

PART II: VALUE CHAINS

The HEKS EPER, UMCOR and Socio-Dig team developed value chain models for three products of critical importance in the region: fish, trees and goats. These models will help HEKS-EPER gain further understanding of the local economy and can be drawn on for insights into how prosperity can be promoted in the region.

Development of the value chains began during the focus group phase of the research where we explored the value chains with groups of respondents and then identified key experts as informants for additional follow-up information.

Socio-Dig subsequently adapted its Livelihood and Marketing Pre-Crisis Intervention Mapping Technique (LaM-PIMPT) to create three detailed value-chain maps for each product. In addition to providing a visually interesting and effective means of conveying information about market chains, the maps will enable HEKS-EPER to more effectively evaluate and meet needs before and after crises.

1. Mapping Strategy

The mapping strategy used here is based on three steps. First, drawing on what was learned in focus groups and the survey, we provide a brief written description of production, processing and marketing of the item. Specific points covered in the description are also transport, who the consumers are, and sexual and age division of labor and ownership. We then provide graphic maps of these processes, including production maps that depict the process of production, indicating gender roles, labor process, technologies, and relevant tenure (ownership). We then present a map of the process and market chain. This map includes graphic depiction of type of measurement (quantity, volume or weight), gender and status of the person who markets the item, transport, and the market venues.

- Types of product
- Roles
- Other Stakeholders
- Production
- Technology
- Tenure & hiring
- Financial underwriters
- Source of financing
- Packaging & measurement
- Package and Transport
- Uses
- Byproducts
- Sale
- Market Venue
- Consumers
- Sexual and Age Division of Labor
- Marketing organization
- Work organization
- Afflictions
- Opportunities
- Most significant relationships
- Opportune points of intervention

A final map includes both production and processing as well as identification of points most opportune for making interventions to strengthen the market chain. Very importantly, the final

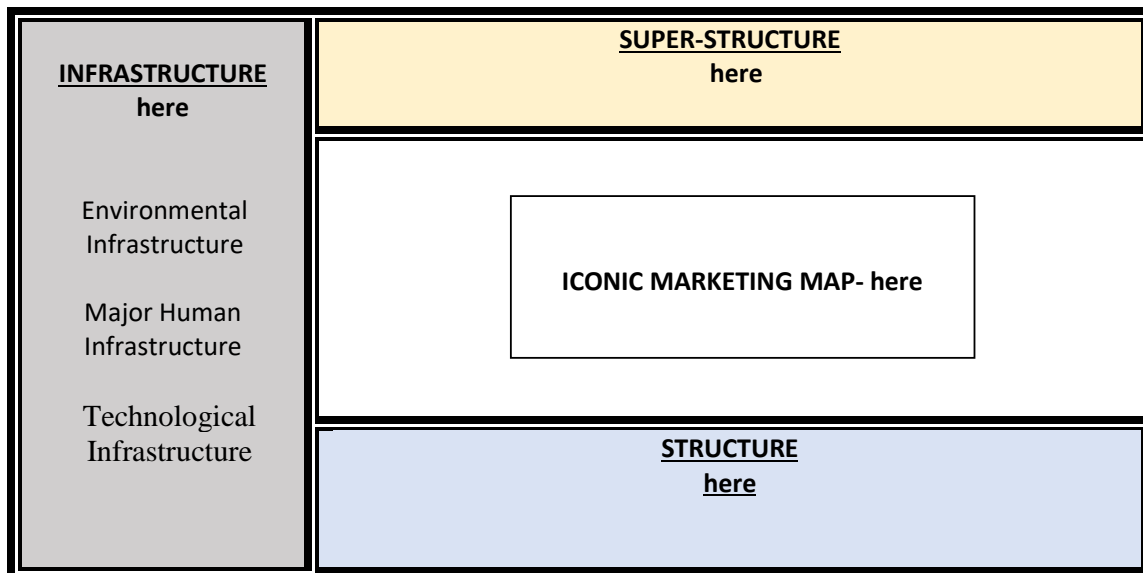
map is embedded in a description of the relevant Infrastructure Social Structure, and Super structure.¹ To elaborate, these three categories are defined as follows,

- Infrastructure
 - natural environment: sea, forests, rivers, savannah, mines, foliage, fishing grounds
 - human infrastructure: demography, roads, transport, communication systems, technology
 - Defined by specification of the dimensions of the resources, such as amount of coast, kilometers of road, quality.
- Social Structure
 - Economic systems: Markets, stores, trade centers
 - Institutions: police, schools, associations, NGOs, ministries...
 - Defined by identification/existence of institution and measured in strength on a scale of 1 to 5, one being weakest and 5 strongest (indicated by number of asterisks, “*”).
- Super Structure
 - Ideas, religions, taboos, celebrations
 - Defined by identification/existence and in the case of stringent religious taboos or institutions, measured in strength on a scale of 1 to 5, one being weakest and 5 strongest (indicated by number of asterisks, “*”).

The Infrastructure, Structure and Superstructure are the constraints of the chain. They define what changes to the chain are practical within the context of what is available in the natural and social environments and the cultural beliefs and practices of the people of the Grand Anse. It may be that a development intervention can overcome a limitation in one or several of these spheres, but the current limitations must be identified and understood. The idea is not to exhaustively explain each category, but rather to catalogue the existence or absence of those constraints of opportunities that are relevant. In this way, the strategy narrows the focus of discussion to a framework of practical options, thereby helping to catalyze the decision-making process regarding development interventions.

¹ See Annex for a description of the theoretical framework, Cultural Materialism.

Figure 15.1: Template for Embedded Marketing Map



2. TREES

Trees and deforestation are topics that greatly concern international conservationists and aid organizations. Haiti has reportedly gone from 30 percent forested in 1940 to 10 percent in 1970 to 2 percent at the turn of the millennium (Michel 2001). Beginning with the now famous 1987 National Geographic picture, it has been common for researchers to site aerial photographs illustrating the radical difference between foliage on the Dominican Republic vs. the Haitian side of the border. Ignoring that these photos were taken in areas where the Dominican Republic has a well-guarded national park whereas, with onset of political turmoil in 1986, Haitian authorities abandoned this area of the border, there are some problems with the extremity to which Haiti has been presented as completely deforested. In 2014, Churches et al summed up the exaggeration when they compared Landsat Thematic Mapper (TM) imagery and, using international criteria for deforestation, determined that Haiti had about 30 percent forest cover, about the same as the United States, France, and Germany, and much higher rate than Ireland and England (see Churches et al, 2014).



Photo 16.1: Famous 1987 National Geographic photo contrasting tree cover on Dominican vs. Haitian side of the border (James P. Blair)

Whatever the case, that much of Haiti suffers deforestation significantly more severe than in the past cannot be gainsaid. To know this one does not need scientific studies. One has only to look



Photo 16.2: Mango Tree in Renal, note the exposed roots are some 6 to 8 feet above the road, a measure of disappearing soil.

out the window of the plane when flying into Haiti to see the billowing underwater clouds of silt, topsoil washed down from the mountains. In those mountains, spectacular gully erosion and exposed tree roots serve as type of meter for the speed with which erosion has been occurring (see Photo 16.1, left). In the valleys, houses that have almost disappeared under ground serve as barometers of erosion as well. Moreover, for the purposes of understanding how to help rural Haitians, trees are not only a check against erosion, they are a critical resource for peasants. Below, we have divided the topic into the categories of Fruit, Lumber and Charcoal.ⁱ

FRUIT

Type

The Grand Anse has at least 26 species of fruit tree. Mangos are especially important, not only for the Grand Anse, but all of Haiti. In 1990 Haiti was the 2nd largest importer of mangos to the US. Haiti still ranks 6th overall. Moreover, this is only one type of mango—the Francique. Only 20 percent of mangos in Haiti are Francique and only twenty percent of the Francique grown in Haiti are exported (see Schwartz 2015). The Grand Anse does not participate in exporting Mangos. According to focus group participants, Francique mangos do not grow well in the area. Major types are fil, kòn, kawòt, kakòn, laben, and, labich. In the Grand Anse as elsewhere in Haiti, mangos and other fruit trees are best described not as a planted, cultivated and cared for perennials, but as a prolific and appreciated weeds, sprouting up from discarded seeds in moist ravines hillsides and slopes.

Primary Stakeholders

Owners. Market women.

Secondary Stakeholders

Pickers. Consumers.

Production

Fruit tree cultivation strategies are best characterized as opportunistic rather than deliberate or planned. Similar to elsewhere in Haiti, farmers in the Grand Anse do not deliberately germinate, nurture and plant trees. They will nurture a seed that sprouts on its own. They may even dig up the sapling and move it to a preferred location. But the only nurseries that have existed in the region were all either associated with the state or, more commonly, an NGO. Nevertheless, farmers report wanting trees, particularly fruit trees and particularly mango, breadfruit, coconut and citrus trees. If given the seedlings, they will plant and nurture them.

Byproducts

Medicinal leaves, Charcoal, Lumber, Roofing thatch. Seeds

Technology

As seen in the Baseline section of the report, Grand Anse farmers use neither pesticide or fertilizer on their fruit trees. Regarding the pruning of trees, farmers do not deliberately prune nor clean trees to allow greater sunlight and dispatch dead branches. Regarding material technology, people in the Grand Anse communities use only machetes and simple picking poles

Main Work Organization Structure

Household organized work organization with some semi-professional pickers.

Most Significant Relationship in Value-chain

Land tenure/ownership of trees, kinship.

Sexual and Age Division of Labor

In the event the fruit is to be sold, it is women who will orchestrate the harvest, transport and sell the fruit. The actually picking of the fruit is the task of boys and men. Children will help with all the tasks. Boys are more likely to help pick, sort and transport fruit. Girls will sort and help their mothers package, transport and sell the fruit.

Tenure

Trees on family land are owned and can be exploited by all the family, even extended relatives. The fruit from trees on hereditary land that has already been divided or on purchased land are thought of as the possession of the woman, but in the name of the household.

Financial underwriters

Aid agencies underwrite the costs of nurseries.

Source of financing

N/A

Hiring

Women may pay men to harvest a tree for her and she may pay for transport of the produce.

Sale

Drawing on focus group discussions, the bulk of fruit probably does not get sold but rather eaten by the owners, neighbors and friends. Coconuts and cashews are exceptions.

Measurement

Fruit is packaged and sold at the wholesale level in *panye* (basket) and then detailed in small piles (*lo*) of 3 to 4 fruits. However, market women sometimes buy entire trees, harvest them and haul the fruit to Jeremie for sale. In this sense fruit is sold wholesale by volume and retailed in quantity.

Package and Transport

To reach main roads, women carry the fruit by foot or pack animal or they pay moto-taxis. If they are destined for Jeremy, upon reaching a/the main road they will use public taptaps, buses or truck. In the event that an entire tree is harvested, they may hire a small truck

Market Venue

Fruits are sometimes wholesaled at the tree to a single buyer who will harvest the entire tree. It is typically sold per basket at markets and ultimately detailed locally in front of homes, at crossroads, and in markets. However, most fruit will be either eaten or sold retail.

Consumers

Little fruit is shipped outside the area. Not even to Port-au-Prince. Most fruit is sold locally to consumers or, as explained above, it will be sold wholesale in baskets to women who then detail the fruit in *lo* (piles of 3 to 4 pieces of fruit) to final consumers.

Afflictions

Diseases have reportedly increased in recent years. Farmers complain about “black soot”, something that is actually a byproduct of insect infestation (sugar excreted by the insects). White flies appear to be a significant part of the problem.

Opportunities

- Treating the insect problem.
- Nurseries, tree planting.
- Commercialization and/or processing of fruit into juices and preserves is an economic opportunity that could be promoted.

LUMBER

Types

There are no fewer than 27 major types of wood used as poles and/or sawed into boards. Some fruit trees become lumber. Mango is especially valued as lumber and prized for constructing dories. Breadfruit and avocado trees were mentioned in focus groups and the survey as a good source of lumber.

Primary Stakeholders

Owners, sawyers, transporters, wood vendors in markets.

Secondary Stakeholders

Carpenters. Homeowners, builders.

Production

Similar to fruit trees, strategies regarding the cultivation of wood trees are best characterized as opportunistic rather than deliberate or planned.

Byproducts

Medicinal leaves and charcoal.

Technology

Farmers use machetes to fell trees. They use long, dual-handled hand saws to make boards.

Sexual and Age Division of Labor

Cutting trees is, like picking fruit, an entirely male undertaking. However, unlike fruit which women sell, the marketing of lumber is a male undertaking, something unusual in that most marketing of local produce is dominated by women. Indeed, handling of cattle, lumber, and

fishing might be the only three productive activities that can be characterized as exclusively male domains. Other male activities, such as planting gardens, are readily assumed by women. In the absence of men, women will even pick fruit and make charcoal.

Tenure

Lumber and wood trees are typically owned by men. A person can sell a living tree to another person. After sale the tree can remain standing on the original property several years.

Hiring

The actual cutting of trees and sawing them into lumber is considered a skilled occupation accomplished by paid craftsmen.

Main Work Organization Structure

Professional sawyers who work in 2-man teams.

Most Significant Relationship in value-chain

Land tenure/ownership of trees. Buyer and seller of trees. Buyer and sellers of boards.

Sale

Lumber is critical both for its uses and to sell in exchange for income. Campeche (logwood) and Grigri (rose wood) are used as posts and beams for houses. Mahogany, oak, cedar and at least a dozen other hardwoods are hand sawed into boards and used to make house walls, furniture, caskets or sent to Jeremie, Miragoane and Port-au-Prince for resale, providing an important source of household income.

Packaging and measurement

Poles and boards are sold by quantity (dozens), but with an appreciation for size and type.

Package and Transport

Boards and poles are carried by the owner, porters or pack animal to the nearest road and then loaded on moto taxi, bus or truck. They are sometimes, but rarely, shipped on boats.

Market Venue

Poles and lumber not sold in the rural areas are transported to Jeremie for sale or to Miragoane lumber market.

Consumers

Poles may be used by anyone but boards are best thought of as a raw material to be processed by skilled craftsmen. The primary purchasers of wood are carpenters in home construction, or making furniture and caskets.

Afflictions

Diseases have reportedly increased in recent years. Farmers complain about "black soot", something that is actually a byproduct of insect infestation (sugar excreted by the insects). White flies appear to be a significant part of the problem.

Opportunities

- Planting of lumber trees
- Preparation of lumber and sale as exotics woods

CHARCOAL

Types

The branches of trees cut for lumber or any tree felled by foul weather or otherwise, becomes fuel for local cooking and charcoal. Young Birdcherry, Lucena, and Acacia, as well as any other tree that farmers would prefer not to nurture, are harvested as saplings to make charcoal. While participants in focus groups insisted that they never cut a healthy fruit tree to make charcoal, any tree *may* become charcoal. Fruit trees that get old and do not yield will become both lumber and charcoal.

Primary Stakeholders

Owners of charcoal, transporters, vendors, buyers, consumers.

Secondary Stakeholders

N/A

Production

The branches or samplings are cut, cleaned of leaves, piled up with dry leaves interspersed among them, then covered with dirt and green leaves to make a type of stove, whereupon the inside of the pile is lit. The wood smolders for several days; half-burned throughout, it becomes charcoal. As mentioned above, any old or fallen tree may be transformed into charcoal, but a major system of production is the harvesting of young trees on agricultural plots, something that fits into a 5 to 8-year fallowing cycle whereby farmers clear the land, make charcoal with the cut brush, then plant gardens with quick growing bean, melons, a variety of tubers, including yams and manioc. After the seasonal crops have been harvested, yams and manioc continue to grow for several years, their roots edible roots harvested as needed. Meanwhile, the garden is once again becoming a thicket of small trees. When the manioc and tubers have been harvested, the farmer eventually returns again to cut the saplings, make charcoal, and then plant a new garden.

Byproducts

Medicinal leaves

Technology

The entire process is accomplished with machetes.

Main Work Organization Structure

Household organized labor. Some professionals.

Most Significant Relationship in value-chain

Land tenure/ownership of trees. Transporters.

Sexual and Age Division of Labor

Men more than women clear gardens, pile the sticks, cover and fire the charcoal. Women and children play a more significant role in sorting the charcoal and putting it into sacks. The man will help his wife or female relative bag, move, and ship charcoal to the city for sale. Some men will accompany the charcoal to the city for sale. Retailing charcoal is, like most trade in local produce, a female activity.

Tenure

With the exception of those professional charcoal entrepreneurs mentioned above, women are typically thought of as the owners of any charcoal that is produced in the name of the household.

Hiring

Farmers often hire charcoal specialists, paying them a part of the harvest in exchange for helping them clear a garden and process the harvested sticks into charcoal. Some professional charcoal entrepreneurs will also buy uncut fields to process into charcoal for sale. And some farmers will simply sell the wood from a cleared field.

Sale

Charcoal is unquestionably one of the most important sources of income for farmers in the Grand Anse. It is entirely a cash crop. Virtually all the charcoal produced is destined for sale in urban areas. Almost as a rule, rural farmers do not use charcoal for cooking fuel but rather wood. It is noteworthy that charcoal is a critical resource when crisis strikes, either regionally or in terms of household shocks. Households with no animals or mature trees to sell will turn to the production of charcoal during hard times. After Hurricane Matthew charcoal made from the enormous quantities of fallen trees and broken branches represented a veritable economic boom, amounting to as much as \$35 million in income for the Grand Anse (estimate from HEKS EPER COP).

Packaging and measurement

Charcoal is sold in volume. Wholesale, it is packed into polyethylene sacks. The standard charcoal sack is actually two sacks sewed together lengthwise. A single double-sack may weigh as much as 150 lbs. Sacks are sold in lots of 10. Charcoal is retailed by the *mamit* (quart) or the *lo* (small pile).

Price

A *lo* (lot) of 10 sacks fetches \$700 to \$800 Haitian dollars (US\$50 to \$70). If transported to Port-au-Prince the increase can be 70 to 100% in value.

Transport

Charcoal is stacked by the roadside and picked up by large trucks that ply the rural roads. On the coast it is loaded onto sailing vessels. Almost all is destined for Port-au-Prince. Very little goes to the city of Jeremy. Transport to Port-au-Prince is \$25 Haitian dollars per sack (~US\$2)

Market Venue

Charcoal is sold to buyers from the city or hauled to the city by the owner on one of the many trucks engaged in the transport of charcoal and sold at charcoal depots, special areas where charcoal is traded in bulk.

Consumers

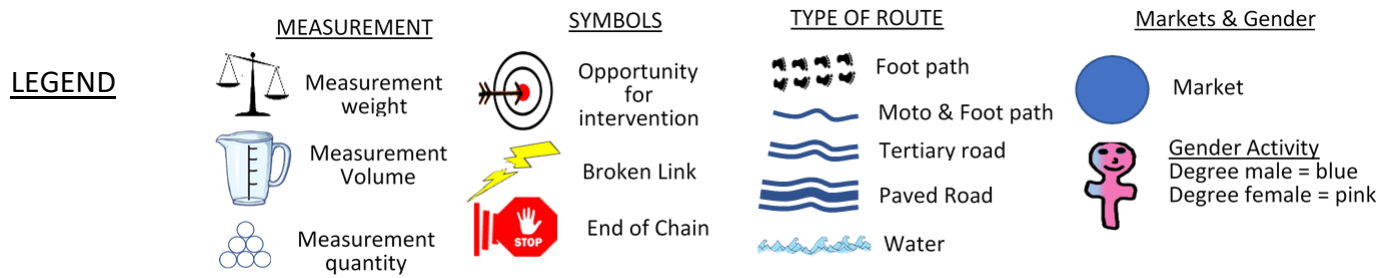
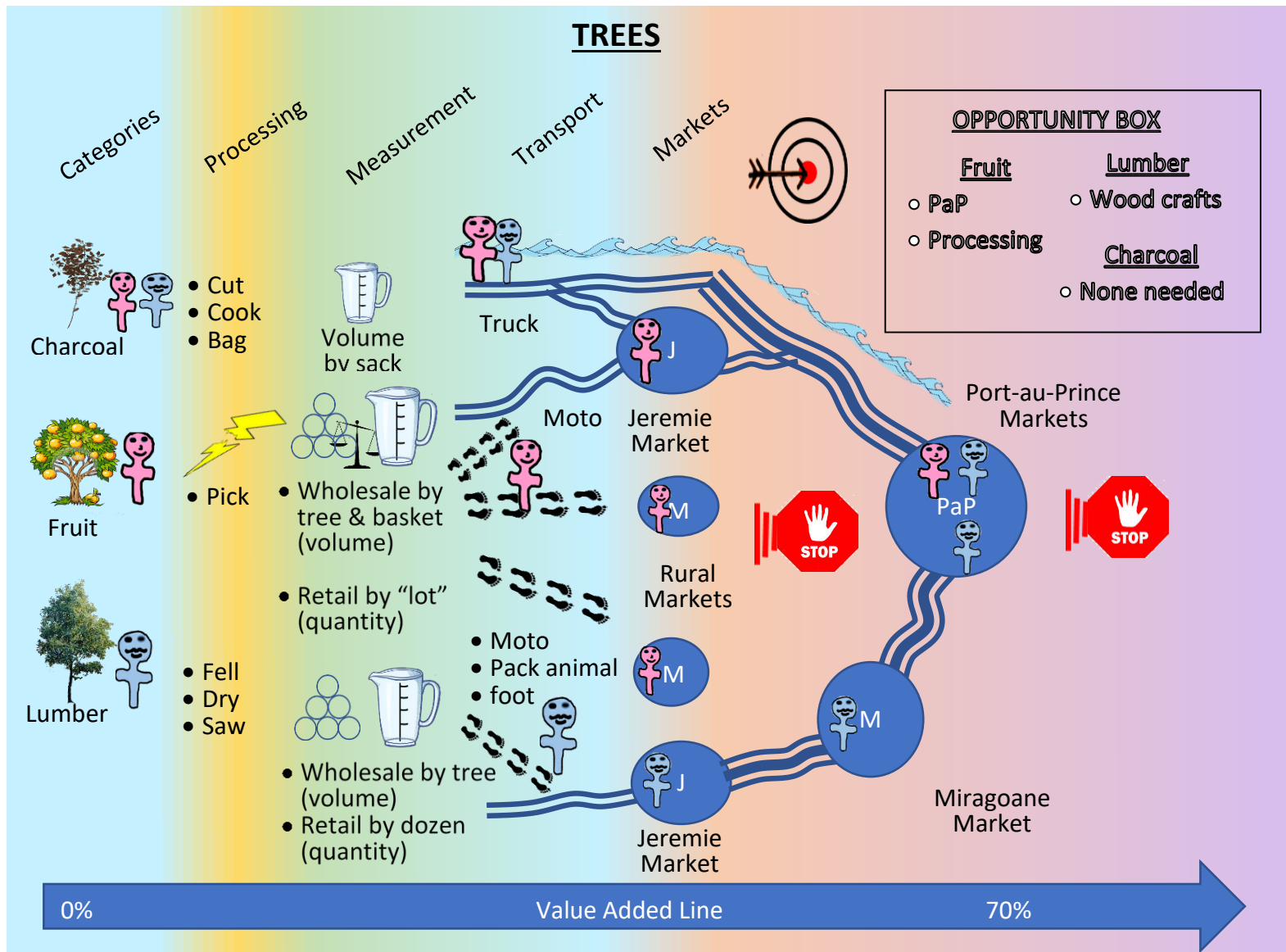
People in rural areas do not use charcoal as cooking fuel, rather they cook with wood. Charcoal is the primary cooking fuel in urban centers, far more common than propane gas.

Afflictions

None

Opportunities

- Improved methods from transforming wood into charcoal can reduce losses by as much as 40 percent.
- Making briquettes from dried leaves and sugar cane baggage



INFRASTRUCTURE

Natural

- ~600 Km² Forested
- Altitude
- Dry forest to humid forest reserves
- 26 species of fruit tree
- 27 plus species of hard woods
- All can be converted to charcoal
- Abundant land for charcoal scrub/garden crop cycle rotation

Demographics

- Relatively low population density to productive land as compared to elsewhere in Haiti

Human

- Few rural roads/Poor condition
- Rural areas: Moto and animal
- Jeremie to Cayes ½ paved road 65 km
- Okay to PaP: Paved 154 km
- 80% telecommunication
- Grid electric only in Jeremie

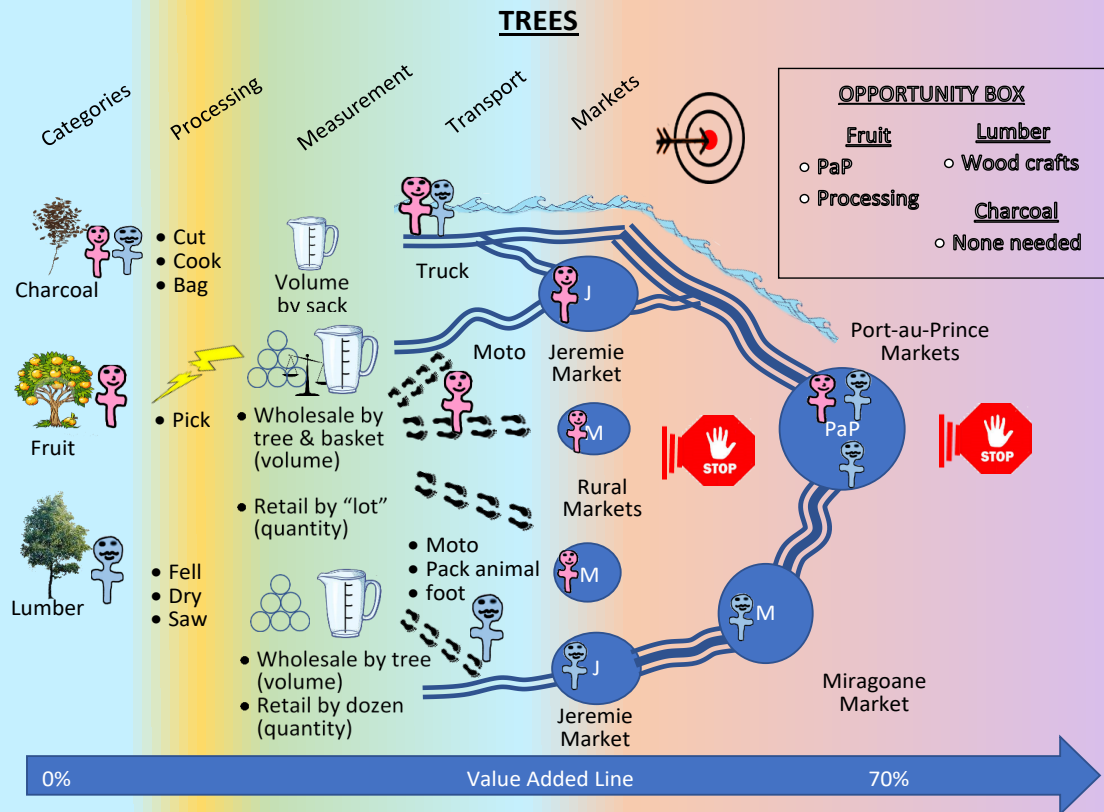
Technology

Semi-Industrial/Modern Fishing

- Hand saws
- Machetes

SUPER-STRUCTURE/IDEOLOGY

Weak Conservationist
Belief that some trees are inhabited by spirits



STRUCTURE/INSTITUTIONS

<u>Strength of Existing Critical Social Structure/Institutions</u>		<u>Non-Existent Critical Structure/Institutions</u>	
• MANDR	*	• Churches	***
• Associations	**	• Mayor/Azek/Kasek	**
• Schools	***	• Police	**
• Universities	*	• `Reciprocal & family labor	***
• NGOs	****	• Formal sector purchasers	*
• Restaurants	*	• Informal Market system	*****
•		• Hshld and Kinship Labor	***
		• Input stores	
		• Forestry agents	
		• Extension services	

3. GOATS

Types

Local goats and improved varieties, meaning imported stock, with no distinction made between different types within the local or imported goat categories. Goats are graded by age, baby goat, young goat, and adult.

Primary Stakeholders

The owner of the goat, consumers, “brase” (professional goat trader who will aggregate goats for resale).

Secondary stakeholders

Restaurant owners, barefoot veterinarians, government officials providing papers in market.

Production

Goats are minimally managed. People predominantly tie rather than corral or range the goats. They are only free-ranged for short periods of time after harvests. Goats in the Grand Anse are not branded. Rather people can demonstrate ownership by the fact that goats bond with and recognize their owners. They are sometimes bred deliberately, but also often simply ‘get bred’ on their own when a male breaks loose or takes advantage of being corralled. Bucks are sometimes castrated at 1 year of age to increase size and meat yield. They are not cut but rather the scrotum is pinched between two blocks of wood and their testicles are crushed with a rock.

Work organization

Organized around the household labor supply.

Package and Transport

The animals are typically transported live. One person can walk with 10 goats. One goat can be led and the others will follow. When transporting the animals to the city, they are simply hung by their feet, live, from the sides of the vehicle.

Processing and packing

- No specialists are needed to slaughter or butcher goats, the skills are common
- The animals are usually killed on market day
- Meat not sold is washed with sour oranges or lime, salted, sundried and then stored for household consumption. However, dried goat meat is not sold in the way that pork is sometimes dried and sold.
- The animal is sometimes quartered but often pieces are simply cut according to demand of client.
- All of the animal can be sold or is eaten: brains, intestines, blood, marrow, bone, and sometimes even skin. Bones in the feet are sold to play a child’s game known as Wosle (similar to jacks). Only hooves, horns, and crushed bone are discarded.

Technology

Knife and machete. Bucks are “castrated” by smashing their testicles with a rock.

Tenure

Households typically own their own goats. However, better off individuals will tenure goats out to others: the arrangement is that they share any medical expenses. The offspring are shared 50/50. Although life expectancy is ~10 years, the typical Grand Anse goat only lives to be 2 to 3 years of age and then either slaughtered or sold for slaughter.

Hiring

All is done with household labor except sometimes slaughter and processing. Killing is not considered an exceptional skill. Anyone may slaughter a goat. Even children might slaughter a goat. Women more often than men butcher the animals. The pay for butchering a goat is ½ to all of the neck meat.

Financial underwriters

Aid agencies have participated in underwriting the costs of importing improved stock and subsidizing vaccination campaigns. Goat meat might be sold on credit but not live goats.

Source of financing to Purchases Goats

Principally gardens and livestock and to a lesser extent fishing.

Sales

The pattern is for households to purchase young female goats, care for them until they have a litter, and then sell the offspring before they begin to reproduce. The woman of the household might sell the goat live or slaughter the goat and retail the meat in the market on the neighborhood. However, selling meat can be risky as she might not find enough customers.

- Goats are sold primarily for the following reasons
 - Food expenses
 - Medical bills
 - School Tuition
 - Finance the Planting of a Garden
 - Purchase fishing gear/traps
 - Invest in Commerce

People will occasionally slaughter a goat for household consumption. Primary reasons goats are killed for household consumption is

- Ceremonial sacrifice or
- Consumption associated with the birth of a human baby

Market Venue

Goats are sold in the livestock section of open markets. There are no slaughter houses. Goats are killed anywhere there is ground and outside of houses or buildings. The meat is sold in the markets, by the street or the woman may walk with the meat and try to sell it.

Consumers

Goat meat is detailed out by the piece to purchasers for household consumption or to informal restaurants or cooks.

Measure

Goat meat is sold by volume, with no standard measuring instrument.

Prices and Profits (Value added line)

Goat traders are known as “Brase”. A typical Brase can handle about 10 to 12 goats, worth about 10,000 to 15,000 *goud*. Goats are most expensive during times of celebrations, December and January when there are religious celebrations, and March through July when children have First Communions. They are least expensive in September when parents tend to sell goats to pay school tuition. The increase in value from rural area to Jeremy is 50%; the increase to Port-au-Prince is 100%. There is a significant price differential between regional Grand Anse rural markets, as much as 20% in prices.

- Mouton (sheep) is typically sold as goat meat. All over Haiti, there is a tendency for people not to admit to killing or eating sheep. Sheep are considered holy, gentle and to eat one may—it is believed—result in ailments, including skin lesions and/or sprouting sheep hair.
- Despite the extreme levels of protein deprivation in rural areas, particularly among children, goat milk is seldom consumed. It is generally thought of as unclean. Nor is it sold or traded.

Sexual and Age Division of Labor

Men and boys are more often responsible for caring for goats than are women and girls. Women tend to buy and sell household goats significantly more frequently than men. However, men tend to be ‘brase’ (goat traders) more commonly than women. A detailed breakdown of tasks by gender is given in Table 17.1.

Female	Percent Female Activity
Tend/change	20%
Castrate	<10%
Transport to market	70%
Sell	70%
Purchase for slaughter	90%
Kill and butcher	70%
Retail fresh meat	90%
Retail cooked meat (restaurant)	99%
Purchase for intermediary retail	30%
Transport to urban markets	30%

Uses

Goats are rarely milked. People in the area do not make cheese or any other product from milk. They are most often slaughtered for meat. Almost the entire animal is eaten, including bone marrow. The only by products are skin, horn and hooves. The skin is sometimes used to make drums. It has little to no cost value. The horns and hooves are discarded

Byproducts

- Despite the existence of a tanning factory in Carrefour Haiti and attempts by factory representatives to set up goatskin purchasing networks in the Jeremy area, there is no active market for goat hides, which are mostly thrown away, consumed, or used to make seats for inexpensive chairs.
- Despite the existence of thriving horn-craft production in Port-au-Prince, people in Jeremy region do not sell horn.

Afflictions

Goats suffer from many afflictions, including anthrax. They should be vaccinated. They are susceptible to exposure to rain and cold. They can develop diarrheal disease from abundant tender foliage that comes after rains.

Opportunities

The principal advantage that could accrue to entrepreneurs investing in goats might come through,

- Dependable provision of vaccines and medicines (input boutiques)
- Fencing, corralling and housing next to homes could increase survival rates of goats
- Corralling/Stockage for bulk sale or shipment
- Fattening
- Fencing, corralling, fattening with supplements and possibilities for meat processing, packaging and shipment to markets in Port-au-Prince (all would require significant investment from an entrepreneur, including cold storage)
- Price differentials between rural and urban markets (50% greater in provincial cities and 100% plus in Port-au-Prince)
- More intensive programs of selective breeding
- Harvesting of milk for household consumption
- Cheese consumption and/or production
- Improved breeding stock with goal of milking
- Use of skin or sale of skin to tannery in Carrefour
- Use of horn to make jewelry or sale to jewelry makers in Port-au-Prince

Given the nutritional value and the need, milk is probably the single greatest opportunity for intervention. Exactly one focus group participant admitted to milking goats. It is overwhelmingly looked down on and eschewed with no opportunity for economic gain through selling the milk

or turning it into cheese, something true not just in the Grand Anse, but throughout Haiti. Yet, nutritionally, goat milk might be the single greatest opportunity for protein capture in what is one of the most nutritionally deprived populations in the Western hemisphere. Virtually all families in rural Haiti, and the Grand Anse in particular, have one to two goats at some point throughout the year.

Figure 17.1: Ethnographic Mode of Production Map for Goats

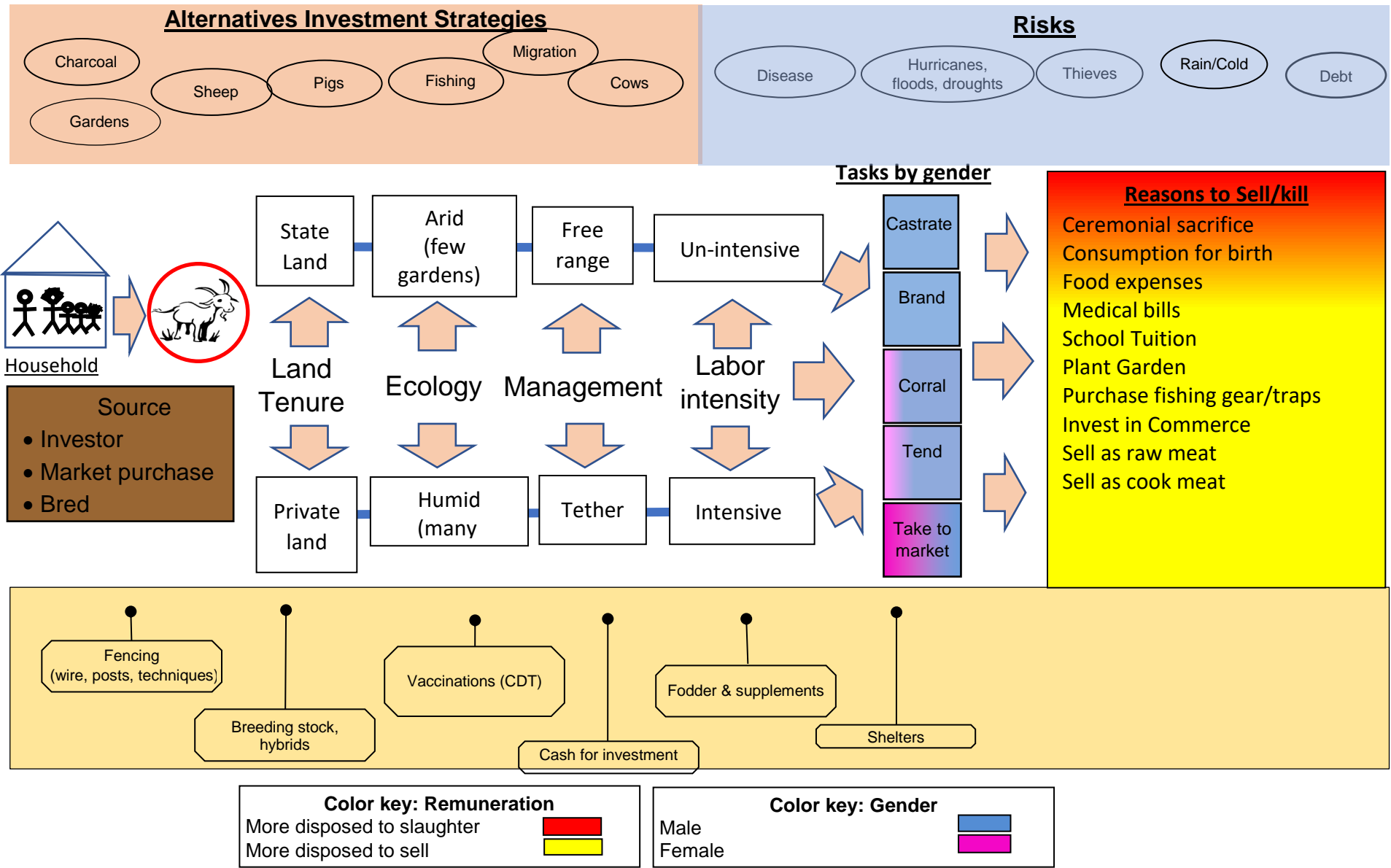
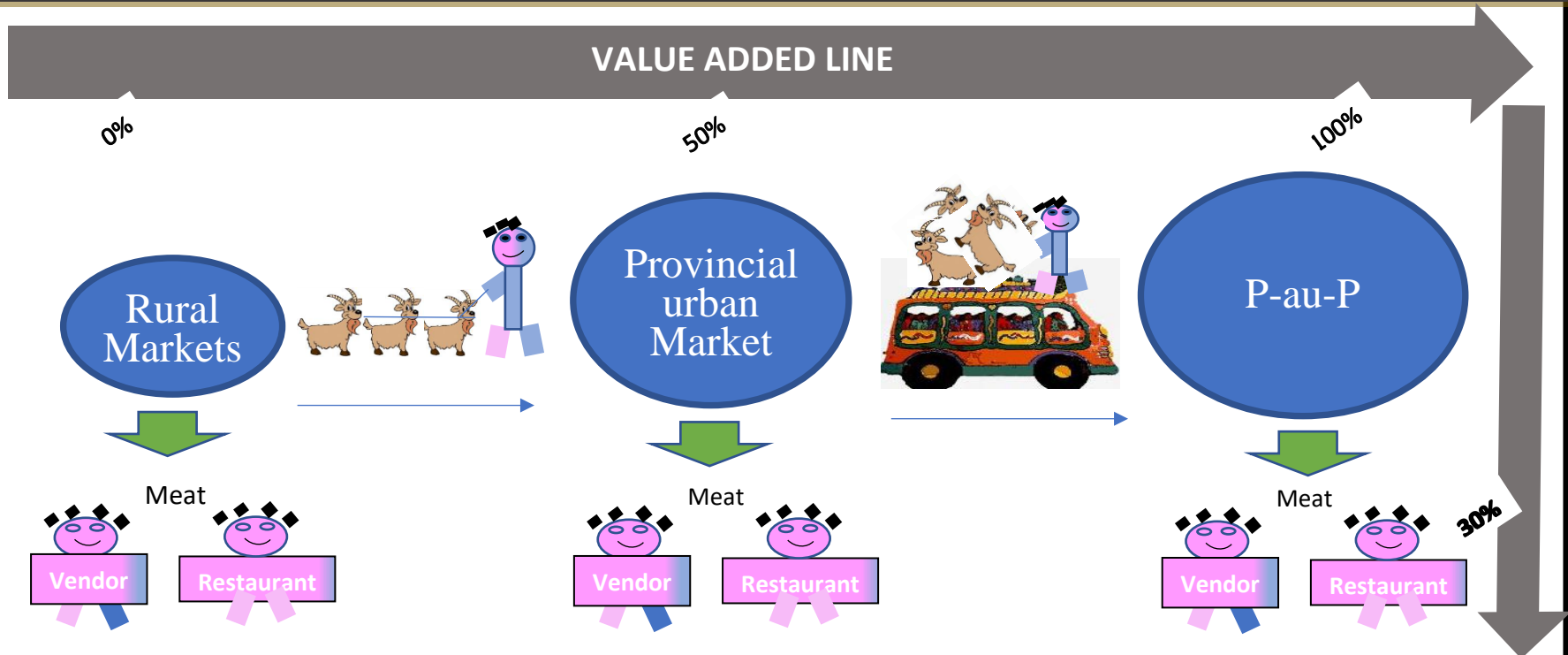


Figure 17.2: Goat Intermediary Marketing Map

Color key: Gender
 Male ■
 Female ■



Goats are purchased in local market, thereby beginning the non-producer market chain. Meat vendor (8 of 10 of whom are women) or restaurant owner (all of whom are women) buy, slaughter and sell the meat directly to the general population or a goat intermediary (8 of 10 of whom are male) purchases the goat and others for transport and resale provincial urban market at 50% over cost; the goats are then sold for slaughter to meat vendor or restaurant owner; or itinerant marketer takes them to P-au-P market for sale at 100% over original rural market price. For resellers cycle is repeated ~40 times per year

Figure 17.3: Goat Marketing Map

Color key: Gender
 Male
 Female

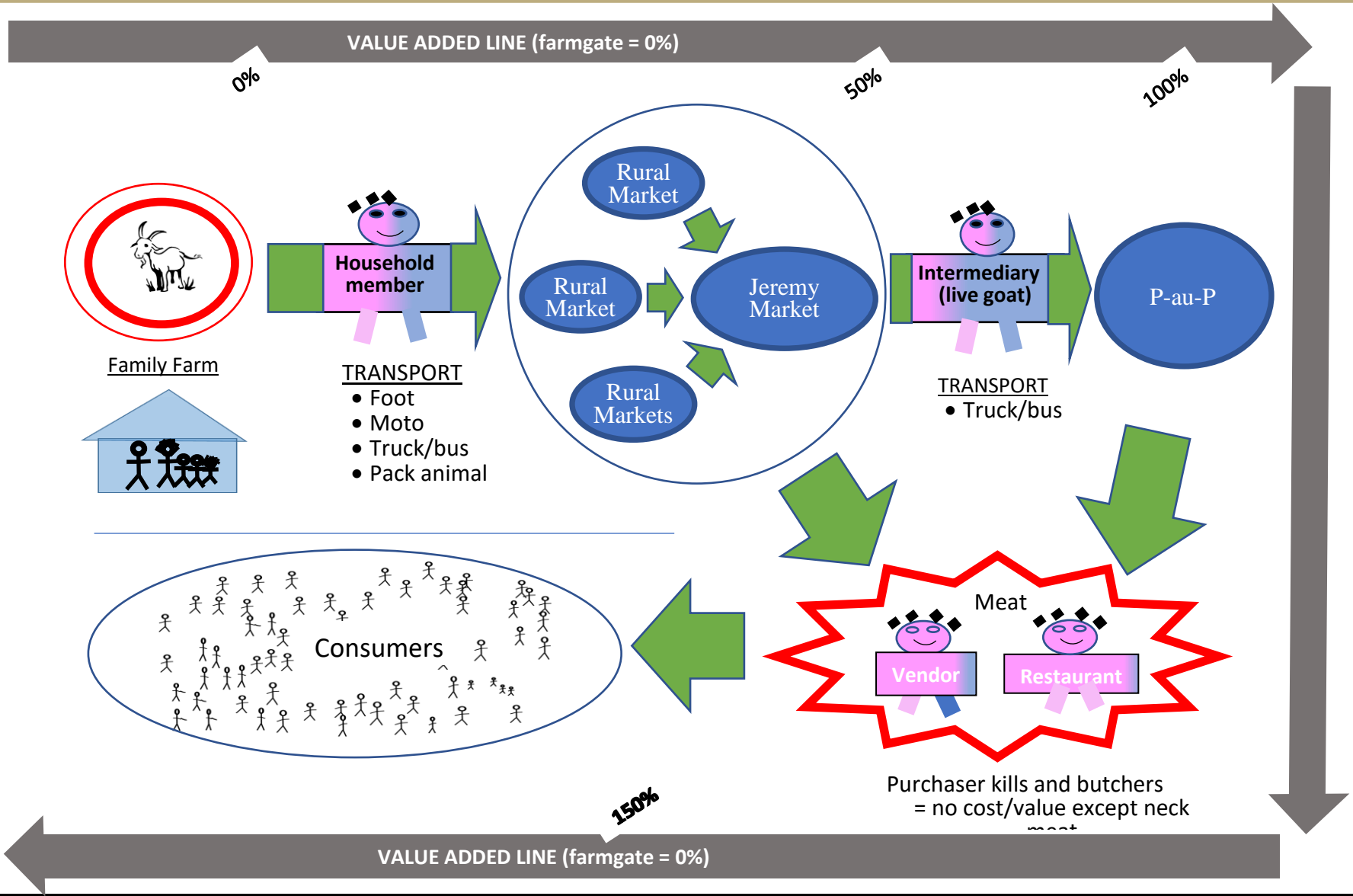


Figure 17.4: Price of Goats from Rural to Urban to Port-au-Prince

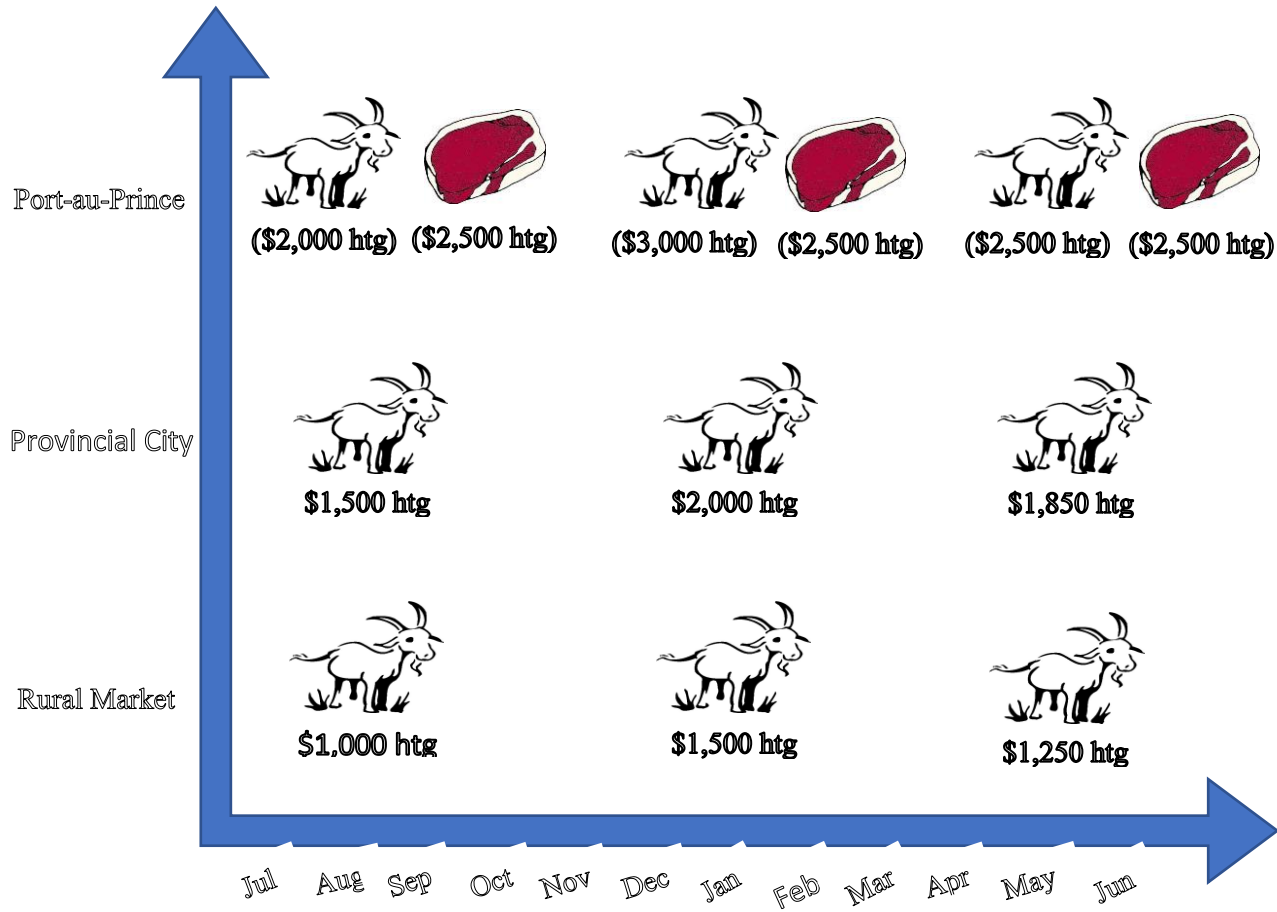
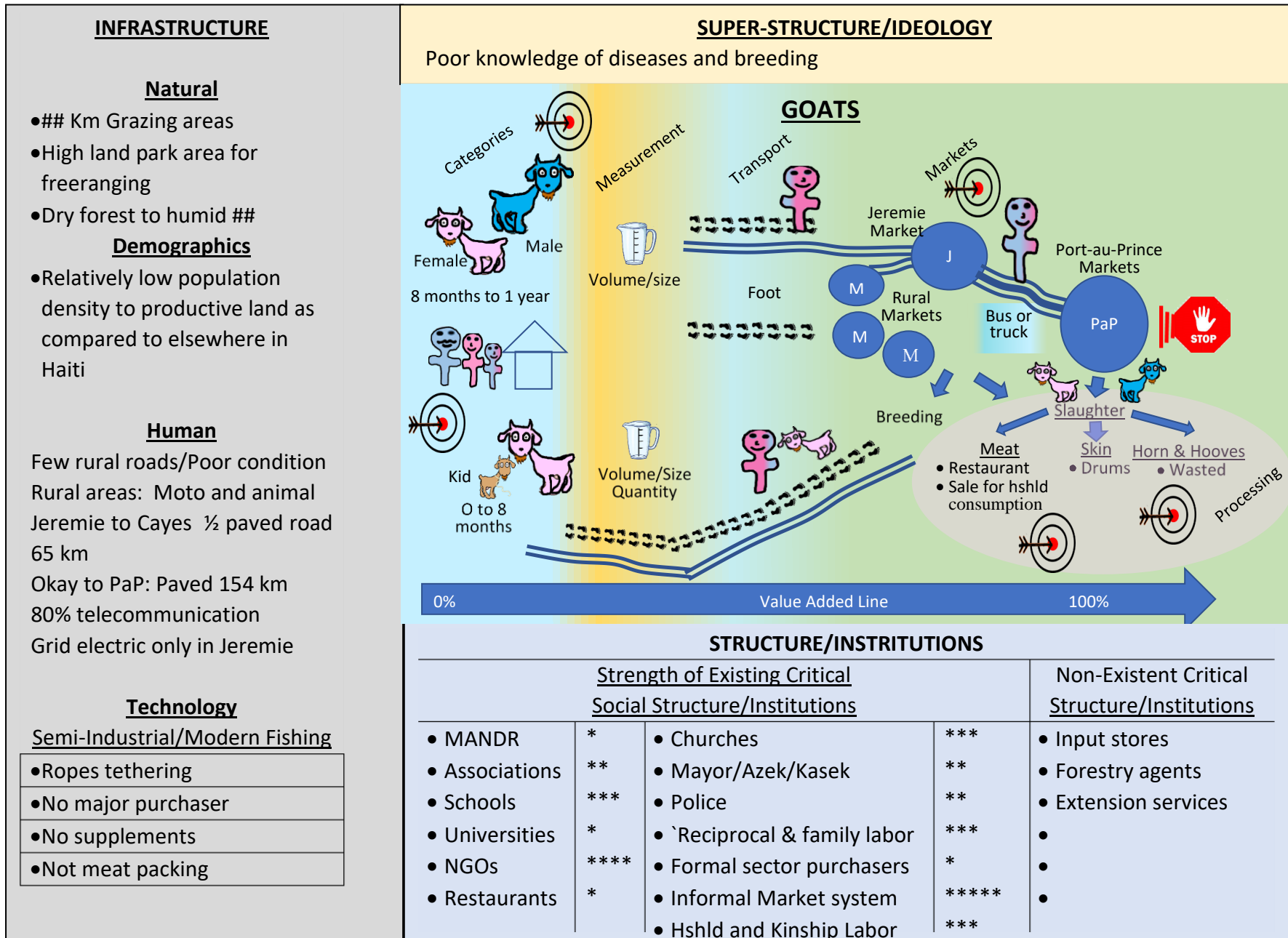














Figure 17.5: Goats Embedded Marketing Map



LEGEND

<u>MEASUREMENT</u>	<u>SYMBOLS</u>	<u>TYPE OF ROUTE</u>	<u>Markets & Gender</u>
 Measurement weight	 Opportunity for intervention	 Foot path	 Market
 Measurement Volume	 Broken Link	 Moto & Foot path	<u>Gender Activity</u> Degree male = blue Degree female = pink
 Measurement quantity	 End of Chain	 Tertiary road	
		 Paved Road	
		 Water	

4. FISH

Types of Fish

Fisherman in the region catch everything from tiny fish fit for an aquarium to 500 lb Marlin, porpoises and even an occasional whale shark. They sometimes classify fish by where they are caught. Artisanal fishman catch fish year-round, mostly juveniles or small, bony, fish not eaten on neighboring islands, and have low value on the international and urban market. Between June and January, the more desirable migratory Skip Jacks, Sardines, and Bonito are caught, sometimes in great number. Industrial fisherman also harvest migratory fish, but their focus includes epipelagic fish, those large predatory fish that hunt the upper levels of the deep sea – specifically Marlin, Swordfish, Dorado, Wahoo, Sailfish, Mackerel, Snapper and various species of Tuna – and that have high value on the urban market.

After the fish have been caught they are classified for sale by the categories, *Pwason Woz* (Pink Fish), *Pwason Blan* (White Fish), *Karabela* (Blue Fish – in other areas of Haiti the category is sometimes "black"). The categories do not strictly correspond to the color of the fish but are more accurately explained as a combination of size and type; both of which are market determined. Pink Fish are the most desirable; White Fish less desirable; Blue Fish--the small fish, juveniles, and rejects from the other categories--the least desirable. Lobster--the most lucrative product for both fisherman and *achtè* but not as commonly caught as fish--and conch fall into two categories: one for the internationally legal marketable size and another price category for undersized specimens. Glass eels are another type of sea product that has become valuable in recent years (see Focus Groups and Part I, Baseline Survey, for more detailed discussion).

Primary Stakeholders

Fisherman and market women.

Secondary Stake holders

Craftsmen who fix boats, nets and make traps. Sellers of hooks, nylon string for nets and other fishing gear. Owners of seines, FADs, NGOs, MARNDR.

Productionⁱ

Recently fishermen in the region have begun to engage in what can be called “industrial fishing strategies” made possible through the installation of offshore floating platforms called "Fish Aggregating Devices" (FADs) that attract large fish, making the location and capture of the fish vastly easier and more efficient. Nevertheless, an artisanal system prevails in the region and fisherman report it being more important for survival due to the fact that they can produce locally or scavenge whatever materials are necessary to engage in fishing and that artisanal fishing provides them with a more stable source of income. Despite the fact that what is being called “industrial” fishing yields much larger and more valuable fish, fisherman have not been able to fully exploit the opportunity due to limitations on storage (ice), transport (roads and vehicles larger than motorcycles) and market (demand is low and there is no single buyer who will purchase exceptionally large fish for shipment to the city). Nor is what we are calling industrial fishing sustainable without significant assistance from NGOs, as seen below.

Byproducts

Bone and Skin.

Production Technology

The use of “industrial” in this case refers to fiber-glass launches approximately 20 feet in length, open, but with outboard motors; long-line fishing gear; and monofilament nets. Industrial strategies can also include air compressors for deeper and more intensive spearfishing and gathering conch; and FADs (Fish Aggregating Devices). New processing and storage technologies include ice, coolers, electric freezers, and cold storage rooms for preservation, motor boats for rapid and safer transport both to offshore fishing grounds and to the urban market. Acquiring all these materials has only been possible with significant support from NGOs and after some 10 years of support, fisherman in the region are no closer to making the industrial strategy sustainable than they were when they started. Nor has the investment itself been complete. The continuing lack of cold storage has meant that many fish spoil. ⁱⁱⁱ

Table 18.1: Fishing Strategies, Artisanal vs. Industrial		
Technology	Materials	
	Artisanal	Industrial
Transport	Dugout canoes, wood paddle, plastic and cloth sails	Launches (Fiberglass boats with 15 to 60 HP motors)
Fishing	Trot lines, line fishing, string nets, monofilament nets, seining, live bait, surrounding or driving fish into nets	Trolling, long-lining, monofilament nets, lures, DCPs, setting nets
Diving	Mask, fins, snorkel, spear gun	Mask, fins, compressor, spear gun
Storage	Salt, lime and sundried	Ice, cold storage

Organization

Industrial fishing is organized around the association which is almost entirely dependent on financial assistance from foreign aid agencies. Three to five men will use the association-owned or subsidized boat and motor, the association-owned or subsidized fishing gear and fish the association-owned FAD. In contrast, artisanal fishing is mostly an autonomous or single-owner enterprise that involves one to three fishermen. It reaches its organizational zenith with the seine which is a team effort that requires major investments (a dory and seine), vigilance (looking out for schools of fish), timing (getting the team, boats and seine into the water before the fish escape), and coordination (putting the seine into the water, surrounding the fish, and then hauling them to shore or into the boat). Thus, the organization necessary to seine usually involves the *met* (the person who has invested in the seine and boat), a *kaptan* (captain

who coordinates), and an *ekip* (a team of from 8 to 30 men). Emphasizing the significance of this natural organization, artisanal fishermen in Wozo – who like all fishermen in the region have a keen interest in trying to capture an international sponsor who will underwrite their transition into industrial fishing – explained that, "every seine is an association."

Hiring

With the exception of repairing equipment--repairing wooden boats, making canoes and mending nets-- fisherman typically do not hire labor. The catch is divided into thirds: one third for the owner of the boat, one third for the captain, and the rest divided among the crew. If the fisherman fish at a FAD, they are also supposed to pay the owner of the FAD—typically an association--a portion of the catch (1/5th the catch).

Figure 18.1: Seining Team/Association

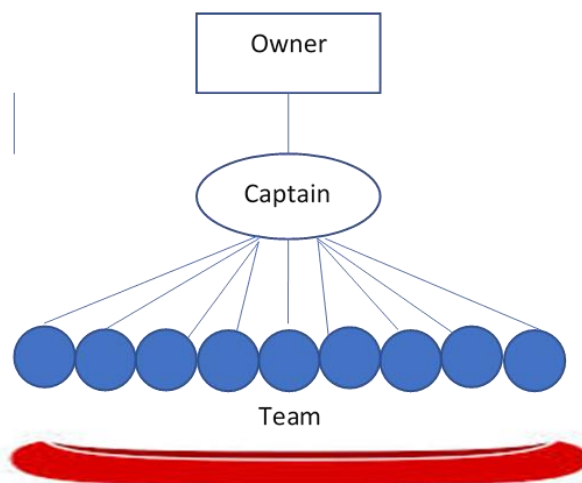


Photo 18.1: A seine team that sees a school of Bonito

Tenure

Boats and fishing equipment such as nets and compressors are typically owned by men. Some women purchase nets and traps—invariably wives or mothers of fishermen. Traps may be purchased and fished even in the name of children, i.e. to pay school expenses for them. The most expensive and prized technologies are outboard motors, fiberglass boats and seines—nets that may be 100 to 200 meters in length. FADs are typically underwritten by NGOs and owned by fishing associations, although at least one FAD in the region is owned by a private entrepreneur.

Financial underwriters

Aid agencies—UN, PADI, Food for the Poor and HEKS-EPER—have all participated in underwriting the costs of industrial fishing in the region. Artisanal fishing is underwritten by the individual, family, friends, and patron (Big Man/Woman). Fisherman typically underwrite the market chain by giving credit to female vendors, usually along lines of kinship.

Source of financing

Principally gardens and livestock.

Most Important Relationship Production

Fishing partners, boat ownership, male producer and female vendor (credit).

Sexual and Age Division of Labor

Men fish. Women and children gut and clean, and sometimes salt and dry the fish. Until recently the sale of fish was entirely a female undertaking. Recently however, the mostly male “achte” has appeared. The “achte” have emerged as byproducts of NGOs and they reflect the tendency for NGOs to give market opportunities to men, more so than women, thereby cutting into the traditional female marketing activities. The *achte* is a well capitalized purchaser who buys fresh fish and ships them to the city for resale.

Sale

Fish are sold locally for household consumption or to be prepared and resold as street food or in informal restaurants. They are also dried and transported to rural markets, Jeremy and even Port-au-Prince. Women in the focus groups who sell fish report it as their preferred trade. But unless a woman has capital to invest in fish and is willing to risk her money, engaging in fishing depends on having a husband, lover, son or other male relative who will give the fish on credit. When taken on credit the woman typically adjusts prices after the fact to account for her profits and/or losses.

Marketing organization

Women sell individually. No pooling of financing, few lenders.

Measurement

Small fish are measured in both volume and quantity. They are typically purchased by the basket or plastic basin (volume), then put on strings and sold by the string (quantity), typically with five to ten fish to a *kod*. Larger fish are bought and sold by volume. They are purchased wholesale based the size of the fish and then retailed by *tranch* (slice).

Processing and storage

Traditionally women gut and de-scale fish, wash them with lime, salt them and sun dry them. The fish can then be stored indefinitely. The women hang them from the rafters in their homes or store them in polyethylene and sometimes burlap sacks until the woman has enough fish for a voyage to market to be profitable, the conditioning factor being the cost of transportation. Fish can also be stored on ice for a shorter period, however ice is only a temporary solution. There are few cold storage rooms in the region and those that exist are costly and require backup generators, i.e. they typically are not working. The fish must be sold quickly or dried.

Transport and Market Venue

The fish are packed into sacks and hauled to a rural market by foot or on the back of a pack animal, on motorcycle to the Jeremy market, or sometimes on public bus or truck to Port-au-Prince. Focus group participants report that high end restaurants and supermarkets do not purchase their fish.

Price and Profit (Value added line)

Final point of sale in Jeremy or rural markets has a ~50 percent markup on the original cost of the fish. Sales in Port-au-Prince are ~100 percent of original costs.

Consumers

Consumers are the general population. During Easter the demand for fish spikes in the city and some woman will make the voyage to Port-au-Prince at this time.

Afflictions

Problems with fish include ciguatera poisoning that may result from eating predator reef fish and scombroid poisoning from larger pelagic fish that have not been properly iced.

Opportunities

There are enormous possibilities for production and marketing of fish in Haiti: 70% of Haiti's estimated consumption of 20,000 MT year fish are imported.¹¹ Yet, per capita consumption of fish in Haiti is estimated to be 4.5 kg, compared to a global average of more than 18 kg. The suggestion is a national market potential of as much as 100,000 MT per year, five times current consumption. HACCP certification--an international standard defining the requirements for effective control of food safety would open up exports to the Dominican Republic, creating an even greater market potential.¹²

Seafood: Ice, Urban markets and Export

A significant and highly lucrative opportunity exists for selling high quality pelagic fish to Port-au-Prince supermarket, restaurants and for export overseas. The installation of more than 120 FAD over the past 10 years have made the opportunity possible. Fishermen in the region pull in an unknown but catch of these fish. Many spoil. Currently there is insufficient ice available and no system for rapidly exporting the fish to the city. Yet, Jeremie has the infrastructure to support an ice plant and the improved road between Jeremy and Les Cayes means there that more than six buses per day and dozens of smaller vehicles make the trip to Port-au-Prince.

Fish Farming

Another significant opportunity, one that focuses more on providing the local rather than the urban market with protein rich source of fish, is freshwater fishculture. Fishfarming of Tilapia and Common Carp began in Haiti as early as 1951 with a collaborative FAO/MARNDR five-year fish-farming project that imported Common Carp from Alabama USA and Tilapia Mossambica from Jamaica. The fish were used to stock rivers, lakes and irrigation canals.. Restocking occurred annually until 1967. In the 10 years 1958 to 1968, 4,824 fish ponds, each of an area of ~100 m², were built in various regions of Haiti—mostly on the Artibonite--and stocked with 798,669 Carp fingerlings and 815,765 Tilapia Mossambica. It was these stocking programs that led to current existence of Carp and Tilapia in the rivers of the Grand Anse (see Photo 18.2, right).



Photo 18.2: Tilapia caught in Grande-Anse River

Some efforts at fish cultivation were made by FAO in 1989-90, notably with construction of a Government/MARNDR managed hatchery in the Artibonite, but

for the most part cultivation of fish in Haiti languished in the 1970s and all but disappeared until the early 2000s when it experienced a resurgence through NGOs.¹

The Haitian family farm livelihood strategy seen in the previous pages is suitable for two kinds of fishculture: pond culture in hand-dug basins and cage culture in estuaries and rivers. Both would depend on the existence of hatcheries and availability of processed fish pellets. While neither resources exist in the Grand Anse, there are at least seven hatcheries currently operating in Haiti, five of which are significantly large operations that can be drawn on for expertise, fingerlings, and access to processed feed,^{iv}

- Point Sonde National Fish Hatchery (an offshoot of the original FAO project)
- CH hatchery Croix-des-Bouquets
- CH hatchery near Mirebalais
- Gressier's Christian Ville
- Operations Blessing: fish hatchery outside of Port-au-Prince in Tabarre

There is also currently a hatchery with a 200,000 fry capacity under construction in the Department of the North East at Lagon aux Boeufs sponsored by Food and Agriculture Organization of the United Nations (FAO) and the Ministry of Agriculture. Assistance with fishfarming startup operations can be procured through Organizations such as Farmer-to-Farmer and Aquaculture without Frontiers.

Figure 18.2: Fishing Infrastructure

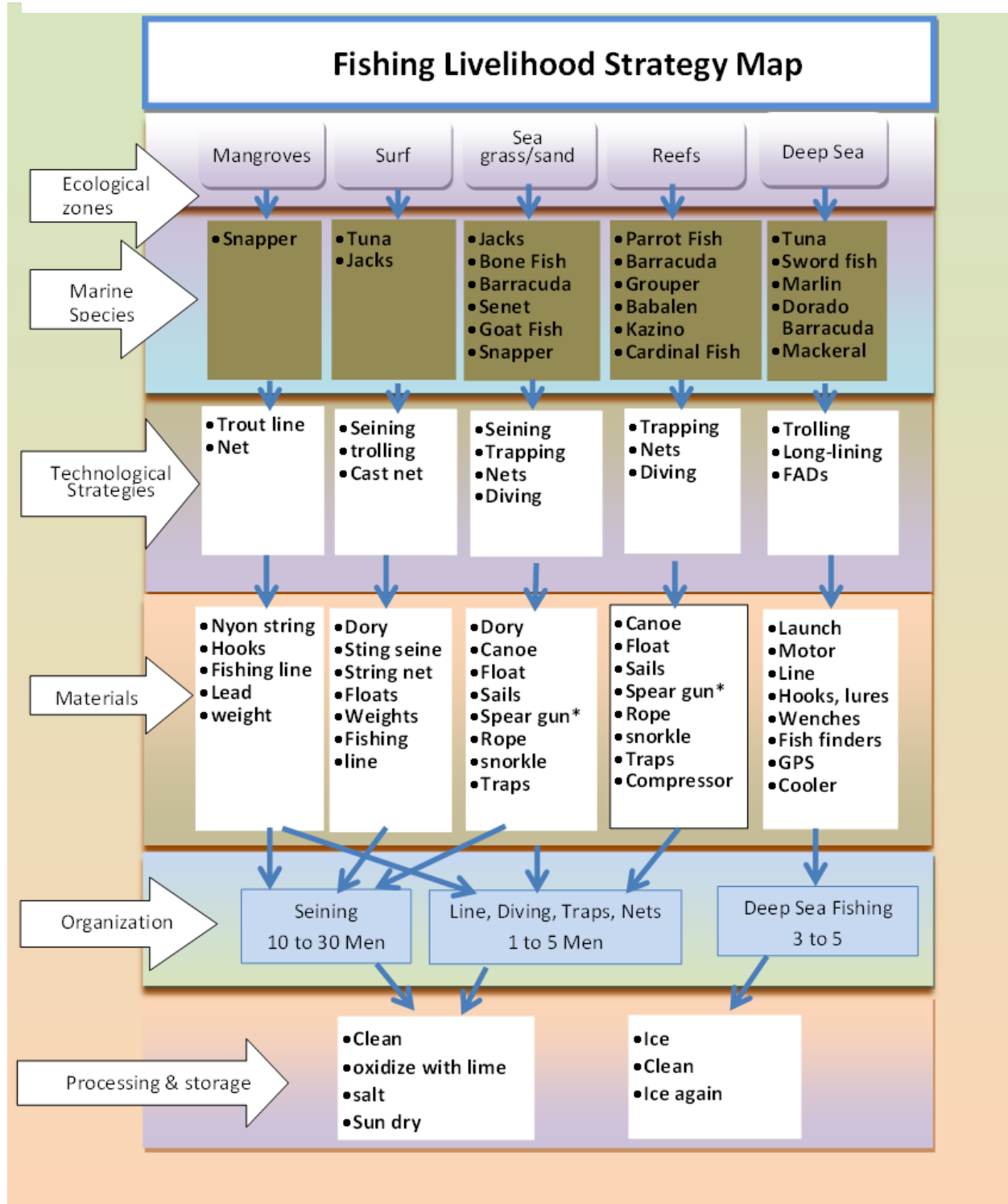


Figure 18.3: Fishing Infrastructure with Points of Intervention and Opportunity

(Key: ! = points of ecological crisis; ☀ = opportunity)

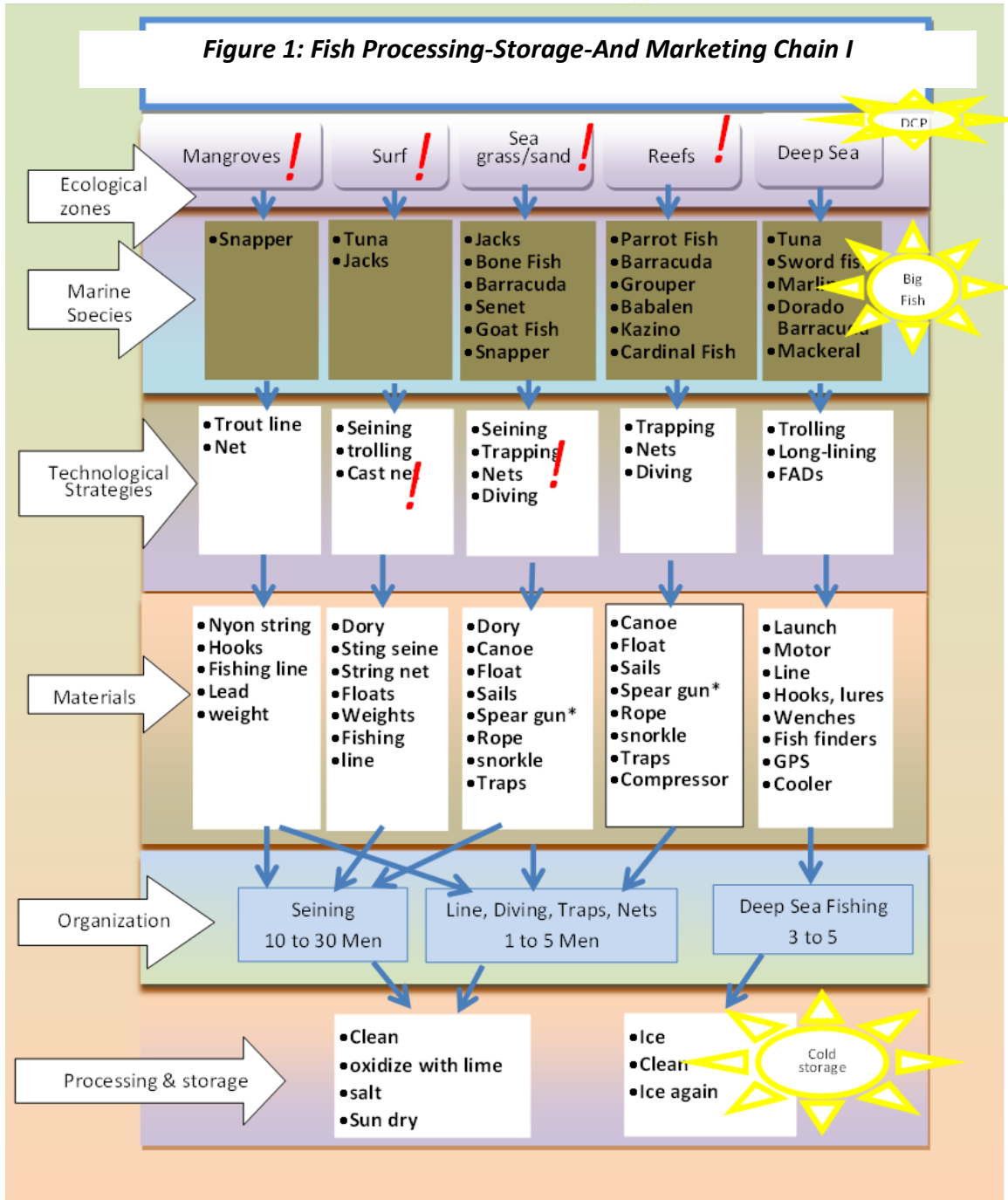
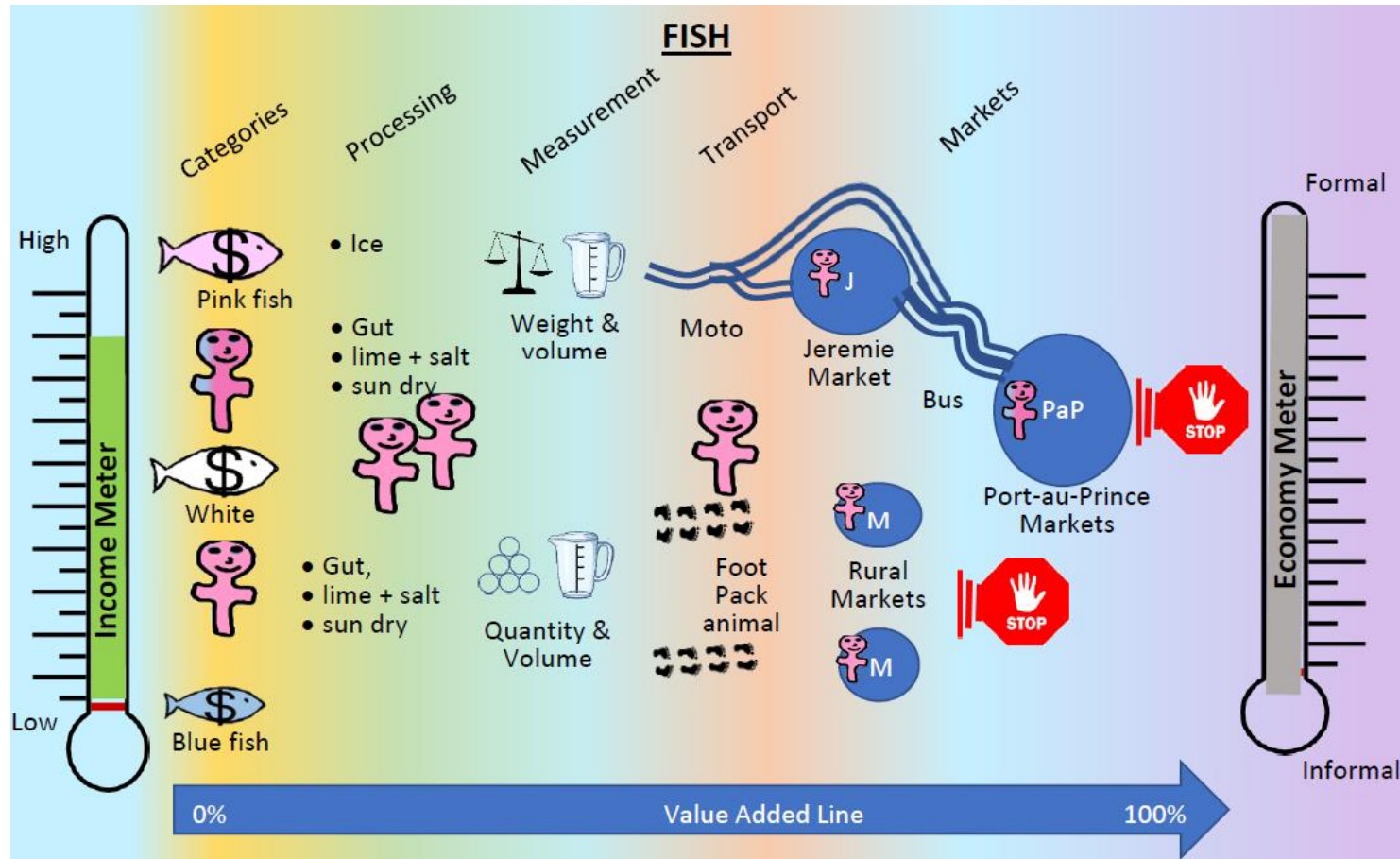


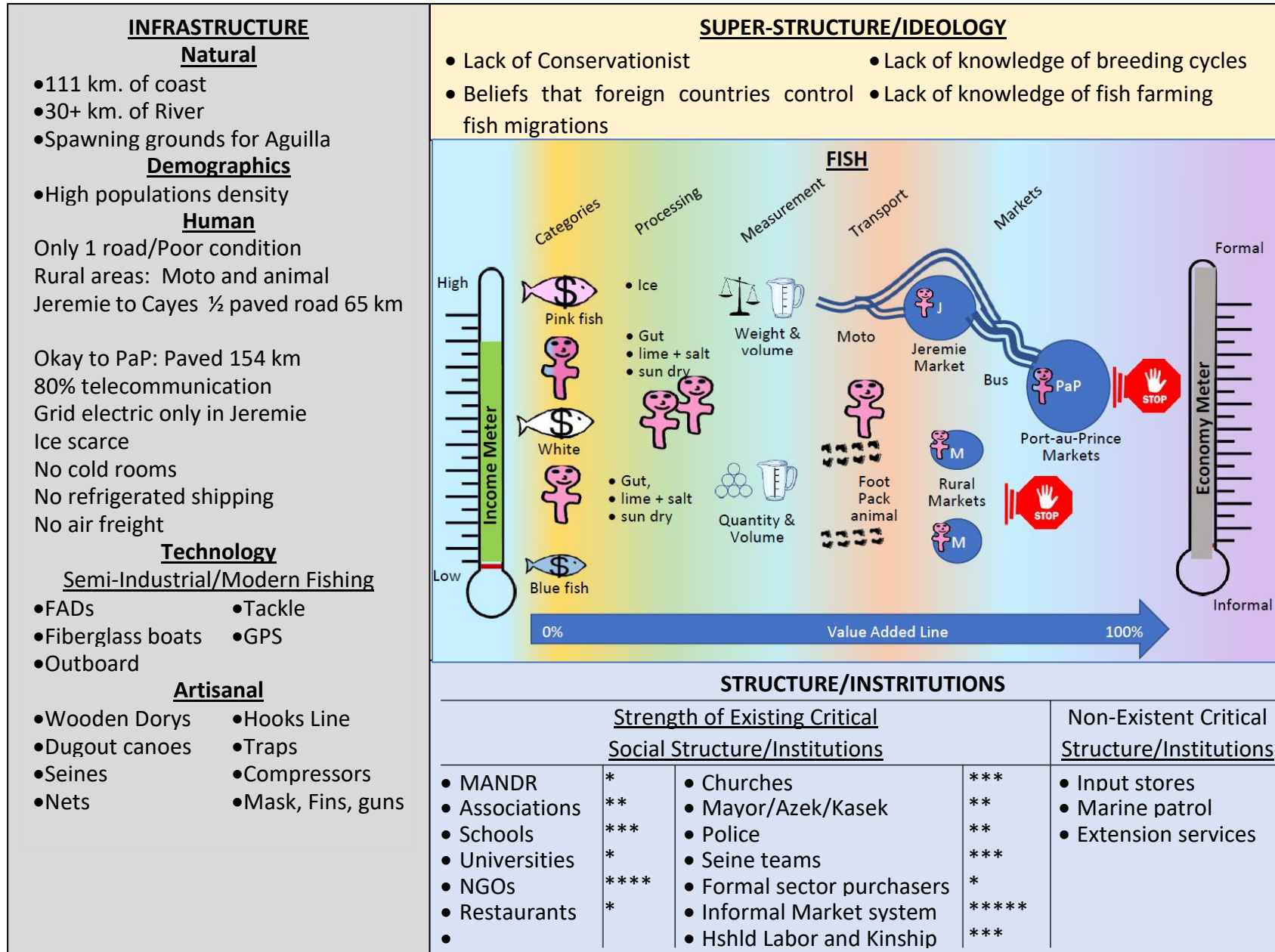
Figure 18.4: Fish Marketing Map



LEGEND

MEASUREMENT	SYMBOLS	TYPE OF ROUTE	LOCAL FISH GRADING SYSTEM	Markets & Gender
Measurement weight	Opportunity for intervention	Foot path	Pink fish	Market
Measurement Volume	Broken Link	Moto & Foot path	White	Gender Activity
Measurement quantity	End of Chain	Tertiary road	Blue fish	Degree male = blue
		Paved Road		Degree female = pink
		Water		

Figure 18.5: FISH Embedded Marketing Map



PART III:

Grassroots Leadership Network for Data Collection and Engagement

Frequency Listing and the NOLKIN Strategy

As part of a strategy for continued data collection and engagement of rural farmers with innovative development interventions, Socio-Dig employed its Freq-listing and the *Notab* Leadership and Key Informant Network Strategy (NOLKINS). NOLKINS is similar to an election in that respondents identify leaders. However, it is not a political strategy. Rather it is a strategy for engaged development. But in coming to understand how it works and why it can be so effective, it helps to think of it as an endeavor to identify leadership that is truly representative of the local population, leaders who can act as catalysts helping humanitarian aid organizations understand what is going on at ground-level and helping them reach out and inform the population. These leaders become points of contact in implementing assistance activities, and sources for monitoring and feedback regarding the success and failures of interventions. In this sense, Freq-listing is to an election what a sample survey is to a census. Both freq-listing and elections yield leaders who are representative of the population. But freq-listing is arguably far more effective than an election because it is unencumbered by the candidate's access to power, by the need for understanding how to negotiate the political process in order to qualify as a candidate, or even by the will to be a candidate. It is also unencumbered by opportunities or motivations to bribe, cajole or corrupt the process. Moreover, the way that freq-listing surveys are designed and conducted and the questions asked mean that the process selects for leaders who are truly local and rural, not merely urban lead

ⁱ There are laws in Haiti that govern and restrict the indiscriminate cutting of trees, but they are not enforced today nor would they be enforceable without inflicting economic hardship on the people living in the region. All over Haiti cutting trees to saw boards and make charcoal is a final recourse in the face of hard times, drought and starvation. This is particularly true in the Grand Anse where virtually everyone depends on wood for cooking fuel and virtually everyone depends on domestic production for lumber supplies.

ⁱⁱ Although petty in terms of international standards, fishing represents a significant part of the household livelihood strategy for some 250,000 men, women and children in Haiti, approximately 25,000 of whom are located in the Grand Anse (MARNDR 2009). The people who live in the fishing communities tend to be among the least educated people in the region and live in marginalized and remote communities. An estimated 92% have not finished high school – compared to 75% nationally (CRFM 2010; EMMUS 2012).

	Per trip	Trips per year	Total per year
Full-time	95.50	311	\$29,700
Half-time	52.41	182	\$9,538
Part-time	127.52	26	\$3,315

^{iv} Also useful resources might be CODEP (Comprehensive Development Project) between Leogane and Jacmel. Farmer to Farmer volunteers provide on-site information and training in small-scale sustainable aquaculture techniques in developing countries.