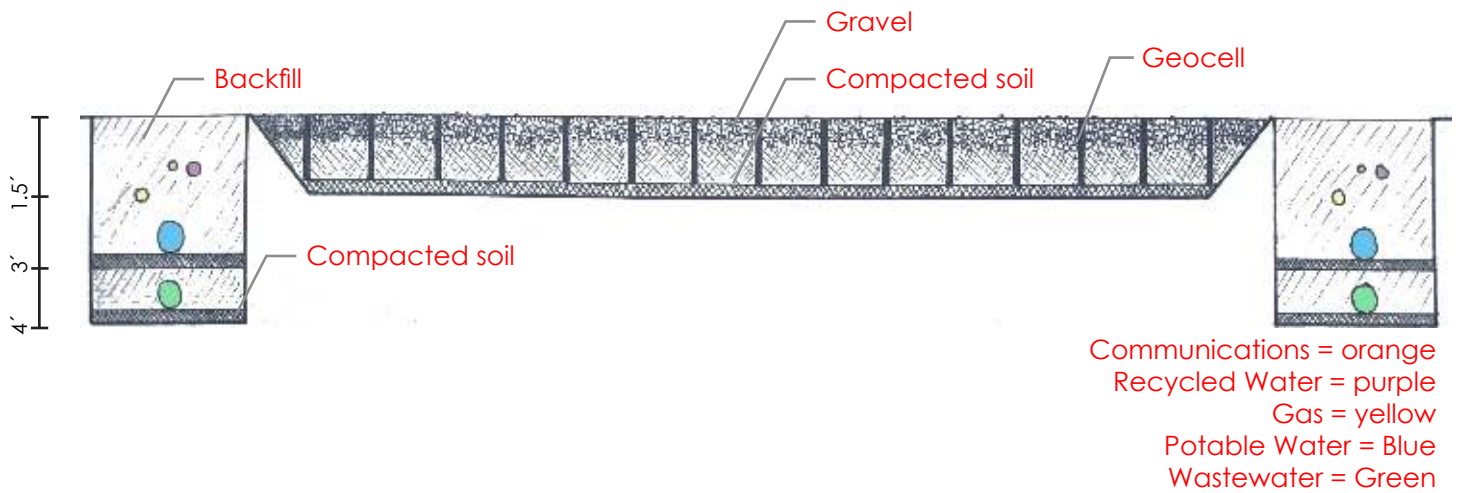


The two sections above were drawn by Michael Martin, Iowa State University Associate Professor of Landscape Architecture comparing Radburn, NJ and Wildwood Park, Winnipeg. "Note how plantings at Radburn serve to structure front yard space for privacy, and note the importance of detached garages in structuring Wildwood Park's land-scapes" (Martin, "Returning to Radburn").



Above section, drawn by author, is based on the master plan on page 4. Ideas from both Radburn and Wildwood Park were combined to provide a New Urbanist feel of public/private space and a successful alley-scape. Layering of vegetation heights provides visual and auditory barriers as well as variation in textures. Kalu Yala's ADUs serve a similar purpose as Wildwood Park's detached garages in creating a private yard space on the backside of the main Charleston style houses. They also define the edge of the alley to focus viewsheds down the corridor.

ALLEY CROSS SECTION:



The alley substructure is composed of three materials:

- Existing soil (compacted/reused)
- Gravel
- PRS Neology Geocells

Above is a detail section showing how the material layers work together and function underground; as well as the service lines in the adjacent trenches. The image below is an example of what it would look like during construction. A soil to gravel ratio of 70 : 30 percent is the ideal mixture within each cell (PRS).



CARBON ACCOUNTING:

Carbon accounting takes into consideration all of the impacts and the emissions that are released from the extraction of the materials, to their production and transportation, and finally to their installation on site. As a general statement, the impacts should be less than or equal to the solutions, or the amount of carbon we are sequestering back into the vegetation and eventually the soil. The goal for this St. John Alley project has been to be "carbon negative." All of the CO₂ emissions we are causing by building the alley need to be accounted for by some other means that we implement here on Kalu Yala property. It will take several years to even be carbon neutral as the bulk of the construction happens at the beginning and trees need time to grow. However, once the vegetation is established and reaches its full potential, the results are exponential. This is depicted in the equation and graphs below (De Gracia).

$$\text{Impact} \leq \text{Solution}$$

$$\text{Road Construction} \leq \epsilon + H_2O + EC + L + B + F$$

Where;

ϵ = Energy

H_2O = Water

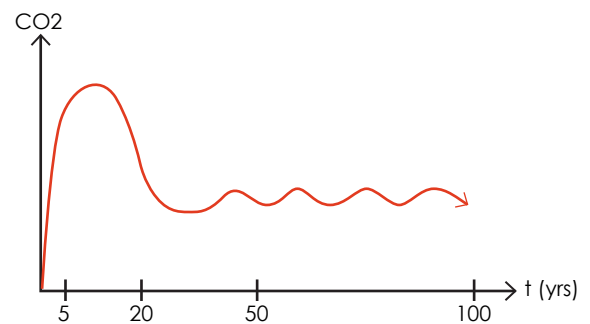
EC = Erosion Control

L = Landscaping

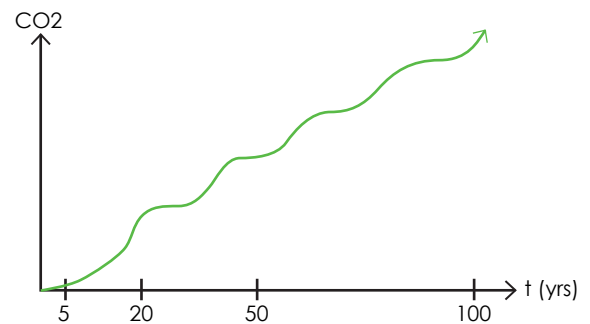
B = Building Materials

F = Food Systems

$$f(t) = \frac{\text{CO}_2 \text{ Alley}}{\text{Time}}$$



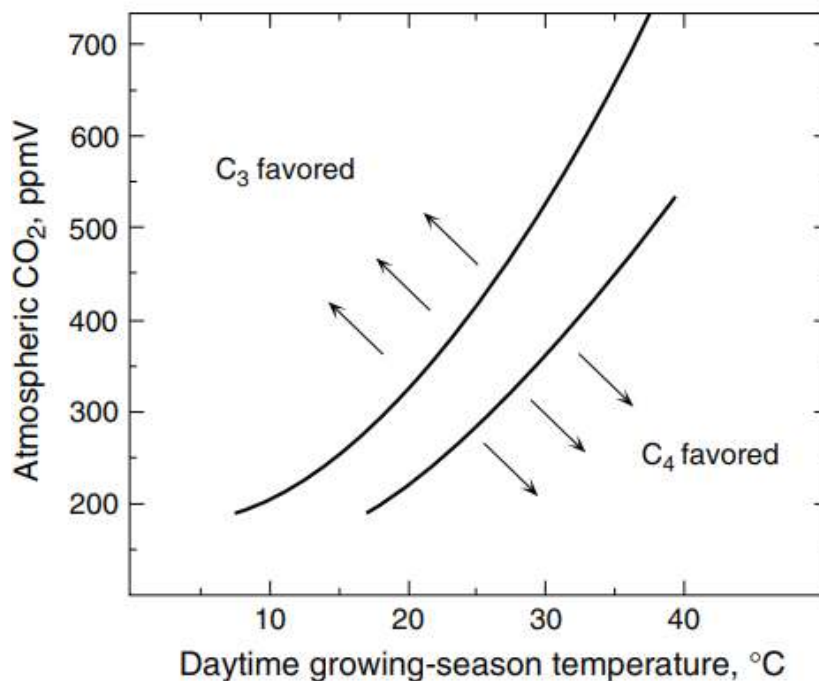
$$f(t) = \frac{\text{Cseq Alley}}{\text{Time}}$$



LANDSCAPING:

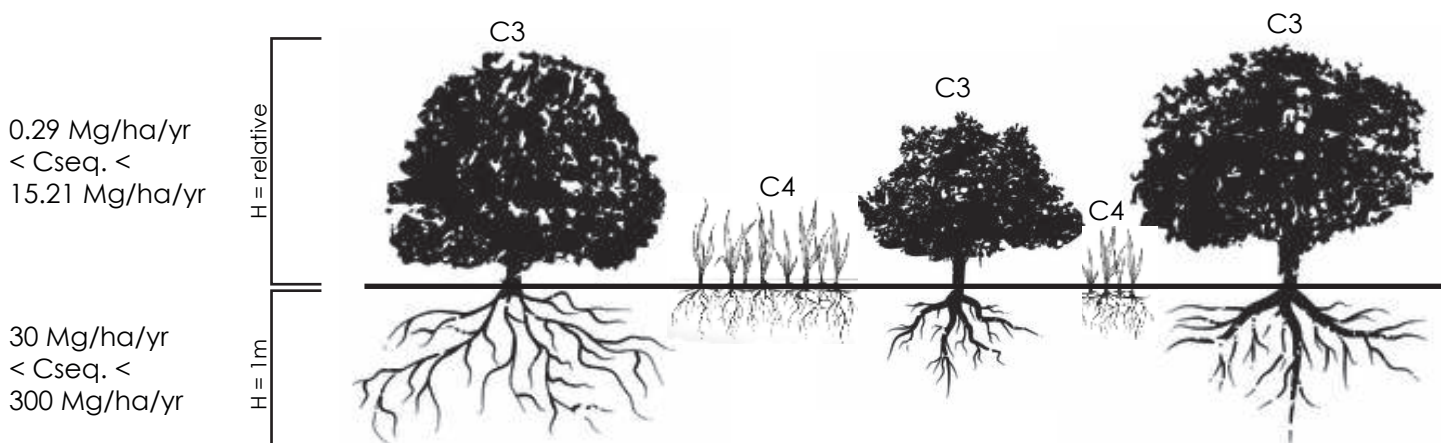
One of the primary ways to organically reduce atmospheric carbon is through photosynthesis, of which there are three pathways among terrestrial plants. The first, C₃ photosynthesis results in a 3-carbon molecule. C₄ occurs most commonly in monocots (short for monocotyledons; flowering plants bearing a single cotyledon, or seed leaf), such as grasses and sedges, and is not as prevalent in dicots (dicotyledons; flowering plants bearing two cotyledons), including most trees and shrubs. Lastly, crassulacean acid metabolism (CAM) photosynthesis occurs in epiphytes (non-parasitic plants growing on other species) and succulents. Due to its limited distribution to very arid regions, however, CAM plants are not a significant component of the global carbon cycle (Ehleringer).

Shown in the graph below are the advantageous temperatures of photosynthetic light-use efficiency for C₃ and C₄ plants. The area in the middle represents temperatures at which the efficiencies are equivalent (Ehleringer).



Based on the current atmospheric CO₂ concentration of 408ppm and an average yearly temperature around 30 degrees Celsius at Kalu Yala, we are in the crossover zone of efficiency. If global temperatures and the ppm continue to rise, C₃ photosynthetic plants will start to be favored. Nevertheless, regardless of which photosynthetic pathway is being used, carbon is being sequestered and aiding in the offset of our carbon footprint--mainly due to the diversity of species present.

Agroforestry systems have a higher potential to sequester carbon due to their improved capture and utilization of resources. If only one species is planted, certain nutrients can be over-harvested. With multiple, one plant may fix a nutrient into the soil that another species needs and vice versa--they can play together. Below is a diagram estimating the amount of carbon stored in agroforestry systems both above and below ground (Nair).



TREES:

Guazuma ulmifolia

Guasimo, Mutambo, West Indian Elm

Native Range-tropical Americas, common throughout Panama in farm pastures

Size-medium sized tree ranging in height from 8-30m; trunk diameter reaches 30-40cm

Growth Rate-fast growing; pioneer species in recently disturbed areas

Growing Conditions-prefers moist, well-drained soil in full or partial sun

Leaf-alternate, in flat plane along branches; upperside dark green, underside light green-blue; rough texture; asymmetric basal connection; three main veins

Fruit-green when immature; turn black and woody, similar to alder- or pine-cones; edible, cherry flavor; produced through much of rainy season

Flower-small, whitish-pale yellow flowers from March-May and September-November

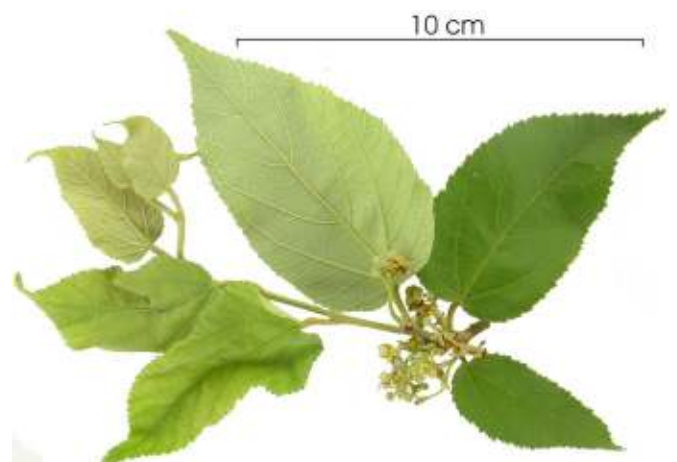
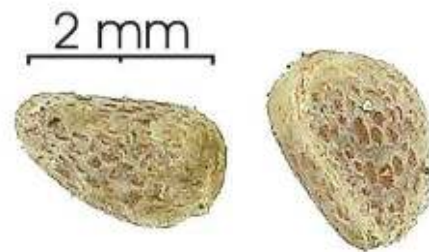
Propagation-from seed

Pruning-branches start near the base but can be pruned for desired head room

Water Needs-medium; can tolerate drought

Uses-shade tree; fodder source for livestock

Problems-rarely can fall victim to *Phelyypera distigma* insects



Licania platypus
Monkey Apple

Native Range-throughout Central America, Northern South America

Size-moderately large tree reaching 10-30m in height and a trunk DBH of up to 75cm

Growth Rate-average

Growing Conditions-prefers moist, well drained soil in full or partial sun; commonly found near rivers

Leaf-alternate; narrowly oblong blades; 10-20cm long; 3-6cm wide; lustrous, shiny upperside; pale underside

Fruit-large, spherical berry turns yellow when ripe; smells like fresh pumpkin; tastes sweet, juicy; fruiting commences when plants are about 10yrs old

Flower-minute, creamy-white bundles; fragrant; flowers from February-April

Propagation-from seed

Pruning-not much needed; trunk grows erect with a rounded crown of heavily foliated, thick branches

Water Needs-medium; wet and dry tolerance

Uses-strong shade trees

Problems-none



Moringa oleifera
Moringa, Horseradish

Native Range-East Asia, India;
introduced to tropical Americas and
has favored extremely well

Size-small tree growing 8-12m with
an open crown and sparse foliage
proving dappled sunlight

Growth Rate-extremely fast growing;
average growth 3m/yr

Growing Conditions-can grow in most
soil conditions; prefers full sun; grows
best with shelter from strong winds

Leaf-small, elliptic, compound leaves;
extremely nutritious

Fruit-pod-like; houses about 9 seeds;
branches droop under weight of heavy
clusters

Flower-long racemes of fragrant flowers
almost year round; flowers roughly 2yrs
after planting seeds (1yr after cuttings)

Propagation-from seed or cuttings

Pruning-multibranched, requires regular
pruning to keep healthy

Water Needs-medium; tolerates
drought well but yields less foliage when
under constant water stress

Uses-many medicinal uses; all parts of
the tree are edible in various forms

Problems-resistant to most pests/
diseases; sometimes susceptible to pod
fly, budworm, hairy caterpillars, red
mites



Theobroma cacao
Cacao

Native Range-tropical Americas

Size-10-15m tall and wide

Growth Rate-fast growing

Growing Conditions-prefers a more acidic pH (5-6.5, tolerating 4-8); grows best in dappled shade

Leaf-narrowly ovate to elliptic; smooth-glossy; 20-30cm by 7-10cm

Fruit-large seed pods contain edible, creamy-white pulp and 20-50 flat seeds (the source of cocoa, cocoa butter, and chocolate)

Flower-18mm in diameter; 5 petals; yellowy white-pink; fragrant; flowers most of the year

Propagation-from fresh seeds (5-7 days after separation from pulp)

Pruning-light maintenance to remove low-hanging branches

Water Needs-medium

Uses-commercially grown for seeds/beans

Problems-no serious diseases; susceptible to variety of insect pests (mirids and borers) as well as black pod and witches broom



Gliricidia sepium
Ballo

Native Range-tropical Americas

Size-small tree, 3-10m tall; open crown with arching branches

Growth Rate-fast growing (3m/yr); pioneer species

Growing Conditions-grows well in disturbed soils; prefers full sun

Leaf-pinnately-compound leaflet; leaves are small and smooth with entire margins

Fruit-pods turn green-brown; seeds explode out up to 25m when mature

Flower-clusters of small pink flowers from December- April

Propagation-from seeds or cuttings

Pruning-can be repeatedly pruned for cuttings and will resprout vigorously

Water Needs-drought tolerant; conserves water by shedding leaves during dry season

Uses-shade and support trees; living fence; phosphorous and potassium fixer; flower can be cooked and eaten

Problems-leaves, seeds, and powdered bark are toxic to humans when ingested



SHRUBS/GROUNDCOVER:

Tithonia diversiflora

Boton de Oro, Mexican Sunflower

Native Range-tropical Americas

Size-medium-sized shrub; 2.5m tall

Growth Rate-fast growing; grows well in disturbed habitats

Growing Conditions-grows well in most soils; prefers well-drained soil in full sun; moderately drought-resistant

Leaf-alternate; narrow ovate and deeply 3-5 lobed

Fruit-brown fruits in spiky seed heads

Flower-bright yellow flowers almost year round

Propagation-from seeds or cuttings

Pruning-will fill out nicely and provide a thick hedge; can prune if desired

Water Needs-medium

Uses-nitrogen fixer; living fence; many medicinal uses

Problems-can sometimes propagate and are too quickly and overtake other species



Bixa orellana
Lipstick Plant, Annatto

Native Range-tropical Americas

Size-large shrub/small trees; 2-8m tall

Growth Rate-fairly fast growing

Growing Conditions-can withstand long droughts, but thrives with well distributed rainfall and dry season for seed ripening; full sun-partial shade

Leaf-pointed, ovate-heart shaped; 10-20cm long; shiny, green upperside; pale brown underside

Fruit-bristly, spiny red capsules; fruiting can commence when only 2yrs old; peak production when 4-5yrs old (starts to decline around 12yrs)

Flower-white, pink, or purple; showy clusters

Propogation-from seeds or cuttings

Pruning-plants can tolerate hard trimming

Water Needs-medium

Uses-red substance (annatto) surrounding seeds is widely used as a dye, food coloring, flavoring, and insect repellent

Problems-sometimes infested by powdery mildew attacking younger fruits



Asclepias curassavica
Tropical Milkweed, Blood Flower

Native Range-tropical Americas

Size-grows up to 1m tall and 0.5-1m wide

Growth Rate-average; will grow in disturbed areas

Growing Conditions-tolerates moderate dryness and light shade; grows best in moist, well-drained soils in full sun

Leaf-opposite; up to 12cm long; stems and leaves produce a milky sap when cut or bruised

Fruit-long, narrow seed pods 8-10cm long; split open and release silky tailed seeds dispersed by wind

Flower-red-orange with yellow hood; flowers most of the year

Propagation-from seed

Pruning-does not require pruning

Water Needs-medium

Uses-attracts hummingbirds, bees, and butterflies

Problems-can sometimes overseed and develop weedy qualities; watch for aphids



Symphytum officinale
Comfrey

Native Range-Europe, Asia; successfully introduced in Panama

Size-about 1m tall and 0.5-1m wide; deeply rooted

Growth Rate-relatively fast; will colonize disturbed areas

Growing Conditions-prefers full sun, partial shade

Leaf-large, hairy, dark green basal leaves grow to 15cm; upper leaves are much smaller

Fruit-small black seeds form after flowers are done blooming

Flower-bluebell-like white to pinkish-purple drooping clusters; flowers May-June

Propagation-from seed, root cuttings, or division

Pruning-plants can be divided if too large

Water Needs-medium; drought tolerant

Uses-ornamental plantings; leaves and roots can help treat various external inflammations; soil builder

Problems-unsafe and dangerous for ingestion; foliage may flop after strong rains



Tradescantia zebrina
Wandering Jew, Inch Plant

Native Range-tropical Americas

Size-1-3cm tall and spreads up to 1m

Growth Rate-perennial herb; prolific groundcover; often forms dense mats or colonies

Growing Conditions-grows well in most conditions; prefers well-drained soil

Leaf-7-10cm long; lanceolate; purple underside; pale striped variegated upperside (zebra-striped)

Fruit-tiny, insignificant brown seeds

Flower-flowers in pairs; 10-15mm in diameter; bright mauve pink; flowers September-February

Propagation-from cuttings; easily moved or manipulated

Pruning-prune out of control shoots by cutting

Water Needs-medium; hardy

Uses-groundcover; herbal tea in Mexico; lubricant in China

Problems-can get out of control if not properly maintained; root rot can occur if soils are too moist; handling large amounts of plant sap may cause skin irritations



SUGGESTED COMBINATIONS:

Ballo & Boton de Oro

For the fence lines, these species will work well together as they are both efficient soil builders. Ballo fixes phosphorous and potassium while providing a more rigid vertical structure. Boton de Oro fixes nitrogen and fills out more horizontally. Together they will create a living wall to screen residences that is both functional and beautiful.

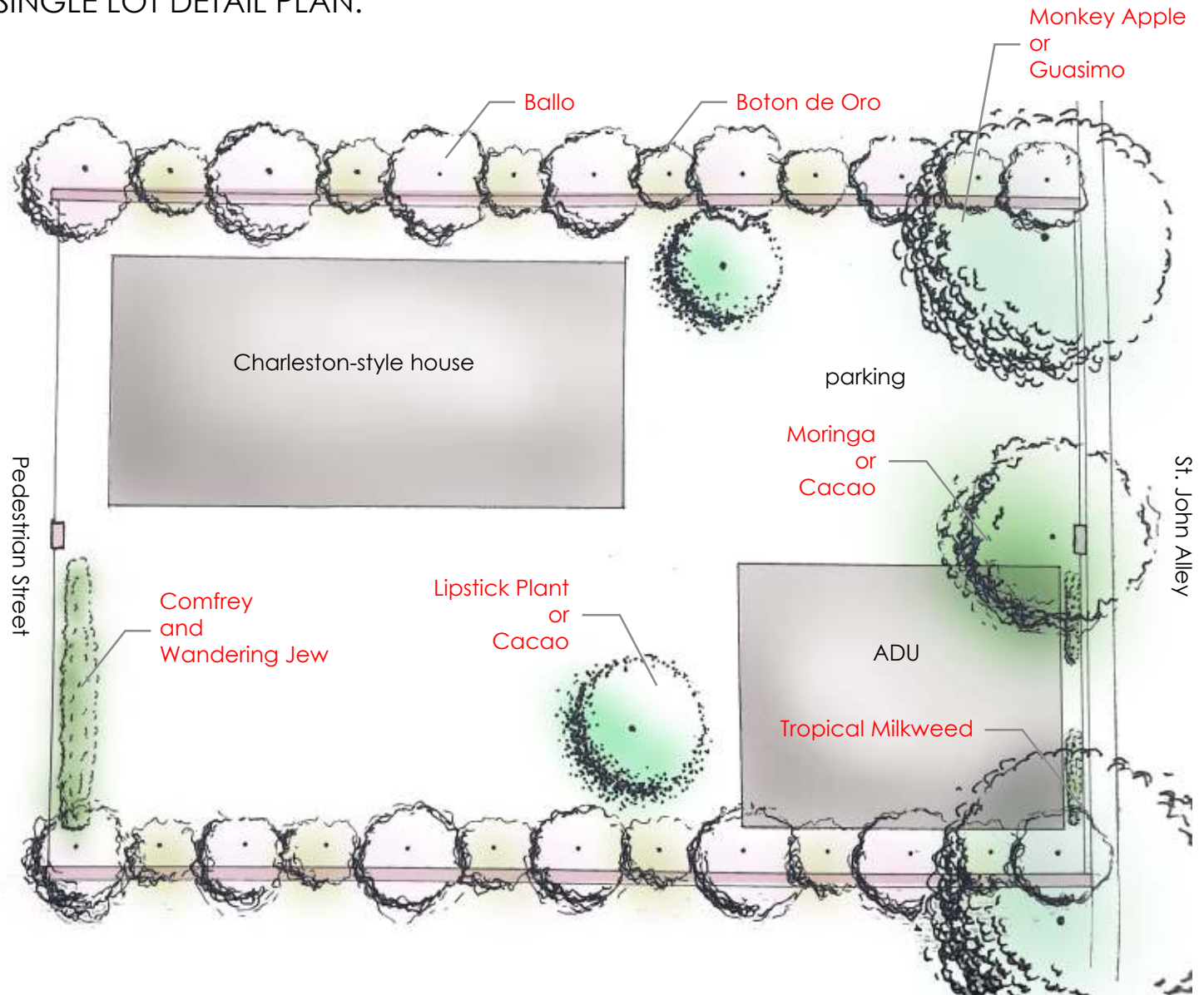
Comfrey & Wandering Jew

These low-growing species match well together purely for aesthetic reasons. Since both have an inflorescence of cool, purple hues, they would compliment each other well and provide a sinuous color palette with varying heights. Additionally, Comfrey flowers from May-June and Wandering Jew flowers from September- February. Planting them side by side would ensure that area would have beautiful fragrant blooms almost year round.

Monkey Apple & Moringa/Cacao

As a strong shade tree, Monkey Apple is a priority to get established first in order to obtain that shade as soon as possible. Having an overstory tree along the alley will make it a more comfortable space out of the beating sun. Multiple heights and variance in texture is also important when choosing plants. Lowering the overhead canopy with the addition of smaller trees will also create a more intimate landscape at human scale. Moringa and Cacao would both grow well beneath the Monkey Apple, and provide delicate white flowers. An alternating pattern could also be used with Moringa and Cacao along the alley to reap the combined benefits of all three trees.

SINGLE LOT DETAIL PLAN:

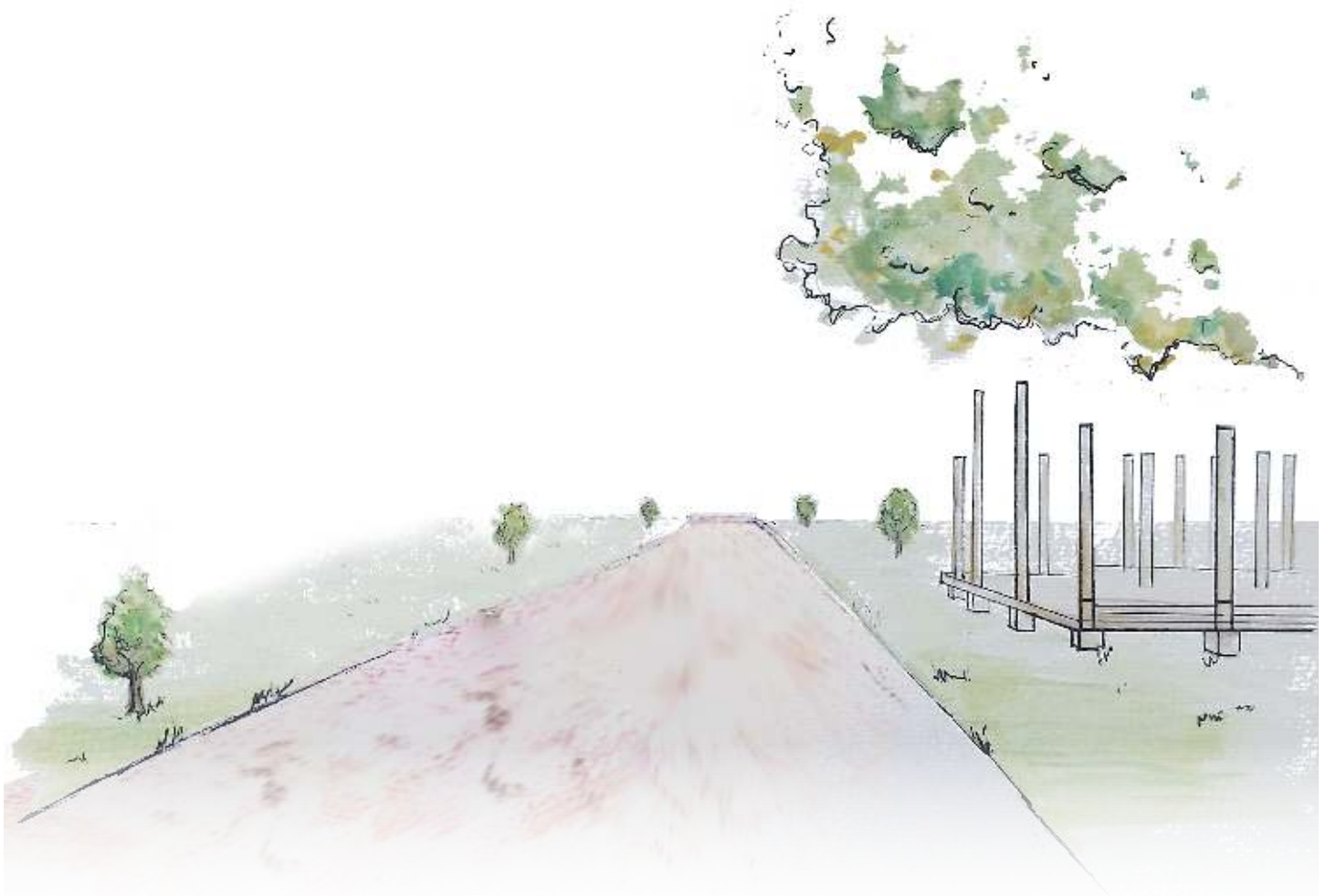


Not all the lots will be exactly the same size (some may be longer or wider depending on the existing conditions). However, shown above is an example of how a 60'x 100' lot could be laid out. Once most of the houses are complete, the goal is to have brick and wrought iron fences separating each lot. Until then, keeping with local aesthetics, Ballo and Boton de Oro will be planted along the fence lines to provide visual and auditory barriers earlier as well as start building soil for any landscaping the homeowners may want to do in the future. They will be planted two feet offset from the eventual fence line so they can still be kept after the wall goes up if that's desired. Even if they are removed nitrogen, phosphorous, and potassium (NPK) levels will have increased in the surrounding soil and the cut material can be used as compost. A small example of this will be done by two life-long stakeholders, Marie Striner and Tyler Marlin in their yard at Kalu Yala.

TIMELINE:

Years 0-5

Ground was broken on March 11, 2018, with the excavation of a roughly 300' x 20' road bed. This first phase requires most of the planning and acquiring of materials for both the alley and the ADUs along it. In the next few months, erosion control mechanisms will be implemented, the substructure materials will be laid in the road bed, and the first ADU will be complete. In May 2018 the trees will be planted to start providing shade; and five years from now, they should be reaching about head-height.



Years 5-20

As more ADUs are being constructed, the space will be activated and start to feel like a true alley. The trenches will have all necessary piping and there should be no more soil disturbance in that area. As a result, more ornamental species are able to be planted. Only the groundcover species with very shallow root systems should be in the 3.5' setback between the alleyway and the ADUs, so as not to disturb critical infrastructure. Some of the original trees planted may not have taken, so they will need to be replaced as well. By the twenty year mark, the entire roadway should be lined with houses and have several permanent residents.



Years 20-50

This is the time period when the alley will be generating the bulk of other physical development at Kalu Yala. The main Charleston-style houses will be situated on the lots and the town will be alive with people. This will foster larger scale improvements due to the strong baseline. For example, the agroforestry system will be at full production catering to residents' fruit and vegetable needs. The biodigester and biofuel networks will now also be able to fulfill all energy and gas needs.



Years 50-100

After so much hustle and bustle, the alley will likely need maintenance. Load capacity studies for the PRS Geocell material can be found on their website (Palese). Keep in mind though, that the material is widely used in rail projects where a significantly larger amount of weight is being applied. Additionally, some of the trees will be reaching specimen status. A lovely, thick canopy will have developed overhead and the full vision of the St. John Alley will be realized.



CONCLUSION:

Many minds came together to make this project possible and many more minds will come after us to finish the job. No single person is more important than the others--just as in a structure, only having some of the elements doesn't work. A strong foundation is needed on which the posts can stand, in order to hold up the beams, which connect the rafters, on whom the purlins sit, to support the roof, all of which is braced in complete compression to carry forces downward; and finally a ridge cap on top is critical to prevent water from getting in and destroying everyone's hard work. Everything is affecting everything else and the addition of each piece makes the structure stronger.

The inception of the St. John Alley is a multifaceted collaboration involving nearly every program currently present at the institute. As of right now the road-bed has been dug out and, with this report included, all the plans are in place to move forward. The tree species specified previously have been located on Kalu Yala property or at nearby nurseries and will be started in the agriculture greenhouse, in order to be ready to plant this May.

Going forward, this report should serve as a blueprint that is able to be referenced as personnel come and go, to keep the vision consistent. All drawings done by the author are able to be used as marketing tools and visual aides that anyone can use to get a feel for the space as it will change over time. This report provides a glimpse into the future of what needs to happen for this project over the next several decades...use it wisely.

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Agroforestry in the Republic of Panama

ENVS 3980: Tropical Agroforestry Applied Study

Rob Taylor

4/19/2012

Introduction

The country of Panama is the isthmus between the continents of North and South America. Panama is a small state with a total area of only 75,517 km² and a population of approximately 3.4 million (INEC, 2010). Panama has an immense wealth of biodiversity and a variety of different ecosystems that make it unique in the Americas (Polsky, 1992). With over 7000 different species of plants and 1250 species of vertebrates, it has become a focus for biological research (Polsky, 1992). Slash and burn agriculture or shifting cultivation is the main agricultural practice in Panama (MacKay, 1990; Fischer and Vasseur, 2000). Unfortunately, the rising population has caused a shift in the impact of this traditional agricultural practice and it is now one of the principal causes of deforestation (Fischer and Vasseur, 2000). Slash and burn now threatens the ecological wealth of the isthmus and the future ability of Panama's agricultural production to meet the demands of its population.

The agricultural technique of Agroforestry has been proposed as a solution to the rising environmental degradation and socioeconomic issues associated with deforestation in Panama. Agroforestry is a land use system that involves trees combined with livestock and crops on the same piece of land with an emphasis on multiple use indigenous trees and shrubs; It is structurally and functionally more complex than a monoculture (Hauff, 1999). Since the 1980's, there has been an increasing focus by both the Panamanian government and Non-Government Organizations, to encourage the adoption of Agroforestry practices in Panama (Fischer and Vasseur, 2000; Condit and Aguilar, 2001).

There will be two sections to this paper. First, will be an attempt to address the question of whether Agroforestry is a solution to the rising rates of deforestation in Panama. The last half of the paper will be a summary of the applied study completed in April 2012, conducted in Panama. The applied study was an internship with the American based company Kalu Yala. The company's main objective in Panama is to build the country's first sustainable village in the foothills of the Panamá province near the border of the Chargres National Park. For this purpose, the company has purchased seven thousand acres of mixed primary and secondary forest with small areas of abandoned pasture land near the confluence of the Rio Pacora and the Rio Iguana.

The company runs a variety of internships, everything from business to Agriculture. The internship program acts as a research and development department for the company. It brings in university students and recent graduates from across the world and allows them to develop their own work and research projects in their respective disciplines. The internship, completed by University of Lethbridge Undergraduate Rob Taylor in the Winter Semester of 2012, was under the Agriculture Program. The specific project was to design and plant an agroforestry demonstration plot at the company's property in the interior of Panama.

Deforestation and Shifting Cultivation Practices in Panama

In Panama, shifting cultivation is the main agricultural practice among small scale farmers and ranchers. As in the rest of Central America, it has been practised on a sustainable basis by indigenous populations for at least the last seven thousand years (MacKay, 1990). Traditional fallow times of between 12 and 20 years meant that the land had time to recover between uses. However, Panama's rapidly expanding population has meant that shifting cultivation can no longer be practiced on a sustainable basis (Fischer and Vasseur, 2000). There

is increasingly less land available for small scale agriculturalists to expand. This problem is compounded by the fact that over 40% of the land in Panama is protected in Parks and indigenous reserves, (Elton, 1997) and 22.6% of the available land is comprised of degraded semi-abandoned soils (Fischer and Vasseur, 2002). In 1947 when the first land-use survey was conducted in Panama, the country had over 70% forest cover, and as of 1995 it was reduced to approximately 44% (INRENARE, 1995). By the mid-nineties the deforestation rate in Panama was 51,000 hectares per year, and was highest in the provinces of Darién, Colon, and Panamá (INRENARE, 1995).



Figure 1. An example of deforestation from shifting cultivation practices. Source: Rob Taylor, 2012

Cattle ranching has been another important factor causing the change of shifting cultivation practices from a sustainable to a damaging practice. In Los Santos in a small ranching community on the Pacific coast of Panama, overstocking and dry season burning have accelerated erosion rates and there has been a notable increase in flooding events (Parsons J.J., 1984). Seeing as over 79% of agricultural land is pasture for livestock these effects are increasingly being seen elsewhere in the country (Wright and Samaneigo, 2008). Unfortunately this shift to cattle ranching has only acted to compound the socioeconomic issues already present in the rural areas of Panama as the median gross income per hectare for pasture land is a mere US\$66 as compared to US\$383 for crop land (Wright and Samaneigo, 2008). This is often attributed to the fact that ranching cattle presents less economic risk for small-scale agriculturalists. Cattle are not as disease prone and can be kept in perpetuity until they can be sold at a more favourable price (Wright and Samaneigo, 2008). In figure 2, a campesino homestead serves as an example of the depressed socioeconomic status of cattle ranchers in the Panamanian interior.



Figure 2. Campesino homestead near the headwaters of the Iguana river. Source: Rob Taylor, 2012

The Benefits of Agroforestry

The issue of deforestation in Panama has needed a solution. It has been proposed that the wide scale implementation of Agroforestry systems across Panama could be the solution to both the ecological and socioeconomic issues associated with deforestation on the isthmus. The first Agroforestry projects and research into agroforestry in Panama began in the 1980's. These early projects often placed a high emphasis on hardwood plantations made up of mostly introduced hardwoods such as Teak, *Tectona grandis* (Fischer, 1998; Condit and Aguillar 2001; Fisher and Vasseur 2002). In 1990, the Panamanian government introduced the Tropical Forestry Action Plan that had the combined goals of reducing deforestation and promoting Agroforestry as a means to reduce erosion, improve soil fertility, and ensure greater self-sufficiency for rural farmers (Fischer and Vasseur, 2000; INRENARE, 1995).

Agroforestry systems provide ecological services that, due to their mimicry of natural systems and intensive management can even exceed natural forest systems. Forest systems are naturally heterogeneous and structurally diverse; this leads to a variety of habitats and microclimates (Bazzaz, 1996). This allows a tremendous amount of biological diversity to exist in small areas of land. Farming only 5% of the land in a farm as an agroforest can account for upwards of 50% of the biodiversity of that land area (Crawford, 1998). Agroforestry systems have been demonstrated to increase soil fertility, reduce surface runoff and soil erosion and reduce the incidence of both flooding and drought events (De La Cruz and Vergara, 1987). Interception of solar radiation by trees can reduce soil temperatures and enhance decomposition rates and nutrient cycling in tropical environments (Chapin *et al*, 2002) Agroforests can also

store immense amounts of atmospheric carbon, with managed Agroforestry systems storing an average of 335 Mg C Ha⁻¹ as compared to the 46 Mg C Ha⁻¹ in pasture land (Kirby and Potvin,



Figure 3. Mature Forest on the Kalu Yala Property. Source: Rob Taylor, 2012

Social and economic factors are important when looking at the adoption of agroforestry techniques (Budowski, 1993). Agroforestry systems can provide economic security to small-scale farmers as trees can act as insurance against crop failure or variation in the price of beef (Nair, 1990). This benefit is also unlikely to change in the future as the prices of tropical wood products are expected to increase in the future (Kapp, 1998). Additionally by providing farmers with food security through fruit trees and wood for construction and living fences it acts to save money that otherwise would have been spent (Condit and Aguillar, 2001).

Despite the many benefits of Agroforestry, there has been consistent low adoption rates of this practice relative to other countries in the tropics (Fisher and Vasseur, 2000; Cochran and Bonnell, 2008). Cochran and Bonnell (2008) completed surveys across Panama in regions where Agroforestry projects had been undertaken in order to explore why there was such a low adoption rate of agroforestry techniques among rural Panamanian farmers, or campesinos. What they discovered was that the most common response for the continued use of shifting cultivation over sustainable agriculture techniques was cultural tradition. The next highest cause of non-adoption was land issues, which included a variety of responses mostly related to land ownership. The majority of Panamanian farmers have only squatter's rights, which are a form of property rights obtained by the open, hostile and continuous occupation of another's property, and therefore do not legally own the land they cultivate (Budowski, 1993; Fisher 1998; Cochran and Bonnell 2008). This means that there is often perceived to be economic risk associated with the adoption of agroforestry techniques.

The main reason for the current low profitability of Agroforestry systems is the limited development of markets for native timber and poor roads in the interior of the country (Fischer and Vasseur, 2002). There has also been very poor project management and follow up by the Panamanian government's efforts to develop Agroforestry projects throughout the country (Fischer, 1998). A failure to incorporate the traditional knowledge of the campesinos and indigenous groups in order to create regionally appropriate practices that work with the local ecology has also occurred (Fischer and Vasseur, 2002). Legislation has prevented the adoption of Agroforestry techniques in Panama, as until recently the Agrarian Code required the elimination of forest cover as a precondition to obtaining squatters rights (Boehnert, 1997). In an attempt to encourage reforestation in the country, Panama passed Law 24 (Legislative Assembly of

Panama, 1993). Law 24, or the Law of Incentives for Reforestation Projects, attempted to provide financial incentives for reforestation projects in Panama; however, these benefits did not extend to smallholders (Fischer and Vasseur, 2000).

A wide variety of Agroforestry practices have been used in Panama since the pre-Columbian era. These included home gardens, living fences, and the use of shade trees to grow cocoa (Budowski, 1993). Although much attention has been paid to the negative effects of deforestation, there is still a strong knowledge base regarding the use and cultivation of native tree species (Condit and Aguilar, 2001). A study conducted by the Smithsonian Tropical Research Institute by Richard Condit and Salomon Aguilar in 2001, looked at the use of wild plants in the rural community of LA Pavas, near Panama. It was found that the inhabitants of the village used over 119 non-cultivated species. The majority of these species were used for house building and 111 of 119 species were native to Panama. Another study conducted by Garen *et al.* in 2010 looked at tree planting and protecting culture of Panamanian cattle ranchers and small scale agriculturalists. In this study, they identified 99 species of tree that were either manually planted or left to remain in pastureland due to the ethnobotanological use. Once again, the majority of the tree species were native to Panama and often used for multiple purposes.

Poor project management and foresight has been cited as the most common reasons agroforestry projects have failed in the past in Panama (Fischer, 1998; Budowski, 1993). It is also important to note that very few of these projects have considered existing Agroforestry techniques, and have instead relied on overly technical and intensive systems that are unfamiliar to the local inhabitants (Fisher and Vasseur, 2002). There has also been a lack of research into the incorporation of indigenous hardwoods, despite their proven high yields and higher profitability when compared to introduced species such as *T.grandis* (Griess and Knoke, 2011;

Garen *et al.*, 2010; Lambent *et al.*, 2011). If Agroforestry is to become a viable solution to the problems of deforestation that exists in Panama these issues need to be taken into consideration.

PART 2: Applied Study

The intent of the 2012 applied study was to explore and attempt to implement Agroforestry practices in Panama. Under the supervision of the Agriculture Internship run by the American company Kalu Yala, there was three months of work in designing and planting the beginnings of an agroforestry demonstration plot in the company's seven thousand acre property in the interior of Panama. The Agroforestry demonstration plot is intended to demonstrate the efficacy of a reforestation system that places emphasis on multipurpose native tree and shrubs species. This system will both provide materials to meet the socio-cultural and economic needs of the valley. Additionally, it will act to enhance the ecological functioning of the valley property. These ecosystem services can include increasing soil fertility, carbon capture, enhancing structural and biological diversity, reducing sediment load in the rivers, and creating cooler microclimates within the valley (Fischer and Vasseur, 2000; Hall *et al*, 2010). The valley exists in a wet/dry tropical climate regime with a bimodal wet season that peaks in late spring and again in the fall (Table1 and Figure 4)

Table 1. Average monthly precipitation (mm) in Study Area (1973-2007)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Average (mm)	52.2	57.3	24.7	111.2	449.5	514.9	339.4	321.9	555.6	499.0	518.7	376.9	3821.3
Maximum (mm)	93.4	191.0	43.2	240.1	661.6	702.2	518.5	532.5	707.0	659.4	830.8	722.4	5200.6
Minimum (mm)	13.4	5.0	13.6	21.7	306.8	81.2	123.8	139.6	423.6	112.1	186.0	52.5	2715.7

Source: ETESA. Station N° 146003 Altos de Pacora, Type PCD, Latitude 9°15'00", Longitude 79°20'00", Elevation 400 m

Figure 4. Average Monthly Precipitation (mm) in Study Area (1973-2007)

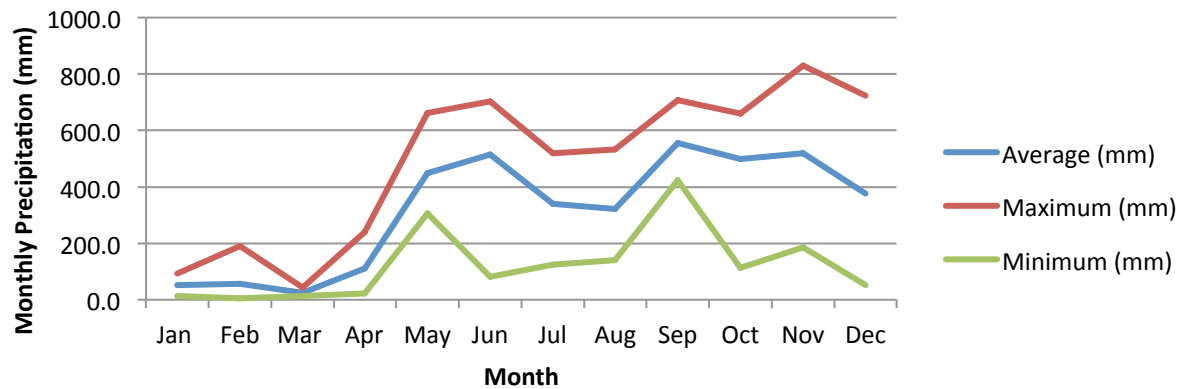


Figure 4. Mixed Secondary and Primary forest near the headwaters of the Pacora River. Source: Rob Taylor, 2012

The long-term goal of the project is to create a functioning agroforest at the Valley site in the specific area designated for agricultural activities. This forest will eventually act, in

association with the greenhouse, as a nursery for continued expansion of a reforestation project. It is expected that the final demonstration plot will contain a variety of native species of tree and shrub that will help to supplement the food and timber needs in the valley. The demonstration plot will also act as an attraction for eco-tourism, as guided tours of both the organic farm and the agroforest have the potential to attract many visitors to the valley.

The Project Site

The property purchased by Kalu Yala is a 3661 ha site politically located in the Corregimiento of Pacora and San Martin, District of Panama, Province of Panama, Republic of Panama (Appendix A). Geographically, it is located in the upper watershed of the Pacora River, specifically in the area known as “tres brazos” or three arms and the Iguana River. Primary forests cover almost half the project (Figure 2) area and include two eco-zones: Pre-montane Very Humid Forest and Tropical Very Humid Forest. Average tree height in the mature forest is approximately 35 metres with a diameter at breast height of greater than 40 cm (Ingemar Panama, 2008). Alluvial soils are common in areas near rivers and creeks and are comprised of a sandy and clayish texture with low limitations to agriculture (Ingemar Panama, 2008). The site chosen for the planting of the Agroforestry demonstration plot was approximately 1 acre located near the eastern boundary with the Iguana River. It is a rocky site with small berms and a seasonal drainage running through the middle. The site is bordered on two sides by a living fence that included species from the *Fabaceae* family as well as several large wild Cashew trees, *Anacardium occidentale*, and a fruiting soursop, *Annona muricata*. Additionally, there were some existing small patches of Guava or Guyaba, *Psidium Guajava*, and a large cleared patch filled with mostly grasses and some weedy shrubs.

Table 2. Actual soil use and vegetation inside Property (See Appendix for Map of property)

Soil use and vegetation type	Surface Area (ha)	% of Property
Mature Forest	1795.53	49
Secondary Forest	384.66	10.5
Very Young Secondary Forest	148.96	4.1
Pasture Lands	1311.85	35.8
No Vegetation	3.39	0.1
Water	16.73	0.5
Total	366.12	100

Source: Preliminary Environmental Report prepared by Ingemar Panama

Progress on the Demonstration Plot

In order to prepare the site for planting there was completion of some mowing of the grasses with a string brush-cutter and some selective hand thinning of the guyaba patches with a machete. The woody cuttings were burned and ashes saved for planting soil. The grasses and leafy matter were added into a compost pile thereafter. Following this, saplings were purchased at a plant nursery located near Tocumen, Panama. A large variety of different trees to plant, with an emphasis on indigenous, multiple use trees and shrubs were acquired. The choices for which trees to plant were based on observations of what trees were planted and protected by the Campesinos on their farms in the valley as well as research conducted by the Smithsonian Tropical Research Institute located in Panama City (Condit and Aguilar, 2001).

The trees were planted in different zones with all of the shade tolerant hardwood trees chosen were planted underneath the shade of existing “nursery” trees and in areas of good drainage. Saplings in the neotropics tended to have higher performance under the shade of pasture trees and shrubs (Hooper *et al*, 2002). The majority of the fruit trees and leguminous shrubs were placed in areas with greater exposure to sunlight and closer to the seasonal drainage where the soil had visibly higher water content. The dark color of the soil indicated the presence of soil organic matter. In addition to the tree saplings planted, over 50 seeds of Guandu bean, *Cajanus*

cajan, were sown in the cleared grassy area. *C. cajan* is a leguminous shrub that produces an edible bean. It was chosen because it would boost soil organic nitrogen at the site due to its association with nitrogen fixing bacteria that form nodules on its roots. In the short term, it will provide a food crop for both people and livestock present in the valley and it responds well to coppicing so it can be used for green manure.

Not all the trees planted were native to the region (Table 3), and this problem was particularly acute with the fruit trees. However, there was an effort made to acquire native hardwood species excluding the few African Mahogany, *Khaya senegalensis*, all other species of hardwood were indigenous to Panama. The species whose future success is of particular importance to the project is Spiny Cedar, *Pachira Quinata*. It has been demonstrated to outperform introduced species such as *T. grandis* in nursery settings with growth rates of 22.16 m^{3-yr} (Lambert *et al*, 2011). Additionally it has been consistently rated among the most marketable species of native hardwood in Panama (Greiss and Knoke, 2011; Fisher and Vasseur 2002).

Overall, fourteen saplings were planted in the one acre plot in addition to the approximately fifty Guandu Beans sown (Figure 3). By the time of departure from Panama, all of the saplings were faring very well, with most showing visible increases in height and diameter and a majority having grown new branches and sets of leaves. The three-month time scale was restrictive for a project of this size and seed sourcing was difficult in the region of Panama where the project site is located. Further work is needed to expand the demonstration plot and incorporate more native species of tree.

Table 3. Tree Species observed to be planted and harvested by Campesinos in the Los Tres Brasos Valley. Scientific Names verified using The Trees of Panama and Costa Rica (Princeton Field Guides) by Richard Condit

Common Name	Genus	Species	Status	Ethnobotanological Uses*	Planted for Project
African Mahogany	<i>Khaya</i>	<i>senegalensis</i>	Introduced	Wood	Yes (3)
Avacado	<i>Persea</i>	<i>americana</i>	Native	Fruit	Yes (2)
Banana/Plantain	<i>Musa</i>	<i>acuminata</i>	Introduced	Fruit	No
Cashew	<i>Anacardium</i>	<i>occidentale</i>	Intoduced	Fruit, Living Fence	Existed on Property
Chirimoya	<i>Annona</i>	<i>sprague</i>	Native	Wood, Fruit	Yes (1)
				Wood, Fruit, Living Fence	
Guanabana	<i>Annona</i>	<i>muricata</i>	Native	Fence	Existed on Property
Guandu bean ^a	<i>Cajanus</i>	<i>cajan</i>	Introduced	Food, Fallow	Yes (~50)
Guyaba	<i>Psidium</i>	<i>guajava</i>	Native	Wood, Fruit	Existed on Property
Laurel	<i>Cordia</i>	<i>alliodora</i>	Native	Wood	Existed on Property
Lemon	<i>Cirus</i>	<i>Limon</i>	Introduced	Fruit	Yes (1)
Mango	<i>Magnifera</i>	<i>indica</i>	Introduced	Fruit	Yes (1)
Orange	<i>Cirtrus</i>	<i>sinensis</i>	Introduced	Fruit	Yes (2)
Papaya	<i>Carica</i>	<i>papaya</i>	Introduced	Fruit	Yes (1)
Roble	<i>Tabebuia</i>	<i>rosea</i>	Native	Wood	Yes (2)
Spiny Cedar	<i>Pachira</i>	<i>quinata</i>	Native	Wood	Yes (1)
Tamarindo	<i>Tamarindus</i>	<i>indica</i>	Introduced	Food	Existed on Property
Bejuco	<i>Cydista</i>	<i>sp.</i>	Native	Fiber	Existed on Property

*Based on conversations with Campesinos and obsevation of their properties

^a Guandu Bean is a leguminous woody Shrub with and edible bean similar to a lentil



Figure 5. *Pachira quinata* sapling in Demonstration plot. Source: Rob Taylor, 2012

Recommendations

Based on the previously proposed goals of the Agroforestry demonstration plot it is desired that the project be expanded to other parts of the property where degraded pastureland exists and there is no proposed development for housing or local businesses. In particular, the hill-slope that exists on the opposite side of the fence from the current plot, as it has very similar characteristics to the current site. Additionally, following completion of an onsite greenhouse, there should be the creation of a native plant nursery. This nursery would act to free the Agroforestry site from dependence on other nurseries in Panama, which from the experience of this project have been shown to have a limited selection of native plants. Another consideration, given the distance from the valley site and the difficulty of getting vehicles into the valley, if a large-scale reforestation project is ever undertaken it will not be feasible to bring in saplings from off-site.

Seedlings grown on site and transplanted into the immediate area would also have better performance as they would be better acclimatized to the unique microclimate of the valley than saplings brought from other parts of the country. Following this, it is recommended that a set of propagation protocols be written for all tree species desired for planting. This would take the guesswork out of the process and make the operation more efficient. Field notes have been shared with the Agriculture Program Director and hopefully progress will be made in this area. Other forms of Agroforestry may also be desirable. In particular, the “fincas” or mixed Banana and plantain intercropped with various root and tuber crops that are maintained by the campesinos in the valley would be highly suited to the lower stretches of the seasonal drainage that runs through the current demonstration plot. The maintenance and expansion of the living fence system that exists on the property is another potential objective of this project.

The existing patches of mature forest that exist on the property are another important consideration for the continued preservation of the valley's biodiversity and ecological functioning. A proposal is that these areas be set aside as a land-trust and following the recommendations of Ingemar Panama's Preliminary Environmental Assessment of the property. No development should be allowed and that these areas need to be set aside for conservation and education purposes only. The Biology Program would manage these forests and all efforts made to ensure that they are never compromised by the activities of the future community that will exist in the valley bottom. Secondly, a Forestry internship should be created to manage the secondary forests for their forest products and ensure that an effective and ecologically responsible reforestation strategy is developed.

The Forestry internship would have a variety of duties ranging from maintaining the native plant nursery, reforesting abandoned pastureland, and ensuring responsible harvest of timber and fruit crops already existing on the valley. To achieve this there must be a long-term field survey of all existing forest resources present in the valley. Although the Preliminary Environmental Report made some general observations regarding actual soil use and vegetation (Table 2), a more in depth study is required. The data collected could then be integrated and analysed using GIS software and from this further forest management decisions could be made.

Conclusion and Synthesis

Deforestation is a chronic issue across much of the Tropics, and the Republic of Panama is no exception. Despite repeated efforts by the Panamanian government to encourage reforestation with the use of legislation such as Law 24 (Legislative Assembly of Panama, 1993), the countries forests continue to be reduced at a rate of 51,000 hectares per year (INRENARE,

1995). Agroforestry, a landuse strategy involving the planting of multiple use trees and shrubs on the same land occupied by trees and shrubs (Hauff, 1999), has been proposed as a solution to deforestation in Panama (Fischer and Vasseur, 2000). Agroforestry has a wide array of environmental and socioeconomic benefits, and is the solution that would best address the issue of maintaining biological diversity and functioning while enhancing the livelihoods of rural farmers in the interior of Panama (Budowski, 1993; Fisher and Vasseur, 2002; Condit and Aguilar, 2001). Unfortunately, chronic mismanagement has plagued attempts by the Panamanian Government and various NGOs to implement Agroforestry techniques in Panama.

The lesson to take from the failures of previous projects is that the project organizers repeatedly failed to consider the traditional environmental knowledge of the small-scale agriculturalists in the areas these programs were developed (Fischer, 1998; Budowski, 1993). This meant that overly technical solutions were introduced, coupled with low follow through meant many of these projects were doomed to failure. Additionally, despite the good-natured attempts to introduce these techniques, the fact remains that poor quality roads and limited market access for forest products in the interior has meant that although project participants often become more self-sufficient, their economic status has not been improved (Fischer 1998).

These lessons are important to consider when developing an Agroforestry project. The idea behind the Kalu Yala Agroforestry demonstration plot was to create an Agroforestry system that works. With an emphasis on basic silvicultural techniques and multiple use indigenous trees and shrubs, it can easily be replicated in other communities. In designing the demonstration plot, the first step, before a single tree was planted in the ground, was observation of the kinds of trees the campesinos kept around their homesteads. By talking with the campesinos and walking their farms and the surrounding forests, the reason for using each tree was discovered (Table 3). This

basic ethnobotanical information will be essential to the future community in the Los Tres Brazos valley.

The Agroforestry demonstration plot should prove to be a successful example of how best to design and implement Agroforestry systems in the humid tropics. By integrating knowledge of the ecosystem services provided by a well-managed agroforest with the traditional and regionally appropriate knowledge of ethnobotany, this system has taken the failures of other projects into consideration (Fischer, 1998; Cochran and Bonnell, 2005). Any forest management strategy requires a long-term vision, and Kalu Yala and the village it hopes to build will be there to help this project expand well into the future.

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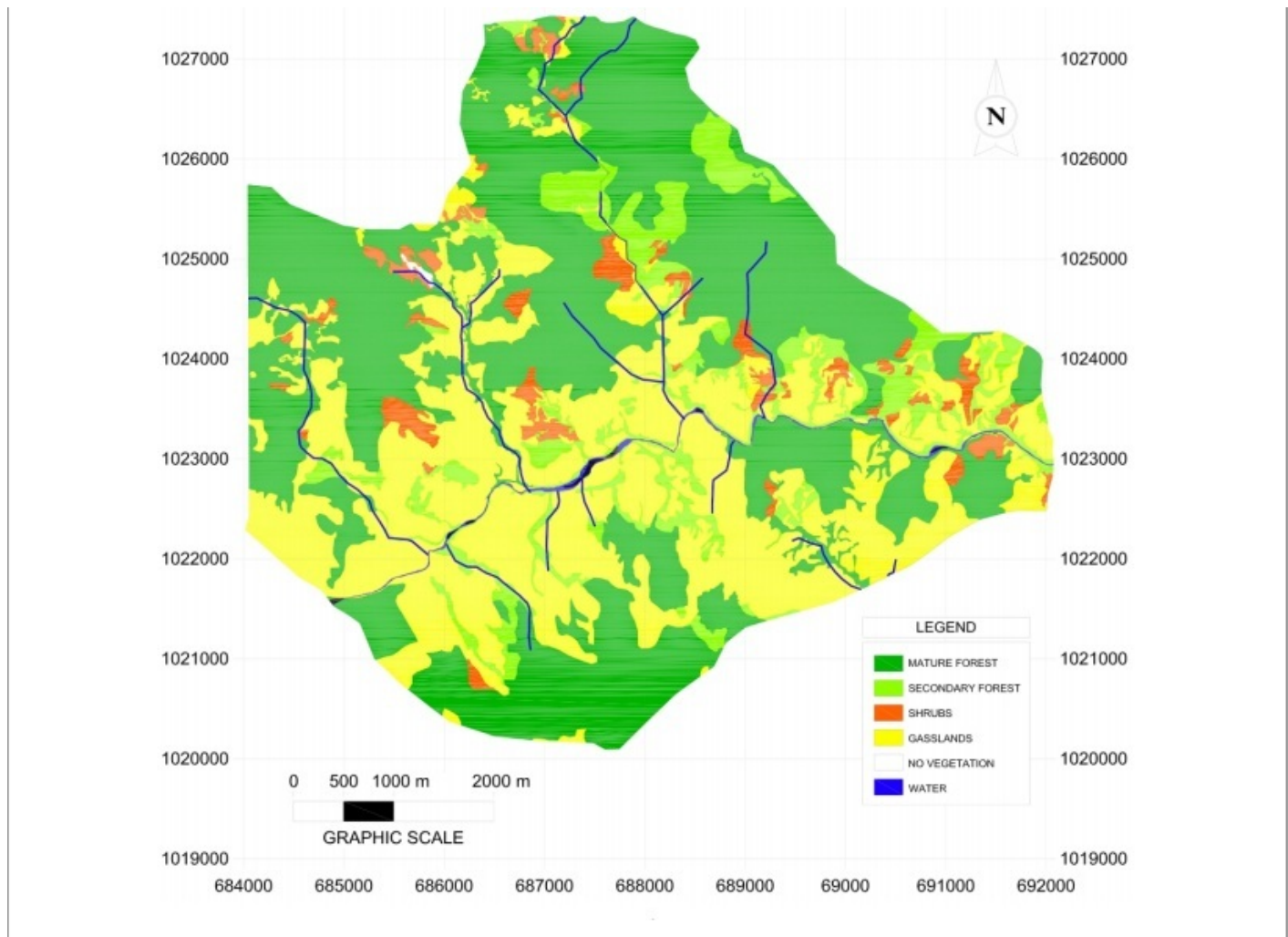
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Appendix A: Actual Soil Use and Vegetation at Project Site



Source: Ingemar Panama (2008) Preliminary Environmental Report. Los Tres Brazos Valley, Panama.

Cooperatives as a Sustainable Business Model in Latin America
A Case study on Panama and the San Miguel Region
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Introduction:

In an age of globalization and exponential capitalist growth, our society faces challenges to provide the international community with the tools necessary for proper social, economic, and ecological development. Individuals lack the resources and opportunities to maintain financial stability. Small business is often placed on the periphery, unable to service the economic and social needs of a local population. Cycles of financial crises have demonstrated the high risk associated with the current popularized business model, and poverty is on the rise at an unprecedented scale. The Millenium Development Goals and post-2015 Sustainable Development Goals paint a positive framework for future growth. In order to uplift communities around the world, however, action is needed to directly impact on an individual, person-to-person, level. The question remains--how can local community members create their own small business that thrives in an economic climate seemingly overrun by the corporate entity, on the local, national, and international scales?

Cooperatives may perhaps be the answer, as the up-and-coming business model essential for small enterprise development worldwide. The International Labour Organization (ILO) defines a cooperative as ‘an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise.’ (ILO Recommendation 193). Cooperatives grant members a unique approach to profit and service provision; a democratically-controlled enterprise under trusted values and principles opens new channels of growth for individuals from a variety of socioeconomic backgrounds. Cooperatives have been deemed able to “Build a Better World” (Somavia, 2012). Though each particular type of cooperative charts its unique benefits and services offered to members, most cooperatives are united in providing the following:

Employment Equity: Cooperatives are open to all, allowing marginalized communities the opportunity of economic development. Women, youth, the poor--all populations granted a chance to succeed through cooperatives. Under the cooperative structure, management holds stakeholder--*not* shareholder--value as most important to measure company success. Being that members all possess shares of a company, this demonstrates a careful consideration of acting in the interests of workers through social inclusion and an equal contribution and distribution of equity capital (Iginareza, 2013). What profit-driven companies may deem unprofitable, cooperatives take advantage of to satisfy members and drive sustainable development.

Empowerment: The empowerment of owning and controlling a company is one that is offered to all cooperative members. Given that cooperatives require the input of each member, a common interest takes a hold of company goals, needs, and vision. When coupled with the *International Cooperative Values and Principles*, empowerment gives groups an ethical and sustainable foundation that has held strong for nearly two centuries and may continue to prove successful in the coming years.

Affordability: In addressing sustainable development, the affordability of planning for longer-term leaves cooperatives less at-risk from the demand for immediate *profits* and more able to meet the immediate *needs* of local populations. Through their purchasing power, cooperatives grant groups an unprecedented resilience to instability and an opportunity to make an impact in ways other business

models cannot: Cooperatives in India helped make the nation the largest milk producer in the world; Agricultural cooperatives allowed farmers the ability to cope with the 2007-2008 food crisis better than alternative business models; and in 2011, the cooperative movement in Japan played a pivotal role in earthquake and tsunami recover by shifting resources delivered to most destructed areas (Sustainable Development, 2012).

Opportunity: The ICA estimates that there are more than 1 billion people classified as members of cooperatives, with 100 million employed through the cooperative model (Mata-Greenwood, 2013). Cooperatives grant opportunity not only for productive employment, but proper provision of services, and a much-needed voice to rural communities (Henry & Schimmel, 2011). When considering social, economic, and ecological impacts of cooperatives, cooperatives fare better than their competitors in public perception and influence.

Ecological Sustainability: Particularly in multi-stakeholder cooperatives, the diversity in management and multi-tiered business structure allows for management of environmental effects at a variety of levels. Cooperatives grant individuals the power to influence good practice of a business, while offering higher-quality services and goods necessary for the livelihoods of populations around the world. As community-based entities, cooperatives can and will make a difference in the way we interact with our environment, serving at the forefront of conservation of our ecosystems.

There exist many benefits for those who choose to capitalize on the cooperative model. For these reasons, the the ICA frames their vision around the idea that cooperatives will serve as the fastest growing form of enterprise by year 2020 (Blueprint). It is my belief that Latin America can play a key role in fueling this development, mirroring the most recent surge in globalization and economic growth, providing a sustainable alternative to current corporate structure. However, countries in this region face roadblocks; by identifying obstacles, creating a path for success, and implementing preliminary initiatives, even those most vulnerable of communities in Latin America will too be able to develop through a cooperative model. I aim to examine the case of Panama--specifically, the region of San Miguel, a zone of opportunity for cooperative growth--to benefit a peripheral community in need of economic, social, and environmental uplift.

Cooperatives History

Cooperatives have long been a part of the economic playing field; for centuries, these groups have rooted their strength in the inherent human desire for collaboration and driven success. In analyzing the role of cooperatives in their current definition, one can trace back the cooperative business model to the mid-19th century, where members joined together in the interest of overcoming the obstacles presented by social and economic modernization of the time (Gibson et al, 2005). The diversity in options of cooperatives gives both consumers and producers a wide range of choices in business model output. Each cooperative has a unique foundation, but all are unified in seven cooperative principles known as the *Rochdale Principles* that have allowed cooperatives the opportunity to emerge in the global markets as a legitimate form of business in the current economic landscape:

1. *Voluntary and Open Membership*: No discriminatory membership requirements
2. *Democratic Member Control*: One member, one vote
3. *Member Economic Participation*: Capital contribution to cooperative by all members
4. *Autonomy and Independence*: Self-help and member-controlled
5. *Education, Training, and Information*: Proper training for all members
6. *Cooperation among Cooperatives*: Collaboration across scales
7. *Concern for Community*: Local focus, on members and surrounding community

The first three of these principles were outlined by the 1844 Rochdale Pioneers Society, formally known as the *Equitable Pioneers of Rochdale Society* and regarded as the foundation of the modern cooperative movement (Gibson et al, 2005). Guiding the initial spread of consumer, retailer, housing, and agriculture through the beginning of the 20th century in Europe, the principles were not expanded across all cooperatives until the establishment of the 1896 International Cooperative Alliance. One of the first three non-governmental organizations to be accorded “consultative status” by the United Nations in 1946, the International Cooperative Alliance (ICA) is considered a leading body for cooperative and technical and framework support worldwide (Mogrovejo et al. 2012).

With the addition of the final four principles, the Rochdale Principles were recognized by 1963 as the official and legitimate guiding points for cooperatives around the world. Cooperative structure is much different than a ‘typical’ business or organization structure; cooperatives are formed by a “bottom-up” approach, in which employees are all members of a cooperative, choosing their management, who in turn hire a board of directors. In addition to the outlined Principles, many cooperatives also shape their model around the 1995 “Cooperative Values” of self-help, self-responsibility, democracy, equality, equity and solidarity. Ethics of cooperatives hold honesty, openness, social responsibility and caring for others as a priority of business organization (Co-operative identity, values & principles).

These have been essential in guiding the unprecedented success of cooperatives in most recent years. The growth of cooperatives have been a cause of excitement for proponents worldwide and a major force behind the perception of cooperatives as a foundation for poverty eradication. Cooperatives currently have a turnover of approximately \$1.1 trillion (USD), employing 20% more employees worldwide than multinational enterprises (The Global Cooperative Sector, 2012). These businesses also account for *all* produced Fair-trade goods worldwide. Cooperatives are found in 96 countries and have experienced little shortage in wealth, despite financial and economic crises of recent

times. Currently, the United States takes the lead with most cooperative members--256 million members in 30,000 different cooperatives. The 300 largest cooperatives in the world could hold the position of the world's ninth largest economy, with an overall 2013 sales of \$2.097 billion USD (Exploring the Co-Operative Economy, 2013). A 2010 World Bank report found that credit union branches serve 870 million people, accounting for 23% of bank branches and acting as the 2nd largest financial services network in the world (Cooperative Membership Hits 1 Billion Worldwide, 2012). These figures are indicative of the strong existing infrastructure of cooperatives worldwide that can serve as a point for growth of cooperative practices for decades to come.

Placing the spotlight on cooperatives is necessary to encourage their establishment worldwide and help entrepreneurs understand the benefits associated with the unique business model. The success of cooperatives was recognized and culminated with the 2012 United Nations International Year of Cooperatives (IYC), spearheading a push for formal cooperative growth worldwide as an integral facet of achieving the Millenium Development Goals and initiatives of poverty reduction across the international community. The Blueprint for a Cooperative Decade was drafted in October 2012 by the General Assembly of the ICA (Blueprint, 2013). Finalized in February of 2013, the Blueprint outlines goals for a "2020 vision", wherein cooperatives exist as: "the acknowledged leader in economic, social and environmental sustainability, the model preferred by people, the fastest growing form of enterprise" (Blueprint, 2013). Cooperatives, it is argued, can be the leading force of poverty reduction by inspiring small-business enterprise through a variety of channels, networks, and business types. Though there does not exist a universal distinction of cooperatives, they are generally broken down into the following divisions, all of which are found in Latin America(Consumer Federation of America)(Types of Cooperatives, 2012):

Consumer: A consumer cooperative is characterized by ownership by customers in a unique collective decision process. Examples of this type of business, which focuses on providing services to meet a certain need in a given neighborhood or local region, include:

- Credit Unions
- Electric Cooperatives
- Utility Cooperatives
- Telephone Cooperative
- Housing Cooperative
- Food Cooperative
- Nursery/Child-Care Cooperative
- Health Cooperative
- Student Services (Book, Food, and Housing services)

Producer: Comprised of entrepreneurs, farmers, and other types of individual producers who join together to cooperatively process or market goods producer cooperatives often have the goal of increasing production capacity, profits, etc (Types of Co-ops). By pooling resources, business-owners can ensure adherence to proper regulations, and adaptation to technological innovation and market conditions. Common examples include:

- Agricultural cooperatives with farmers who pool resources to increase purchasing power and strength in current markets (Types of Cooperatives)

- Professionals who share support staff and building despite separate business functions.

Worker: Owned and controlled by workers, this particular type of cooperative is unique in its democratic structure wherein membership is usually only open to employees. A worker cooperative's infrastructural organization is largely determined by size; the number on a management team varies from business to business. Wherein "normal" businesses drive labor to serve the interests of capital, worker cooperatives aim to frame capital as serving the interests of labour (Types of Co-ops).

Common examples include:

- Consumer retail
- Consumer services
- Food Service
- Health Care
- Manufacturing

Hybrid: A hybrid model incorporates a multi-stakeholder approach to some of the models listed above, known for its diversity in available products and services. Each stakeholder can contribute a beneficial service that balances consumer wants and needs that may not be addressed by another cooperative member. Both users and producers increase satisfaction, in the drive to balance interests. Minimizing conflict in this model, however, is challenging; stakeholder often maintain different goals and visions that may not align with other member companies' principles (Types of Co-Ops).

ICA Distinctions

Expanding upon these distinctions, the International Cooperative Alliance has created sectoral organizations that focus on oversight of the following types of cooperatives most common in the international markets:

Agricultural (International Cooperative Agricultural Organization, ICAO): Agricultural producers group together and associate under cooperative values to improve position in the marketplace on any given scale (Department of Agriculture, Forestry and Fisheries). By addressing common issues, agricultural cooperatives fuel improvement of products and services, opening new channels for market growth and expansion.

Characteristics and benefits include:

1. *Improved Bargaining Power:* The volume of several businesses provides a strong push when negotiating with outside organizations and businesses.
2. *Reduced Costs & Increase Income:* Through volume purchasing, cooperatives can buy minimized amounts of equipment and necessary services and still meet and/or exceed net goal production.
3. *Improved Quality:* With the improvement of facilities and cross-company collaboration, member satisfaction is taken into account. Furthermore, the input of resources and

capital from multiple producers allow for a diversity in offered products and services that compete against even the largest of agro-corporations.

4. *Risk Reduction:* A pooled effort of resources and services provides producer-members a safety net when expanding to new markets.

Banking (International Cooperative Banking Association, ICBA):

A second type exists in banking cooperatives, financial entities wherein members are both owners and customers of their banks. Perhaps the fastest growing type of cooperative in the world, credit unions accounted for one-fifth of cooperative members worldwide by 2013 according to a report by the World Council of Credit Unions (World Council of Credit Unions Inc., 2013) Put on a level playing field with stockholder banks through adherence to respective national banking regulations administered by outside state cooperative bodies, these cooperatives serve to increase banking access and finance to vulnerable populations in both developed and developing countries at local levels. According to the ICBA, there exist three common characteristics in banking cooperatives worldwide (International Cooperative Banking Association):

1. *Customer's owned entities:* Through a "one member-one vote" mentality, the member control of cooperatives balances business values. Risk is minimized by increase in credit and direct address of member needs. Through responses to current member concerns, banks remain stable despite financial crises.
2. *Democratic member control:* Emphasizing a common good of profit gain and allocation, banking cooperatives allow members to play a central role in furthering bank foundational values. In Europe, this scheme allows members to take part in the development of their local communities and play a leading role in Socially Responsible Investment (SRI) (European Association of Cooperative Banks).
3. *Profit allocation:* Yearly profits, benefits, and surplus are placed in reserves, with a portion allocated towards members. This allows for a common benefit for all members, further rewarding good governance in equal member ownership.

Consumer (Consumer Cooperatives Worldwide, CCW): (See Cooperative Types: Consumer above)

Fisheries (International Cooperative Fisheries Organization, ICFO)

1. *Training and Organization:* Vocational and educational services can be pooled across individual fisheries. As in other producer organization, the collective sharing of resources and equipment allows for a stronger hold on new technological advancements and market channels.
2. *Global technical support:* Building upon the previous benefit, a global network of fisheries can be built, on both individual-to-individual and cooperative-to-cooperative bases. This further increases opportunities for shared resources and collaboration.
3. *Reduction of environmental degradation:* A shared responsibility among members of fishery cooperatives emphasizes the coordination of efforts to reduce environmental pollution and

alteration of habitats while still allowing for optimal levels of production. Cooperatives can work with local governments to implement coastal management plans (ICFO, 2013).

Health (International Health Cooperative Organization, IHCO): Classified by a diverse set of cooperatives (consumer, producer, hybrid), this business model seeks to unify groups on the basis of health-related services. Examples and benefits include:

1. *Health Insurance Groups--Client Benefits--* Offered at different levels of coverage (small business, individuals, self-employed, etc.), these groups aim to provide affordable services for members and often shape their goals based on the need of a community. For more benefits see *Cooperative and Mutual Insurance*
2. *Health Insurance Groups--Employee Benefits--* The opportunity to work in a community-involved cooperative grants employees the chance to improve skills and shape the overall functions of the company.
3. *Other forms of Health Cooperatives--* Pharmacies, Health Support Groups, Medical Supplies groups. This diversity in types of health cooperatives grants clients and members a network of services run by socially-responsible businesses.

Housing (Cooperative Housing International, ICA Housing): Directly addresses housing insecurity, this type allows members to act as a general assembly that owns land, building, green areas, and any applicable services associated with the cooperative. According to *Habitat for Humanity*, the cooperative model of housing not only reduces bureaucratic oversight, but also administrative and transactional costs, because of the unique overall management of land and loan for housing run solely by the cooperative (Clestan & Gonzalez). Often offering subsidized housing, the community within a cooperative is supportive of members from diverse economic backgrounds that share a common pursuit for collective action. Cooperatives are characterized by the following:

1. *Self-management:* The empowerment of people is made possible through the decisionmaking power of each individual member of the cooperative. The community control of a cooperative grants each member the opportunity to be termed a 'mutual owner', playing a central role in upholding applicable rules, regulations, and community by-laws.
2. *Self-help:* Equal contribution of efforts and management by all cooperative members; administrative duties, upkeep of housing infrastructure, construction processes are carried out by members.
3. *Right to a commonly-owned housing cooperative/an alternative form of housing tenure:* Members' shares of the cooperative can earn equity and can be sold and inherited. This can be directly associated with affordability; Aside from increasing in taxes and/or operation costs, the cost of living in a cooperative remains relatively stagnant. In many nations, tax deductions are made possible by the idea that members are allowed to deduct their share of real estate.

4. *Technical assistance*: A multidisciplinary approach to technical assistance is made possible by networks with specialists in architecture, legal counsel, etc. The cooperative is free to create partnerships with outside bodies if deemed appropriate for overall cooperative value and structure (Camoratto, 2012).

Cooperative and Mutual Insurance (International Cooperative and Mutual Insurance Federation, ICMIF): Premiums paid by members are pooled and invested, and often offered at a lower cost than competitor insurance groups. Profits are returned to customers as dividends. Consumers often look to cooperative/mutual insurance for the following benefits:

1. *No traditional “shareholders”*: Basing profits in dividends is not at the forefront of company policy; mutual insurance companies are not forced to follow stock-exchange prices to dictate investment return. Clients and shareholders are one in the same in this model, allowing for a mutual decision-making process that drives long-term management and financial investments. Ultimately, the transparency that results maintains profit security and client loyalty (International Association of Mutual Insurers, n.d.).
2. *Immune to “take-overs”*: Because this model of cooperative is member-owned and managed, the long-term goals of the company is the basis for profit return. Cooperative and mutual insurance companies often advertise competitive covers and profit returns in rebates.
3. *Member-policyholder rights*: Decisions, recommendations, and proposals are made by members, who also act as individual members of a management team. A collective approach to financial security and transactions is a natural advantage to customers, as they feel a sense of involvement in overall company structure. Companies incorporate a “we” mentality when marketing.

Industrial, Artisanal, and Service Producers (International Organization of Industrial, Artisanal, and Service Producers’ Cooperatives, CICOPA): Grouping three types of producers, this particular sectoral organization of cooperatives services a particular group of businesses in order to break through markets through the following:

1. *Eliminating the Middle-Man*: Control of distribution of work is kept to each individual artists, and market capacity is increased by eliminating a “middle-man” distributor through retail, internet, or catalogue sales (What is a Cooperative?, 2012).
2. *Quantity purchases*: Money is saved through bulk and quantity purchases. Higher quality materials can be bought with a larger pool of capital, often leading to higher-quality goods.
3. *Shared Resources*: The sharing of studio space and equipment allows for an increase in quality of work and ease of production. This allows for artistic freedom as a cooperative space, with a support network of other producers that encourages innovation and market strategies.

Latin America

In Latin America, the influence of cooperatives has been a driving force in economic and social stability for the past two centuries to adapt to the growing socioeconomic issues of poverty, violence, and instability. Informal cooperatives first appeared in the 19th century in Argentina, Brazil, Venezuela, and Mexico, and soon spread their ideals to neighboring regions with the rise in migration and trade. According to researchers Rodrigo Mogrovejo et al in “*El Cooperativismo en America Latina* (Cooperativism in Latin America)” (2012), the adoption of cooperativism was expedited by the influence of four forces: the European immigrants to Latin America and their cooperatives in the form of consumption, finance, and mutual security; the Catholic Church and their efforts to combat vulnerability in the Andean region through savings and credit unions; governments and programs geared towards agro- and commercial association (supported by the United States Association for International Development (AID)); and unions, who directly target workers and families in their approach of the cooperative model. Cooperatives flourished in the region as local organizations of individuals wishing to collaborate in economic and social ventures through the beginning of the 20th century.

Cooperatives did not gain legal legitimacy, however, until Latin America in 1987 with the emergence of the Organization of Cooperatives of America’s (OCA) Framework law to guide cooperatives laws in the region. The 1990 inception of the *International Cooperative Alliance for the Americas* (ICA Americas) has furthered the foundation for growth of cooperatives in Latin America.

The ICA is guided by an autonomous body of rules termed the Framework Law on Cooperatives in Latin America (FL), meant to provide a base from which to stem cooperative establishment and maintain harmony among bodies across Latin America. First approved by the assembly of OCA in November 1988, a recent draft was completed in conjunction with the ICA in February of 2008 by the Consultative Council of the ICA Americas. The Framework Law clearly outlines provisions and recommendations for Latin American cooperatives, with three underlying principles that can be highlighted to “provide a legal framework for their organization, operation and regulation” (International Cooperative Alliance for the Americas, 2009) :

1. *Assertion of the Cooperative Identity:* The ICA follows the ILO Recommendation 193 (“*autonomous association of persons...*”) This demonstrates the legitimacy of cooperatives in Latin America, as separate from for-profit companies and legal bodies.
2. *Business Sense:* The FL outlines recommendations to ensure ease in cooperative structure and financial stability, which include: the authorization to service outside of the membership pool, rights for members, and options for reserves, capital contribution pools, and liability capacity. This particular principle gives prospective cooperative members the opportunity to understand the benefits of joining a cooperative, and the flexibility granted to these bodies to ensure success.

3. *Autonomy*: Rules communicate the importance of governance structure of a cooperative, as well as their autonomy from their respective local and national governments. An assembly, board of directors, and supervisory authority comprises the governance aspects of each cooperation, and a registration system and limited legal supervision is administered by national governments to maintain a verification of compliance with laws and regulations. In this regard, the FL does not touch upon a framework for tax treatment of cooperatives in order to respect the separate legal workings of each country.

These guiding principles currently provide the foundation for the over 13,000 cooperatives that represent over 32 million members in Latin America (Mogrovejo, 2012). According to the 2012 ILO study “*Cooperativas en America Latina*” (2012), there exist two contrasting perspectives on the role of cooperatives from the Latin American mindset, particularly in Panama, due in part to division of opinions on the recent urbanization and development attributed to corporate capitalism in the region. Despite observed past cooperative successes, ‘*Cooperation*’ is oftentimes not associated with the economic wealth experienced under globalization’s neoliberal free market foundation, and can mistakenly be viewed as an unsuccessful, hopeless venture in the current economic climate. The first, skeptical view of cooperatives is characterized by this opinion, coupled with criticisms of the current treatment of cooperatives under *lax* Latin American labor laws. On the other hand, supporters of cooperatives recognize them to be a stepping stone on the path to sustainability (Davies & Mills, 2013). The commercial efficiency, combined with the capacity to shape local and national stability, provides a healthy alternative for growth and development in even the most rural of regions of Latin America.

Global Groups in Latin America

Currently, the economic climate for cooperatives in Latin America is positive, when considering the political and economic foundations already set in place for development on micro- and macro-scales. The ICA operates through a series of committees that ensure smooth operation and oversight of Latin American cooperatives, such as the *Comite Regional de Equidad de Genero* (CREG, Regional Committee of Equity), *Comite de Cooperativas de Trabajo Asociado* (Committee of Cooperatives of Associative Work), *Comite Regional de Cooperativas Financieras y Bancos Cooperativos de la ACI Americas* (COFIA, Regional Committee of Financial and Bank Cooperative of ICA Americas), etc. The International Organisation of Industrial, Artisanal, and Service Producers’ Cooperatives (CICOPA) stands as an example of sectoral organizational management within the ICA serving to represent a variety of sectors within Latin America (Mogrovejo et al, 2012).

The support for cooperative structure, however, would not be possible without backing by larger economic organizations that uphold the overall economic development of the Latin

American region. Within Latin America, there exist regional groups that have begun to incorporate cooperative values in separate committees focusing on this particular business model. The 1991 formation of MERCOSUR (Mercado Comun del Sur) incorporates seven Latin American countries as the “*Common Market of the South*”--Argentina, Brazil, Paraguay and Uruguay as permanent members established under the 1991 Treaty of Asuncion; and Bolivia, Chile, Colombia, Ecuador and Peru (Venezuela pending ratification) as associate members that contribute to efforts to eliminate trade barriers and obstacles. As the world’s fourth largest trading bloc behind the Association of South East Asian Nations (ASEA), European Union (EU), and North American Free Trade Association (NAFTA), MERCOSUR provides an outlet through which trade ties are possible on the international front, and provides cooperative support through the functions of the aforementioned CICOPA, as well as the *Reunion Especializada de Cooperativas del Mercosur* (RECM, the Special Meeting of MERCOSUR Cooperatives) (Profile- MERCOSUR). Similarly, UNASUR has members from Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Surinam, Uruguay and Venezuela.

Tools provided by international groups are also indispensable. The *Confederacion de Cooperativas del Caribe y Centroamerica* supplies integrative services for a specific region of Latin America as a non-governmental regional body. (Mogrovejo et al, 2012) The ICMIF/Americas (International Cooperative and Mutual Insurance Federation/Regional Association for The Americas) provides functional support for companies with a “mutuality” or “people-based business strategy”, boasting a representation of over 230 companies in nearly 70 countries worldwide (ICMIF/Americas Home Page, n.d.).

This intertwining of public institution and organizations provides a multi-fold network of support for new emerging cooperatives. Though the number of cooperatives in Latin America pale in comparison to those of the United States, it is important to note the upswing of development associated with cooperatives in most recent years. The make-up of cooperatives is far from homogenous, a broad demographic of individuals across a variety of sectors--men and women, citizens and visitors, young and old. Governments have promoted these cooperatives in conjunction with support from outside bodies. The following table displays the main bodies responsible for furthering cooperative values and infrastructure in Latin American countries:

Country	Public Organizations	Public Institution
Argentina	<i>Confederacion Inter Cooperativa Agropecuaria Cooperativa Limitada</i> (CONINAGRO); <i>Confederacion de Cooperativas de la Republica de Argentina</i> (COOPERAR)	<i>Instituto Nacional de Asociativismo y Economia Social</i> (INAES)
Bolivia	<i>Confederacion Nacional de Cooperativas de Bolivia</i> (CONCOBOL, National Confederation of Cooperatives in Bolivia)	<i>La Direccion General de Cooperativas</i> (General Direction of Cooperatives)
Brazil	<i>Organizacion de Cooperativas de Brasil</i> (OCB, Organization of Cooperatives of Brazil)	<i>El Departamento de Cooperativismo y Asociativismo del Ministerio de Agricultura</i> (DENACOOOP, Department of Cooperativism and

		Associativity of Ministry of Agriculture)
Chile	<i>Confederacion General de Cooperativas de Chile</i> (CONFECOOP, General Confederation of Chilean Cooperatives)	<i>Departamento Nacional de Cooperativas</i> (DECOOP, National Department of Cooperatives)
Colombia	<i>Confederacion de Cooperativas</i> (CONFECOOP, Confederation of Cooperatives)	<i>Superintendencia de Economia Solidaria</i> (Superintendent of Solidarity Economy)
Costa Rica	<i>Consejo Nacional de Cooperativas</i> (National Council of Cooperatives)	<i>Instituto Nacional de Fomento Cooperativo</i> (INFOCOOP, National Institute of Cooperative Promotion)
Ecuador	None	<i>Direccion Nacional de Cooperativas</i> (DINACOOOP, National Directive of Cooperatives)
El Salvador	<i>Confederacion de Asociaciones Cooperativas de El Salvador</i> (COACES, Confederation of Cooperative Associations of El Salvador); <i>Confederacion de Cooperativas de la Reforma Agraria</i> (CONFRAS, Confederation of Cooperatives of Agrarian Reform); <i>Asociacion Salvadorena de Cooperativas</i> (ASALCOOP, Salvadorean Association of Cooperatives)	<i>Instituto Salvadoreno de Fomento Cooperativo</i> (INSAFOCOOP, Salvadorean Institute of Cooperative Promotion)
Guatemala	<i>Confederacion Guatemalteca de Federaciones Cooperativas</i> (CONFECOOP, Guatemalan Confederation of Cooperative Federations)	<i>Instituto Nacional de Cooperativas</i> (INACOOOP, National Institute of Cooperatives)
Honduras	<i>Confederacion Hondurena de Cooperativas</i> (CHC); <i>Federacion de Cooperativas de Ahorro y Credito y Cooperativas Mixtas</i> (FACACH)	<i>Instituto Hondureno de Cooperativas</i> (IHDECOOP)
Mexico	<i>Confederacion Nacional de Cooperativas</i> (CNC)	<i>Comisión Nacional Bancaria y de Valores</i> (CNBV)
Nicaragua	<i>Consejo Nacional de Cooperativas</i> (CONACOOOP)	<i>Instituto Nacional de Fomento Cooperativo</i> (INFOCOOP)
Panama	<i>Consejo Nacional de Cooperativas</i> (CONALCOOP)	<i>Instituto Panameno Autonomo Cooperativo</i> (IPACOOOP)
Paraguay	<i>Confederacion Paraguaya de Cooperativas</i> (CONPACOOOP)	<i>Instituto Nacional de Cooperativismo</i> (INCOOP)
Peru	<i>Confederacion Nacional de Cooperativas</i> (CONFENACOOOP)	<i>Ministerio de la Producción</i> (Ministry of Production)
Uruguay	<i>Confederacion Uruguaya de Cooperativas</i> (CUDECOOP)	<i>Instituto Nacional de Cooperativismo</i> (INACOOOP)
Venezuela	None	<i>Superintendencia Nacional de Cooperativas</i> (SUNACOOOP)

(Mogrovejo et al, 2012)

Given the existing infrastructure available for cooperatives in Latin America, this region can be viewed as a breeding ground for integrative economic practice within cooperative frameworks. The following cases, drawn from model services in the countries above--can serve as guiding points of reference for future entrepreneurial ventures of the Latin American businessmen and women through cooperation, and perhaps as a model for a proposed business in the Kalu Yala, San Miguel region:

Argentina & Worker Cooperatives:

Following the 2001-2003 economic crisis in Argentina, government and business groups struggled to find a grasp on financial stability. Cooperatives acted as a solution; the establishment of worker cooperatives was encouraged by the Argentine government, stimulating economic development, reducing unemployment, and creating a new environment and foundation for the role of cooperatives in the Argentine economy for years to come (Valente 2011). By 2009, the ministry of social development launched the “*Argentina Trabaja*” program (Argentina Works program) to employ 100,000 Argentineans in both legally-viable and financially-stable jobs. Cooperatives were formed with a focus on improving infrastructure, wherein employees received vocational training, work clothes, health care, and livable wage, and pension. By 2010, a study found that 79 percent of participants lack the required 13 years of primary and secondary education, and 77.6 percent had no trade or profession upon signing up for the program; *Argentina Trabaja* successfully provided jobs in an equitable manner under a social welfare model, ensuring long-term, sustainable growth for both individuals and the nation as a whole (Valente 2011). This, it can be argued, is a “top-down” approach that runs into roadblocks when approached with conflicts between workers and the State.

Such development has inspired an opposite approach to cooperative function in the integration of economic activity separate from the state; the Asociación Nacional de Trabajadores Autogestionados (ANTA, National Association of Self-Managed Workers) groups workers from different cooperatives within a larger trade union, the *Central de Trabajadores de la Argentina* (CTA, Workers’ Confederation of Argentina). This unique approach does have its complexities, and allowed for the creation of a cooperative within a pre-established and successful trade union, and the establishment of a cooperative as an autonomous, self-administered entity without dependency on the State (Dobrusin, 2013). Interestingly, those within the ANTA are identified as “workers”, not “partners”, despite democratic management, and incentives to join rest in the trade union strength, higher salaries, community involvement, and significant growth of ANTA in the past years.

Both Argentina Trabaja and ANTA provide rich evidence as to the diverse options of structure when establishing a cooperative, each accompanied by a set of costs and benefits.

Brazil & Agriculture:

Brazil is a prime example of a cooperative hub; within the *Organizacion de Cooperativas en Brazil* (Organization of Cooperatives in Brazil), there exist over 6,600 cooperatives that employ 9 million members throughout the country. In analyzing the role of cooperatives as a sustainable business model ecologically, socially, and economically, one can look to a case study of the *Cooperativa Agrícola Mista de Tomé-Açu*, a Japanese-Brazilian Agricultural Cooperative specializing in black pepper, cocoa beans, and tropical fruits (Vazquez-Leon, 2010). Its inception in 1930 blossomed into a cooperative that incorporated practices that considered sustainable agroforestry to break through international markets. CAMTA stands as an example of the benefits associated with cooperatives, able to stand the test of time and maintain stability despite socio-economic divisions in Brazil; shared knowledge,

pooled resources for good storage, and entrance into tropical fruit markets (Piekielek, 2010). Research by Jessica Piekielek of the University of Arizona highlights the compelling facets of success, focusing on four key themes that uphold the foundation of CAMTA, all of which can be used as guiding points for rural agricultural cooperatives elsewhere:

1. *Development of Ecological Knowledge and An Agroforestry Model:* CAMTA encouraged individual farm efforts to contribute to crop diversification. A model that emerged in the 1970s, this type of agroforestry mirrors natural tropical forest processes in such a way that allows for crops that complement one another to thrive on individual plots of land cultivated by members.
2. *Strategic and Crisis-Driven Capital Investment:* The collaboration with outside organizations, such as JICA, has not only allowed for proper training on tools and agricultural skills, but also the offering of capital in times of financial crisis. Investment of CAFTA are made strategically to ensure a proper foundation of the overall cooperative.
3. *Ethnic Identity and Cooperativism:* The history behind CAMTA that rests in an ethno-centric, immigrant community, grants a common ground among members.
4. *Democratic Structure and Rejuvenation of Leadership:* Following ICA guidelines of democracy and member power, the votes of each member is integral to the overall structure of CAMTA. A strength in unity reinforces cooperative success. (Piekielek, 2010)

Ecuador & Banking Cooperatives:

The end of the 20th century brought a strong financial crisis on the Ecuador economy, dropping 6.3 percent of GDP and leading to a bankruptcy of 22 banks representing 60 percent of the financial system of the time (Crombugghe, 2005). As an approach, banking cooperatives were implemented in two forms: regulated and unregulated. The first was supervised by the Administration of Banks and Insurance, advertised as “open” for both members and non-members. The latter, unregulated, was supervised by the Ministry of Social Welfare under a “closed” model of cooperative.

Both forms were successful; a portfolio growth from June 2003 to 2005 from \$187 to \$577.5 million (USD) dollars accompanied a growth in savings from \$272.7 to \$482.1 million dollars, as well as a 72 percent growth in ordinary savings and 89 percent in term deposits. By the end of 2005, the savings-credit cooperative model emerged as the second most popular option for banking behind the official banking sector. More importantly, this model of cooperative was a viable option for even the most rural of areas, with 77 percent of savings distributed to mountainous regions, and 45% of clients acting as rural micro-enterprises (Crombugghe, 2005).

Why Panama?

Panama is an extraordinary platform for entrepreneurial success and enterprise accomplishment. The \$36 billion (USD) economy of Panama is the fastest growing in Latin America, attracting investors and enterprises from around the world (Sabo, 2014). The re-introduction of a Democratic Republic in the 1980s has allowed Panama to thrive in the past three decades. An openness to foreign investment and a strong history of bi- and multilateral trade agreements paints a near-perfect climate for fertile economic growth.

Panama's growth can largely be attributed to the success of the Panama Canal, one of the most critical and innovative accomplishments in world ocean trade routes. Shaping global economic patterns, the Panama Canal is the most-travelled passageway in the world, accommodating over 140 maritime trade routes and 5 percent of the yearly total cargo volume (Panama Canal Expansion Report, 2010). Linking trade through the Atlantic and Pacific Oceans, the Canal stands as a neutral international passageway that has paved the way for Panama's role in international trade patterns. In order to match the unprecedented exponential growth of global trade, the Panama Canal is currently undergoing the largest construction expansion project in the world with an expected completion date of 2015. The \$5 billion (USD) Expansion Project sets the stage for Panama's continued involvement in the international playing field, a new national figure of power on the global economic stage.

Named the #1 country to visit in 2012 by the New York Times, Panama has a strong tourism sector that further drives economic success. In Panama City alone, hotel growth has surged from 1,400 to over 15,000 rooms in 13 years, with top players dominating the local hotel industry (Trump, Starwood, and Hard Rock, among others) (Neville, 2013). The period of 2009-2013 saw over 1.6 million visitors, attracted by welcoming policies, affordable prices and ease of US Dollar use, and vibrant culture (International Tourism, 2013). The eclectic mix of "old" Panama in Casco Viejo, a colonial charm on the edge of the city deemed a UN Heritage Site, with "new" city-life of skyscrapers and posh nightlife, give tourists a unique experience that matches global cities of the world. This, combined with rainforests and valleys rich with vegetation, gives tourists the ideal climate to visit and contribute to the growing Panamanian economy.

The surge of wealth in Panama has not been witnessed by all members of the population, however. According to the Economic Commission for Latin America and the Caribbean (ECLAC), 28.6 percent of the population is categorized as "poor", with 11.7 percent of overall population as "extremely poor". The peripheries of Panama City create a stark contrast with urban development--the city of Colon is perhaps the best example, with a population of 220,000 living near or below poverty line, substandard conditions and crime. Despite being the largest duty-free trade zone in the Western Hemisphere, Colon remains a socio-economically complicated pit left ignored by government investment (Archibold, 2013). Hit hardest by income inequality, however, are the rural poor: the small subsistence farmers without strong networks to break through the national and international markets, rural labourers without land subsiding on wage labor as their main form of income, women in wage labor, and indigenous people (the "Guna Yala"). Panama City is seen as a main source of employment, and areas have been stripped of financial stability with the rise of rural-to-urban migration. The poor lack the support system necessary to gain wealth, and an increase of jobs requiring specialized labor and skills has resulted in response to the specialization of sectors under globalization.

In order to accelerate growth, Panama needs a strengthening of public finances, an expansion of infrastructure, and a provision of basic education and health services for its poorest citizens. The 2010-2014 Country Strategy with the Inter-American Development Bank (IDB) focuses on these central ideas through 5 initiatives of public finance, transport, water and sanitation, energy, education, and health (Panama IDB Country Strategy, 2010). As one of the founding members of the IDB, Panama holds itself as a central figure in development in Latin America, and has aligned itself with other international organizations and bodies key to furthering capital gain alongside sustainable initiatives.

Could cooperatives be the answer necessary to allow the poor, both urban and rural, to capitalize on the open opportunities of international trade and development currently on the rise in Panama? The Panamanian landscape for cooperative growth is far from grim; the government has implemented a strong foundation from which to harvest a thriving cooperative structure. The ideal time to start cooperative is in the immediate future; cooperatives can serve as a creative approach to the economic stability and success of Panama on the global stage.

History of Cooperatives within Panama

The first informal cooperatives in Panama were observed in 1903, yet the country remained the last of the Central American countries to establish formal recognition of these cooperatives under government structure (Shaffer, 1999 p.110). Following the signing of the Herran-Hay Treaty, Panama officially separated from Columbia as an independent Republic on August 12, 1903 (Panama's Independence Day). The legal recognition of cooperatives did not come until over a decade later in 1916, Articles 474 to 488 Commercial Code, Book I, Title VIII, Capital VIII established the first formal codes for cooperatives in Panama, furthered in 1926 under the authorization of "Scholarly Cooperatives" through a law of the National Assembly of Panama (*Resena Cronologia*).

The recognition of cooperatives by local populations, however, did not pick up speed until February 1954, when cooperative laws were enacted to form the first "Cooperatives of Production, Consumption, and Housing" and the Legal Regime of Cooperative Association. This paved the way for the first National Credit Union foundation by 1961, and set the stage for the future of cooperatives for decades to come in Panama. The 1970s saw the formation of cooperatives varieties (agricultural, fisheries, transportation), as well as the establishment of the *Confederacion LatinoAmericano de Cooperativas de Ahorro y Credito* (COLAC) and *Instituto Cooperativo InterAmericano* (ICI Panama), both of which play integral roles in the support of the cooperative movement in Central America. Most important is the formal adoption of the 1976 Constitution Article 278 which states that the "State has the duty to promote and oversee cooperatives and for that purpose will establish...necessary institutions" (Rosa de Vallarino, 2012)(*Constitucion Politica de la Republica de Panama, Titulo X, Articulo 278*).

In July of the 1980, an autonomous government cooperative structure, *Instituto Panameno Autonomo Cooperativo* (IPACOOOP, *Autonomous Panamanian Cooperative Institute*)

was founded under 9 principles under Law 24 of the National Legislative Council: excellence, autonomy, compromise, efficiency, transparency, responsibility, solidarity, humbleness, and honesty. The goals of the IPACOOOP are as follows:

1. Establish centers for the education of individuals on the Cooperative principles, alongside administrative, accounting, and management tools
2. Coordinate with local government agencies to ensure the support of cooperative
3. Provide technical assistance to implement and evaluate cooperative success
4. Promote cooperation among cooperatives
5. Support the inclusion of cooperatives into Panamanian National Development Plans
6. Provide recommendations to the Panamanian Executive Branch on regulations and laws related to cooperative
7. Serve as the supervision of Cooperatives in Panama.

(IPACOOOP, 2012)

The IPACOOOP is the most important link Panamanian cooperatives have to the government system, furthering their progress as legitimate bodies of economic production, and ensuring support in overall infrastructural mechanics. Direct services include judicial support (certification of business, registration, etc.), finances, business protection, organization, and technical assistance, among others (IPACOOOP, 2011).

In exploring the expansion of the cooperatives, one can note the IPACOOOP's step-by-step approach to organizing a Panamanian cooperative:

1. *Solicit a Group*: A business name, identification numbers, and signatures of a group of a minimum of 20 people must contact IPACOOOP
2. *Formal Recognition of Group*: A designated official of the IPACOOOP evaluation the group and formulates a report that determines basic business opportunity
3. *Preliminary Presentation*: Following a formal presentation of the report to the IPACOOOP Committee, the *Estatuto y el Estudio de Viabilidad Socio-Economica* (Statute and Study of Socio-Economic Viability) is made
4. *Basic Seminar*: A minimum of 20 hours is organized to match a formal technician with the group to run a basic tutorial of cooperative and business practices
5. *Evaluation of Group*
6. *Constitutive Assembly*: The Assembly meets with the designated official to re-evaluate step 5.
7. *Document Review*
8. *Cooperative Registration*: A signing of the *Acta Asamblea de Constitucion de Cooperativa* (Assembly Act of the Cooperative Constitution), the certification of the Cooperative and assignment of legal representation by signature of the Director of the Cooperative Register.

These guiding points have been instrumental in allowing for the growth of cooperatives in Panama. The creation of the IPACOOOP was furthered by 1997, with the passage of Law N 17

which created a regulatory mechanism and integrative pathway for cooperatives as a central facet of the national economy.

According to the IPACOOOP, there are 593 cooperatives in Panama as of the third trimester of 2013 (Rojas, 2014). The number of cooperatives within the Panamanian economy has experienced considerable growth in recent times, with a diversity that creates a opportunistic climate for future development. Cooperatives in Panama provide an equitable source of business development, influencing people from diverse social backgrounds, and employing an equal fraction of both men and women in Panama. The IPACOOOP reports a total number of male skilled associates at 102,000, versus a total number of women at 102,228; a comparison that demonstrates the progressive development of Panamanian cooperative on both an economic *and* social scale. The IPACOOOP classifies cooperatives into twelve divisions:

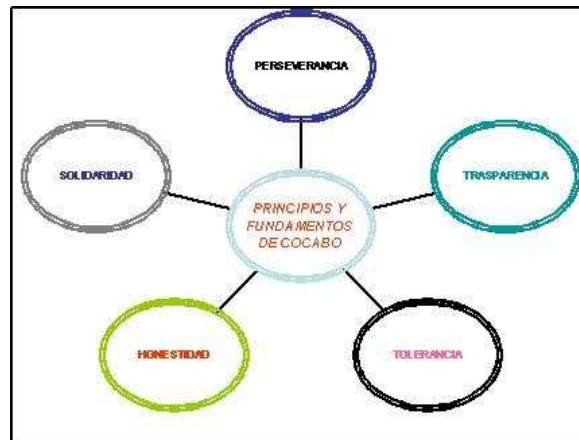
1. *Ahorro y Credito*--Credit and Savings
2. *Consumo*--Consumption
3. *Juvenil Escolar*--Scholarly Juvenile
4. *Mercadeo*--Market
5. *Pesca*--Fish
6. *Produccion*--Production
7. *Produccion y Mercadeo*--Production and Market
8. *Salud*--Health
9. *Servicios*--Service
10. *Servicios Multiples*--Multi-Service
11. *Trabajo*--Work
12. *Transporte*--Transportation

The IPACOOOP does not provide a directory, nor specific guidelines, to explain these divisions. I aim to examine the most compelling of this selection, pulling information that I believe gives an idea of the climate for cooperatives in Panama, helping shape a proposed business plan for a cooperative that services the population in San Miguel.

Multiple-Service Cooperatives: Though there are no specific guidelines as to the types of cooperatives under this designation, agricultural cooperatives may be classified as such due to their diverse range of crop selection and target markets. Agriculture cooperatives within Panama are valued at over \$48,000,000 USD (Rosas de Vallarino, 2012). As of 2012, 41 cooperatives in Panama were comprised of 568 family farms, directly benefitting over 2800 Panamanian families.

One can look to the multiple-service Cacao Co-Operative of Bocatorena (COCABO, 2014) as an example of this type of body. The first agricultural cooperative established in Panama in 1952, COCABO derives its strength from the mission to “promote the social, cultural, economic and environmental development of its members through diversification of agricultural, commercial and educational activities” (COCABO, 2014). As such, this particular cooperative

strives to offer members a variety of services, from technical assistance, to training for sustainable business practice, community development and maintenance of financial capital. What began as a small organization of cacao farmers has now expanded to 1,500 members in the Bocas del Toro Province who also sell bananas, rice, oranges, and coconut. As a producer of Fair-Trade certified Cacao Bean, COCABO also prides itself on organic production, through the fulfillment of the European Union Article 29 (1), Regulation (EC) No. 834/2007, and the United States/Canada/EU Regulating (EC) No. 889/2008 (Oregon Tith 2014).



COCABO--Principles & Fundamentals: Perseverance, Transparency, Tolerance, Honesty, Solidarity (COCABO 2014)

COCABO has implemented unique programs within its overall vision; the Family Farm Project, in conjunction with the IPACOOOP, began in November 2013 with a seed funding of B/.5,100.00 (\$5,100 USD) to give chickens to eight communities throughout the Bocas del Toro region with an aim of sustainable breeding--both for community nutrition and commercial venture.

A multi-service cooperative such as COCABO is a leading model of example for future cooperatives in the decades to come. By allowing for the development of member knowledge on sustainability--both in the “green” sense of the word, and in the upkeep of financial stability--this cooperative is successful in encouraging development in rural regions largely left untouched by urbanization.

Housing Cooperatives: There is no current evidence as to the existence of housing cooperatives that mirror those of the United States, wherein a cooperative is established as a legal entity that presides over one or more residential buildings maintained by a unique form of cooperative home-ownership. However, innovative schemes of support for housing tenure under a cooperative model have been presented in Panama through collaboration across financial sectors. As of 2013, IPACOOOP reports that there are 6 cooperatives classified as servicing *vivienda* (housing), devoted to garnering funds for cooperative partnerships that help encourage housing

tenure. *La Fundacion Panamena para la Vivienda Cooperativa* (FUNDAVICO, Panamanian Foundation for Cooperative Living), is one such body, often partnership with the *Consejo Nacional de Vivienda* (CONAVI, National Housing Council) and the *Cooperativa de Ahorro y Creditos* (Cooperative of Savings and Credits) to further the role of cooperatives in the housing sector (FUNDAVICO 2012). By the end of the 2012 International Year of Cooperatives, more than 1,500 Panamanian families benefited from the allocation of funds from the *Ministerio de Vivienda y Ordenamiento Territorial* (MIVIOT, Ministry of Housing) that totaled over \$5 million (USD), and from savings and credit union funds over \$30 million (USD) (Rosas de Vallarino, 2012).

Most recently, in July of 2013, CONAV allocated B/.220,000 (220,000 Balboas) for housing for cooperative associates. In an unprecedented joint agreement between the two bodies, CONAVI recognized the opportunity that rests in the cooperative partnerships that allow employees to purchase property, remodel homes, and secure tenure, catalyzing an overall increase in quality of life (CONAVI APRUEBA).

Financial Cooperatives:

An overwhelming amount of cooperatives in Panama are classified as *Cooperativa de Ahorro y Créditos* (Savings and Credit Unions), constituting 28 percent of the overall number of Panamanian cooperatives (Cooperativas de Ahorro y Crédito de Panamá, 2014). Stemming back to the beginnings of the Panama Canal and lack of financial tools for workers, this particular type of cooperative enjoys that largest share of use by Panamanian citizens and visitors, alike. Larger unions are comprised of nearly 100,000 members, who pay a minimum monthly deposit as a contribution to credit union capital. A safer alternative to banks, unions are limited in their lending practices (up to four times their capital), and, on average, can only loan up to \$10,000 (USD) due to parameters set by member contributions. Though Panamanian unions do not offer common commercial or business services (checking account, online banking, credit cards, etc.), members are less exposed to risk and often enjoy a higher interest pay at credit unions, which have not failed in Panama as banks have since their establishment in the early 20th century (Cooperativas de Ahorro y Crédito de Panamá, 2014). Oftentimes, these organizations limit memberships to workers of specific sectors or industries, but many have begun opening doors to foreigners to capitalize on the rise in tourism and business sectors.

It is important to note the large role that this particular type of cooperative plays in the overall financial stability of Panamanians. Their far reach in influence, as well as their direct ties with government, provide an interesting link between the average Panamanian and the opportunity to escape economic vulnerability.

Juvenile Cooperatives: This form of cooperative is perhaps the most compelling case within Panama, as it introduces a unique channel of growth for cooperatives to directly stimulate social development in the increasing percentages of vulnerable youth. Law 20 of 1926 authorizes the

establishment of youth cooperatives for the “promotion of savings and mutualism” (Rosas de Vallarino, 2012). Decree 31 of 1981 created the legal formation of youth cooperatives under the Panama Cooperative Institute. Following the aforementioned 1997 Law 17 and subsequent frameworks, youth cooperatives experienced a significant growth in numbers; the period from 2007 to 2011, alone, saw an increase from 29 to 96 cooperatives. The requirements for the establishment of youth cooperatives mirror those of adult groups, yet are only open to young adults from 16 to 35 years old to take advantage of the initial \$1500 (USD) seed funding (Rosas de Vallarino, 2012).

Under the “*Tan Joven Como Tu*” (As Young as You) campaign, the IPACOOOP, provides youth opportunities for cooperative involvement through two channels: *Cooperativas Comunes* (Community Cooperatives) and *Cooperativas Escolares* (Scholarly Cooperatives) (Decreto 31, Artículo 23). Community cooperatives are linked by the physical proximity of a local community and are not required to be comprised of youth from the same school. The government of Panama has targeted the creation of these cooperatives within schools with education as the common bond among members in Scholarly Cooperatives. Regulations have become relaxed in recent times, as the government now allows not only students, but parents, faculty members, and staff, to take advantage of the \$500 (USD) allocated yearly to each school for cooperative finance. As of 2013, students have the opportunity to choose from over 110 different cooperatives geared towards schools to fuel entrepreneurial development (IPACOOOP).

In 2010, the *Ministerio de Trabajo y Desarrollo Laboral* (MITRADEL, Ministry of Labour) in partnership with *Autoridad de La Micro, Pequena, y Mediana Empresa* (Authority of Macro, Micro, and Meso Enterprise) launched the *Mi Primera Empleo* (‘my first job’) to provide youth ages 18-29 vocational training in entrepreneurship and cooperative values (A Better Future for Young People). Since the creation of the program, over 500 students have benefited. Young people entering the job market in Panama are able to confidently use their learned skills from the program to contribute to productive activity in a professional environment with a foundation of cooperative ideals.

The International Year of the Cooperatives: The 2012 International Year of the Cooperative (IYC), declared by the United Nations to shed light on the idea that “*Cooperative Enterprises Build a Better World*”, sparked further motivation in the cooperative movement within Panama. As the host of the 21st annual *International Cooperative and Mutual Insurance Federation/Regional Association for The Americas* Conference, as well as the Second International Cooperative Summit of the ICA, Panama was a key figure in the global debate on channel development for cooperatives, and brought forth cooperatives to the public eye through an innovative marketing strategy by capitalizing on existing popular trends.

The lottery was one such breakthrough; Panama became the first country, alongside Costa Rica, to link cooperatives with the popular country-wide lottery. In January of that year, commemorative lottery tickets marked with the slogan and logo of the IYC were distributed

(ICA Americas..., 2012). Monthly walks were organized by cooperatives across the country, and the Major League Baseball of Panama. National press, radio, television, and social media networks were used to further the goal of information distribution to all Panamanian citizens. The IYC shed light on the diversity of cooperatives within Latin America, and Panama specifically, and allowed for entrepreneurs to gain knowledge on the opportunities within this sustainable business model.

The IYC is a marking point for the progress of cooperatives in Panama. Providing valuable information on existing bodies and opportunities for growth, the IYC establishes Panama as a world leader in the cooperative model, developing alongside its fast-growing economy on the international playing field.

The mystery remains--Why, then, have the benefits of the *IPACOO*P and these examined cooperatives not reached the most vulnerable of towns and villages of the Panamanian landscape? Though cooperatives have gained momentum in recent decades, a large portion of Panama remains untouched by the benefits of the cooperative business model. The case of San Miguel is no exception. In the coming years, it will be crucial for small business to maintain a foothold in the market in order to ensure the overall financial stability of rural economies, and I believe there exist important channels for development in the town of San Miguel for cooperatives.

The Case of San Miguel, Kalu Yala Region

Located in the Province of Panama, the town of San Miguel is relatively new on the Panamanian Map. San Miguel was formally recognized in 1963 as a small village part of the *Corrimiento de San Martin*. Stretching about 4 kilometers between *Carriazo*, *El Tigre*, and *La Chapa*, the small town is only one hour away from central Panama City. The two main rivers of San Miguel, *Rio Pacora* and *Rio San Miguel*, serve as a popular tourism spot for local Panamanians (Hoormann, 2014).

San Miguel exists as a small, rural community of roughly 500 residents, largely dominated by a conservative, religious way of life that helps keep the town small and mostly crime-free. Left largely untouched by the urbanization taking place in Panama City, the town serves as an ideal spot for a future cooperative. Given the following circumstances, San Miguel lacks high-quality service and infrastructure--currently limitations to development that can serve to become opportunities from which to stem cooperative growth.

Infrastructure:

As part of San Martin, residents of San Miguel can take advantage of the established resources. Electricity, public and residential telephones are provided by the San Martin infrastructural services. A library provides residents with free internet and literary resources. There is also a *Centro de Salud* (Health Center) and an Agriculture Agency set up by the *Ministerio de Desarrollo Agropecuario* (MIA, Ministry of Agricultural Development) that form the base of development in the region (San Martín, 2012).

The town of San Miguel only receives rudimentary support from the Panamanian government. The local clinic, a subsidiary of the *Region de Salud de San Miguelito*, is supported by the *Ministerio de Salud*. Residents can rely on the clinic for basic care from the six-person staff from 7 am to 3 pm each week, but are forced to travel to outside of the town limits to other limits with more advanced services. With no working ambulance in the region, patients have the choice of driving or taking public transportation to nearby hospitals in 24 de Diciembre (35 minutes), Chepo (45 minutes), or Panama City (1 hour). Locals often rely on longstanding tradition of natural, alternative medicines and plants for minor injury and illness.

Water infrastructure is maintained by the Department of Environmental Health, albeit rather poorly; a 2014 study confirmed high levels of e.coli bacteria in municipal water and deemed the water unsafe to drink (Hoormann, 2014). Sewage is managed through septic tanks that are filtered and drained into the Rio Pacora. Weekly trash pick-ups have recently been supported by the central government, yet littering and trash burning still remains an issue and detriment to the local environment.

Education:

Education is also of substandard quality. With one primary school, San Miguel students attend Pre-Kindergarten through 6th grade, with an option of continuing education at schools one hour away by bus. The cost of transportation and time of education deters many from attending high school one hour away at “Filippo” or “Los Lotes” high school (Campo, 2011). As a result, only a small number of San Miguel students move on to universities in Panama City. Recent efforts, however, have

encouraged further education in adult years; a small library exists on the same grounds as the San Miguel primary school, where residents often attend adult English classes and can learn basic reading skills.

Business:

It would be an overstatement to consider business as “booming” as in Panama City. The entrepreneurial business spirit does exist in a sizeable portion of residents, but wages and lack of capital keep many from opening any business outside of the already-established support for “mini supers” and “fondas” (restaurants). The following outlines a small number of these businesses known to be servicing local residents:

Business Name/Type	Owners (Number of/Names)	Business Type	Notes
Un-named--Hairdresser/Barber	***	Out-of-home	
Un-named--Mechanic/Car Body Shops	****	Out-of-home	
Un-Named--Tool Sharpening	1/Augustin	Out-of-home	
Un-Named--Gourd Art	1/Nilca	Out-of-home	
Un-Named-- <i>Queso Fresco</i>	1/Aminta	Out-of-home; cheese production	
Un-Named-- <i>Duros (Popsicles)</i>	2/Aura & Miriam	Out-of-home; local food production	
Un-Named--Milk	1/Nina	Out-of-home	
Un-Named--Eggs	1/Pipi	Out-of-home	
Un-Named--Baker	1/Rosita	Out-of-home	
Un-Named-- <i>Empanada/Car nimanolas</i>	Noris	Out-of-home; local food production	
Un-Named--Dairy Farm	1/Camilo Sr.	Farm	
Un-Named--Farm	1/Senor Chin	Farm	Sugar cane, corn, watermelons. All products sold to the local fonda or mini-super.
Un-Named--Farm	1/Noris & Family	Farm	Yuca, plaintains, chickens and pigs for slaughtering. All products sold to the local fonda or mini-super.

(Hoormann, 2014)(Wickstrom, 2013) (Tian, 2013)

The aforementioned limitations of capital keeping many residents confined to minor good production for distribution to neighbors, especially during holiday season. As a rural town, the San Miguel consumer economy is largely dominated by small business run out of people’s homes, both formally and informally.

There are, however, a small number of established businesses that service both local residents and tourists who frequent San Miguel:

<i>Business Name</i>	Number/Name of Owner	Business Type	Notes
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<i>La Taverna del Rio</i>	1/Omar Perez; Fonda operated by Sofia “Chofi” and family; Bar operated by Nico Perez	Bar, Restaurant, Gathering Spot	Top spot for social gathering in the town
<i>Fonda El Charco</i>	1?***	Breakfast Restaurant	Only open for Breakfast from 5:30 am (first bus) until mid-day
<i>Jardin Campesino Santeno</i>	2/Martina	Restaurant	Open during summer months from December to February
<i>Abarroteria San Miguel</i>	2/Sweetie & Chong; operated with help of two sons Alex and Angel	Mini-Supermarket--meat, basic produce, home repair supplies, basic clothing	Open from 7 am to 7/8 pm
Mini-Super ***	1/Luis	Mini-Supermarket--meat, basic produce, home repair supplies, basic clothing	Open from 7 am to 8/9 pm

(Hoormann, 2014)(Wickstrom, 2013) (Tian, 2013)

An August 2013 study of Local Multipliers found that the local businesses in San Miguel were not spending a large amount of revenues locally. The “family-owned”, small businesses were spurring consumerism, yet a large amount of money was spent on the “Abarroteria”, which is a franchised branch of a larger corporation of markets outsourcing to the small town of San Miguel. Any money spent at this particular Mini-Super is invested outside of San Miguel, aimed at benefitting *not* the local community, but the corporation it services. This Mini-Super is a major shopping outlet for the locals, who find cheap goods and produce in a convenient location, minutes outside their front door. The local fondas generate local money flow as well, yet import a large amount of meat from outside of the region. Likewise, bars buy alcohol and supplies from non-local sources. In effect, San Miguel consumption drains more money than is gained, ultimately leading to the continuation of the stagnant growth cycle (Tian, 2013).

The lack of agricultural production is compelling. With the recent rise in globalization and Panama City’s influence on a global scale, many rural residents have chosen to abandon agricultural production in favor of traveling to the city for greater job security. There is little incentive to grow food in the San Miguel region: transportation is costly, and the Panamanian market seems to favor imports (due largely in part to the ease of goods through the Panama Canal, and the further decrease in production by local farmers in recent years) (Wickstrom, 2013). Furthermore, the class divide between a *campesino* and Panamanian elite is quite stark; many residents hold social class as a priority, and find the life of farming to be of little income for what is deemed an “acceptable” lifestyle in Panamanian terms.

San Miguel is caught in a consistent cycle of stagnant growth. The town has experienced little economic development in recent times, and residents experience a lack of incentive for small business establishment. Cooperatives can be a gateway for a new age of development for this rural town. Perhaps a larger question remains, *why San Miguel?* What will the small, rural community provide for the foundation of a successful cooperative? I believe that the town already has the ideal setting for such a business, current limitations and all; opportunities exist for residents to get involved in this particular, sustainable model of business that can serve the town for decades to come.

....But Why San Miguel

The significance of San Miguel rests in its opportunities to take advantage of nodes that are now opening for entrepreneurial pursuit.

Tourism: During the Panamanian summer months from December to February, San Miguel is a popular tourism spot for locals. The yearly “*Fiesta de Fundacion*” on December 11th draws town-members, as well as friends from outside city limits, to gather in the streets and local restaurants to celebrate the anniversary of the town’s founding. Rio Pacora, one of two bordering rivers in the area, attracts visitors from the periphery of Panama City during the weekends. Residents have begun making profit from this tourism by setting up ropes and charging entrance fees to the banks of the rivers, where most are likely to gather (Wickstrom, 2013). Similarly, *Jardin Campesino Santeno* restricts its open hours to the summer months.

A cooperative can benefit from this concentrated influx of visitors. Tourists, by default, enjoy taking advantage of local flavor and goods. A cooperative could bank a portion of its success from these groups of people to cater to locals *and* tourists, alike.

Existing Networks: The small size of San Miguel--both in population and geographic size--gives the town existing networks from which to stem partnerships and relationships. San Miguel already has a strong foundation in religious values, and many attend the same religious institutions. There are little to no cultural and language differences between town members; social network failures may be simple to avoid. Trust in business ethics can be built over time through the cooperative, serving to further increase cooperation across social boundaries and strengthen entrepreneurial bases in San Miguel. A trading of training and vocational skills can easily be distributed in a cooperative. Members have the opportunity to collectively benefit from the diversity of skills, perspectives, and goals of each other. San Miguel residents will have the opportunity to pursue any sort of product they would like to sell to tourists or fellow neighbors, with a solid base from which to market product appeal. As small actors in a value chain, residents of San Miguel currently face limited resources and capacity, further preventing their influence of higher-value markets. A cooperative would be the correct approach to accessing trade networks and increase value chain competition to set the precedent for future San Miguel market growth.

Topography & Vegetation:

Though there currently exist little incentives for residents to invest in agricultural pursuits, a cooperative could be the ideal channel for San Miguel to break through the agricultural sector and reach local and domestic markets. The region, in its current state, is naturally agriculturally rich and already provides a platform for market growth. Agricultural production of Panama makes just under 5% of total GDP (Central Intelligence Agency, 2012). San Miguel residents could contribute to this percentage, increasing the role of local agricultural production in overall market development. The biodiversity of plant and animal species in tropical climate create an ideal setting for small-scale production of agricultural goods:

Yucca, plantains, cucumbers, tomatoes, peppers and fruits grow easily in backyards (Wickstrom, 2013). In the Tres Brazos region near the Valley, the climate is cool enough to allow for growth of other crops, like onions and potatoes. Fruits grow abundantly in San Miguel, and neighbors

often do not know what to do with excess fruits during fertile seasons. A cooperative would provide a method of distributing excess products to sell.

Investments--Kalu Yala:

The development of Kalu Yala may prove to be just the right anchor institution from which to pull resources and support in the establishment of a cooperative. In its current state, Kalu Yala is a 5,300-acre land plot in a 9,500 acre mountain valley, the site of future residential development in a central location close to both the urban center and rural charm. Bordered by the Chagres National Park and Kuna Yala Territory, Kalu Yala is the closest mountain valley to Panama City, only 24 miles from Tocumen International Airport, and 15 miles from the South Corridor Expressway (the main highway that connects the provinces of Panama) (Schwing, E. & Dienes, B., 2010). Slated to begin construction in Fall of 2014, the community will feature a hybrid of mountain and valley atmosphere, complete with rainforest hiking trails and two accessible rivers on the property (Pacora and Iguana). In recent years, Kalu Yala has slated development alongside investment into San Miguel region as the closest neighbors to the town, assisting in infrastructural development (such as water filtration systems) and education (both in the primary school and adult English classes).

What sets the Kalu Yala development apart from other tourism and residential communities in Panama is the guiding force of “New Urbanism” that has dominated each stage of planning. Using Lifestyles of Health and Sustainability (LOHAS) as a principle behind company values, a sense of community can be built through walkable neighborhoods that increase energy efficiency and environmental sustainability (Slobada, 2013). There exists an inherent desire for inter-connectedness; between neighbors, with the immediate environment, and with neighboring communities. A self-proclaimed community that “encourages collaboration and innovation”, Kalu Yala aims to focus on sustainable development and defy the real estate industry trends of community overhaul and environmental depletion (Slobada, 2013). Leveraging human capital to accelerate community development, the company of Kalu Yala not only envisions a positive living experience within new development property lines, but within neighboring communities in such a way that harvests a symbiotic relationship for years to come.

In this sense, it is in the best interest of Kalu Yala to encourage enterprise of San Miguel--a mutual benefit shared by both Kalu Yala and San Miguel residents by attracting more tourists and consumers to local markets. In the coming years, this influx of new groups to the area will bring a unique opportunity for increased monetary flow. A cooperative fits within the frame of sustainability preached by Kalu Yala; a small- to medium-sized enterprise can be considered a “green” infrastructural outlet for growth.

The Proposal:

The current theme in the rise of global cities is the specialization of a given society in the units of production through urbanization, predominantly through trade and collaborative growth across sector lines. Cooperatives in Panama can capitalize on the vast opportunities for development within Panama through partnerships with existing groups to engage in the international economic playing field on a grander scale. Value chains are of increasing importance to prioritize when crafting a cooperative.

As defined by the International Labour Organization, a value chain is “the full range of activities required to bring a product or service from conception, through the intermediary phases of production (...), delivery to final consumers, and final disposal after use” (Value Chain, 2010)) A collective organization in Kalu Yala will be capable of large purchases and sales that allows for small producers to address value chain requirements at both a vertical and horizontal level:

1. *Vertical*: Training of Members, Information about Market Requirements, Outside Links
2. *Horizontal*: Increase Bargaining Power, Increased Pooled Land Span

The Cooperative proposed should be designed in such a way that allows all members to take advantage of a business classified under a Multi-Service “*Produccion y Mercadeo (Production and Market)*” by IPACCOOP. The primary objective of the cooperative will be to provide local income for local residents, with an aim to re-invest these funds back into the local economy in such a way that eliminates the draining of economic growth as in current practices. To devise a proper planning strategy for the implementation of The Cooperative, I will loosely use the International Labour Office (ILO) project guidelines for the establishment of a cooperative. The following breaks down the project planning in four steps: project identification; project formulation; implementation planning; planning of monitoring and evaluation (Project Design Manual, 2010)

Step 1--Project Identification

Shared Value

It is first important to take note the essential concept of Shared Value in designing this cooperative. As defined by the Initiative for a Competitive Inner City, “[Shared value is] the policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates...Shared value is not social responsibility, philanthropy...but a new way to achieve economic success” (Kramer & Porter)

Communities need strong business, and vice versa. Businesses create employment and wealth opportunities, and communities create the demand and support for these ventures. The interdependency of an anchor institution and a community is instrumental to shaping this relationship; a harmony between private and public good is necessary for overall economic development. Kalu Yala can be this anchor institution that spurs this sort of symbiotic success. The Cooperative will be structured in such a way that maintains support from Kalu Yala as a network of conscious people in management, supervision, and support. In this sense, it is necessary to keep in mind the role of Kalu Yala at every point of planning for The Cooperative as the main structure from which cooperative growth can stem.

Target Group Selection

Direct Recipients	- San Miguel Residents
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	- Cooperative Members: Men, Women, and children who contribute to the cooperative
Ultimate beneficiaries	- Member households and communities - Kalu Yala Residents - Kalu Yala Tourists
Project Partners	- Kalu Yala S.A.

Problem Analysis--SWOT:

In order to examine the feasibility of a given cooperative in the San Miguel/Kalu Yala region, it is necessary to analyze the internal strengths and weaknesses, as well as the external opportunities and threats of a business model.

Internal	External
Strengths <ul style="list-style-type: none"> • Stated entrepreneurial spirit of some residents • Kalu Yala support • Established links among residents 	Opportunities <ul style="list-style-type: none"> • Tourists • New Kalu Yala Valley residents • Outside bodies and investment
Weakness <ul style="list-style-type: none"> • Lack of motivation in most residents • Lack of knowledge • No infrastructure 	Threats <ul style="list-style-type: none"> • Competition: Established Mini-Supers • Current Market Draining

Objective Analysis

Taking into account the given target groups and SWOT analysis, one can look to the following criteria to further justify the creation of The Cooperative:

Benefits to the target group	<ul style="list-style-type: none"> • Income • Financial Security • Capitalize on Tourism/New Residents • Food Security • Education: Agricultural Training • Health: Nutrition Education • Gender-Equality in Employment
Feasibility	(SWOT Analysis finding)
Link with Kalu Yala Policy	<ul style="list-style-type: none"> • Community-Based Development • Links between new Valley residents and San Miguel residents • Shared Good Governance
Sustainability	<ul style="list-style-type: none"> • Training for Agricultural Practices--“Eco-Friendly”, Healthy • Money reinvested into Community • Financial Security/Sustainability for Members

	<ul style="list-style-type: none"> • Sustainable Natural Resource Management
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The following outlines the Problem, Causes, and Effects of current conditions surrounding the conditions prior to the creation of The Cooperative:

Core Problem:	Causes:	Effects
Draining of Economy/Production is Low	No Local Production-- <ul style="list-style-type: none"> • Inadequate knowledge • Inadequate education • Illiteracy • Lack of access to markets 	No Economic Growth <ul style="list-style-type: none"> • Dependency on outside producers • Unhealthy diets/limited diets • Increase in poverty

With the stated objective to provide local income for local residents, and an aim to re-invest these funds back into the local economy in such a way that eliminates the draining of economic growth as in current practice, the physical objectives as a means to achieving this desired situation are as follows:

The main place of business of The Cooperative will be situated in a store in place within the Kalu Yala valley development. Given that there are calls for businesses to be established within Kalu Yala, this cooperative can easily be accepted by the community as an essential storefront of the local market. Given that there is a diversity of production opportunities for cooperative members, the store sales should include the following sales: food--San Miguel residents; crafts--San Miguel residents; food--Kalu Yala Valley. In this way, both residents of San Miguel and the local agricultural fields of Kalu Yala can contribute to store stock.

Benefits of The Cooperative to Kalu Yala, S.A.:

- Increased “Community-Based” Revenue
- Increase Trust and Collaboration with San Miguel Residents
- Consistent and Reliable Farm Labor

I can pull from my research on the success of Brazil’s CAMTA cooperative; the founding principles can be an essential guiding point for the relationship between Kalu Yala and The Cooperative:

1. *Development of Ecological Knowledge and An Agroforestry Model:* Given that Kalu Yala already has a strong grasp on permaculture in the local environment, this will allow for a proper training of residents on farming techniques and sustainability. See “Kalu Yala” in *Step 3: Implementation Planning*.
2. *Strategic and Crisis-Driven Capital Investment:* Though much further down the path of planning, the investment of the cooperatives are to be made in such a way that encourages economic stability not only in the short term, but in the long-term. Collaboration with outside organizations will improve The Cooperative’s market ties on the local, national, and international scales.
3. *Ethnic Identity and Cooperativism:* San Miguel residents all share their Panamanian heritage. A common ground among members is already planted in this idea;

cooperativism will stem from the further cultivation of togetherness in business ideals and practice.

4. *Democratic Structure and Rejuvenation of Leadership*: In following international and domestic regulations on the structure of cooperatives, the votes of each member will contribute to cooperative practices. Kalu Yala serves as a partner and advising body in this regard.

Step 2: Project Formulation

The measure of success of the cooperative is instrumental to the long-standing upkeep of the institution. From the very first steps taken to establish the cooperative, data must be gathered to compare progress from any given point to the baseline of zero production prior to the cooperative. There are four types of indicators (with examples) to be used for this purpose:

1. Quantitative Indicators:
 - a. Gross Production Levels
 - b. Cooperative Revenue
 - c. Number of Cooperative Members
2. Qualitative Indicators:
 - a. Satisfaction of Members
 - b. Satisfaction of Families
 - c. Satisfaction of Tourists
 - d. Satisfaction of Kalu Yala residents
3. Direct Indicators:
 - a. Percentage of Members Reaching a Specific Income Level
 - b. Percentage of Members Producing New Agricultural Products
 - c. Overall Economic Growth of Local Economy
4. Indirect Indicators:
 - a. Percentage Increase of Consumers in the Kalu Yala Valley
 - b. Percentage Increase of Local Goods in Other Local Establishments

In order to achieve a grasp of understanding on these indicators, it is necessary to use a diverse range of methods; observations, interviews, surveys, and focus groups are some examples that are currently used by Kalu Yala for project development. In this case, it is best to follow ILO guidelines of ‘*SMART*’ indicators, those that are *Specific, Measurable, Achievable and Agreed upon, Realistic, and Time-bound*.

General Meetings should also be held regularly with all cooperative members and presiding Kalu Yala employees. It may be best that Kalu Yala S.A. collect and provide the information for the cooperatives on a regular basis (different indicators monthly, quarterly, and annually). This will allow for a comprehensive analysis by one supporting body that can observe the immediate and surrounding community for years to come.

A **resource plan** must also be set to establish the requirements and costs for the stated necessary inputs of personnel, facility upkeep, and any necessary equipment and materials (Guidelines for Establishing Cooperatives, 2010). In this way, Kalu Yala will be a foundational role in setting up

budgets for miscellaneous inputs. Financial restraints and opportunities are to be found in this particular step. The following are examples of possible expenditures to be spent by Kalu Yala in starting the cooperative:

- Cooperative Acknowledgement by Government
- Store Stands
- Storefront Decal/Design
- Store infrastructure (Absorbed by overall development budget)
- Training of Members

Step 3: Implementation Planning

Work Breakdown

Adopted by the International Labour Conference in 2008, the *Decent Work* principles would be wise to be included in The Cooperative foundation. *Decent Work* is underpinned by four objectives:

1. Promoting Full and Productive Employment
2. Developing and Enhancing Social Protection and Social Security
3. Promoting Social Dialogue and Tripartism
4. Respecting, Promoting, and Realizing Fundamental Principles and Rights at Work

(Cooperative Enterprises Build a Better World, 2012)

The sustainability that results from the establishment of The Cooperative will prove to benefit all members of the cooperative. The work breakdown is dependent on the number and type of cooperative members. The following act as examples of the possibilities for employment of San Miguel residents within the cooperative:

- Agricultural Producers--San Miguel Residents
- Craftsman/woman--San Miguel Residents
- Transport of Goods from San Miguel to Store
- Store employee/Sales

Role of Children:

Though The Cooperative will not be classified as a “Juvenile Cooperative”, young residents of San Miguel should have the opportunity to contribute to cooperative structure and growth. Given that the youth of San Miguel have very little opportunity to continue education beyond high school, the training given by The Cooperative’s relationship with Kalu Yala and outside bodies will prove indispensable in providing for an important foundation for the San Miguel entrepreneurial mindset.

The engagement of local schools in the cooperative can be a unique channel for which the cooperative to gain deeper traction in the town economy. Similar to what is already seen in juvenile cooperatives in Panama today, children can help run the cooperative and also serve as producers of artisanal products. Given that regulations have become more relaxed on funding for juvenile cooperatives, it may be possible to apply for funding that may otherwise only be available to juvenile cooperatives.

Membership/Restrictions:

First members of the cooperative should be approached by Kalu Yala, in recognizing current members of the community with stated intentions of production and/or entrepreneurial goals. Following the establishment of the first membership pool that comprises a Board, applications will be accepted and reviewed by the Board. There should not be large restrictions put in place on type and number of cooperative members. However, any membership must follow the guidelines of the official Panamanian ICA.coop rules.

Kalu Yala

Kalu Yala, as a company and staff pool, will also hold responsibility in this cooperative. As an agricultural producer, it will serve as a contributor to store stock. As a landlord, it will serve as the overseer of the store as a physical unit. As a mentor, it will serve an essential role in providing the training for cooperative members and producers. It is here that Kalu Yala is *integral* in contributing to the progressive nature of agricultural production in San Miguel under the aforementioned “vertical” cooperative structure.

Perhaps the best channel to achieve this would be through the *San Miguel Community Raised Bed Program* in pilot stages, starting August 2014. In this nature, the necessary “outputs” portion of planning can be achieved, notably through training of community members on proper production practices. Pilot study participants are to receive a raised bed at no cost--includes a raised bed, soil, and seed/transplant start pack--with their commitment to a 6-month trial period. Raised beds are placed on individual land plots, and participants are able to keep all of the harvest in exchange for collaboration with Kalu Yala staff on research, training, and program compliance. Participants attend regular program meetings and workshops on topics such as permaculture, soil maintenance, and pest control. Given the success of the program, a large portion of the agricultural producers of The Cooperative will be able to take advantage of the raised bed.

In this sense, the relationship The Cooperative has with Kalu Yala harkens upon the success of the aforementioned COCABO cooperative in Panama. The multi-service cooperative structure grants members the opportunity to learn a variety of business skills and practice, all-the-while encouraging positive production values that increase overall economic gain for the local San Miguel economy.

Step 4: Planning of Monitoring and Evaluation

The ILO recommends that monitoring involves “collection, analysis, and communication concerning the progress of the project and outputs achieved...” (76) (Value Chain Development, 2010) These steps will require collaboration between cooperative members and Kalu Yala staff to ensure utmost comprehensive data. Highlighted are the four aspects of proper evaluation: *Comparison, Measurement, Verification, and Action*.

The structure of the cooperative is instrumental in allowing for ease of monitoring and evaluation. The Board is elected by members, working in conjunction with Kalu Yala. Members work towards overall development of The Cooperative. The aforementioned General Meetings must be held consistently. In this way, feedback can be given on member satisfaction, and data can be both gathered and distributed to all members. Workshops can also be held during General Meeting hours.

Outside Bodies

Cooperation with other advisory bodies is essential in furthering project evaluation on the domestic and international scales:

- *Domestic*--On the domestic front, **trade unions** can prove to be an essential partner. Founded upon the mission of defense of general worker and national interests intertwined in issues of equity and labor capacity, the *Central Nacional de Trabajadores de Panama* is the largest trade union in Panama. This can be a proper alliance in assessing business viability, all the while complementing each other with cooperative values and financial instruments (Trade Unions...2013). Considering funding, The Cooperative can look into sources already established in Panama: community development banks, community development and micro-loan funds, and community development credit unions (Kretzmann, 1993).
- *International*--**International Labour Organization**. The ILO's Small and Medium Enterprises Unit provide assistance in the following sectors:
 - Building Entrepreneurship and Management Skills
 - Entrepreneurship and SME Management Training
 - Women Entrepreneurship Development
 - Entrepreneurship Development
 - Providing Access to Markets
 - Value Chain Development
 - Reforming the Enabling Environment
 - Evidence-Based Policy Development
 - Responsible Workplace Practices
 - Productivity Training for Small and Medium Enterprises (SMEs) Unit and "Sustaining Competitive and Responsible Enterprises" (SCORE)

The International Cooperative Alliance is also an important body of monitoring, evaluation, and advising. ICA special units must be highlighted: the *International Cooperative Agricultural Organization* (ICAO) and *International Organization of Industrial, Artisanal, and Service Producers' Cooperatives* (CICOPA) provide tools to assist in implementation of The Cooperative.

Viewing The Cooperative as a local institution that serves as a conduit for ties with outside resources can leverage relationships to support locally-driven success (Kretzmann, 1993).

Conclusion

The promise of sustainable development through cooperatives can become a reality. When one considers international patterns of globalization, it is difficult to ignore the detrimental pressures placed on small business and communities. In the case of Panama, the region of San Miguel is a zone of opportunity for cooperative growth wherein the prospect of a cooperative establishment can play a major role in economic, social, and environmental improvement. As observed across all Latin American countries, cooperatives serve as important facets of growth in a diverse variety of forms, benefitting a diverse set of people, resulting in diverse examples of success.

Given that Panama already has a strong foundation for cooperatives, I have proposed the establishment of The Cooperative in such a manner that considers current national and local conditions, with channels that can be tapped into for entrepreneurial pursuit. In the immediate short term, Kalu Yala must recall the IPACOOOP requirements to follow through with the implementation process, specifically through the first two as the foundation for any further progress:

1. **Solicit a Group:** Gather a minimum of 20 San Miguel residents and Kalu Yala employees willing to participate in the cooperative. A full investigation of community capacities--of individuals, institutions, and physical resources. Kalu Yala can pool from the residents already agreeing to participate in the *San Miguel Community Raised Bed Program*, as well as current employees. Local schools and local informal businesses are also an asset in this step. A business name is determined
2. **Formal Recognition of Group:** Request for an evaluation by an IPACOOOP official.

It is my believe that The Cooperative can be a strong storefront to channel San Miguel production within the next decade. I envision a greater understanding of local permaculture, nutrition, and business sense for The Cooperative's members. No longer will money be drained out of the local economy; a newfound sense of success can garner a greater hope for further economic stability for San Miguel. The Cooperative will be fashioned in such a way that both models and inspires the cooperative movement across the globe, a contribution to a new business structure that can and will contribute to sustainability throughout the international community.

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