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GENDER AND POVERTY DIMENSIONS IN A VALUE CHAIN ANALYSIS OF MILKFISH IN REGION 10, PHILIPPINES

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- ◆ This value chain analysis for Milkfish in Region 10 is part of a project on “Value Chain Analysis for Key Aquatic and Agricultural Products in Selected Regions in the Philippines” which is funded by **WorldFish, Philippines**
- ◆ Through several VCAs WorldFish aims to identify entry points for effective intervention in reducing poverty in its Aquatic and Agricultural Systems (AAS) Program.



Value chain



A sequence of related enterprises - alternatively referred to as major players - that perform specific functions to add value to a product, from primary production, processing and distribution, and selling to the final consumer

The VCA conducted employed a triangulation of primary and secondary data. Primary data gathering was through actual observation, surveys, informal interviews, key informant interviews, and FGDs. Secondary data were mainly from the BFAR and BAS websites and published research articles.

Milkfish

(*Chanos chanos*)

- locally known as *Bangus*
- No. 2 in the Philippine aquaculture industry:

1st - seaweeds (65.66%)

2nd - **bangus** (16.90%)

3rd - tilapia (11.32%)

- milkfish is mainly consumed as food and is a good source of protein



Outline of Presentation

- **Brief Industry Assessment**

- to put into context the value chain analysis on *Bangus*,
- centered on *Bangus* production, supply, exportation

- **Value Chain Mapping**

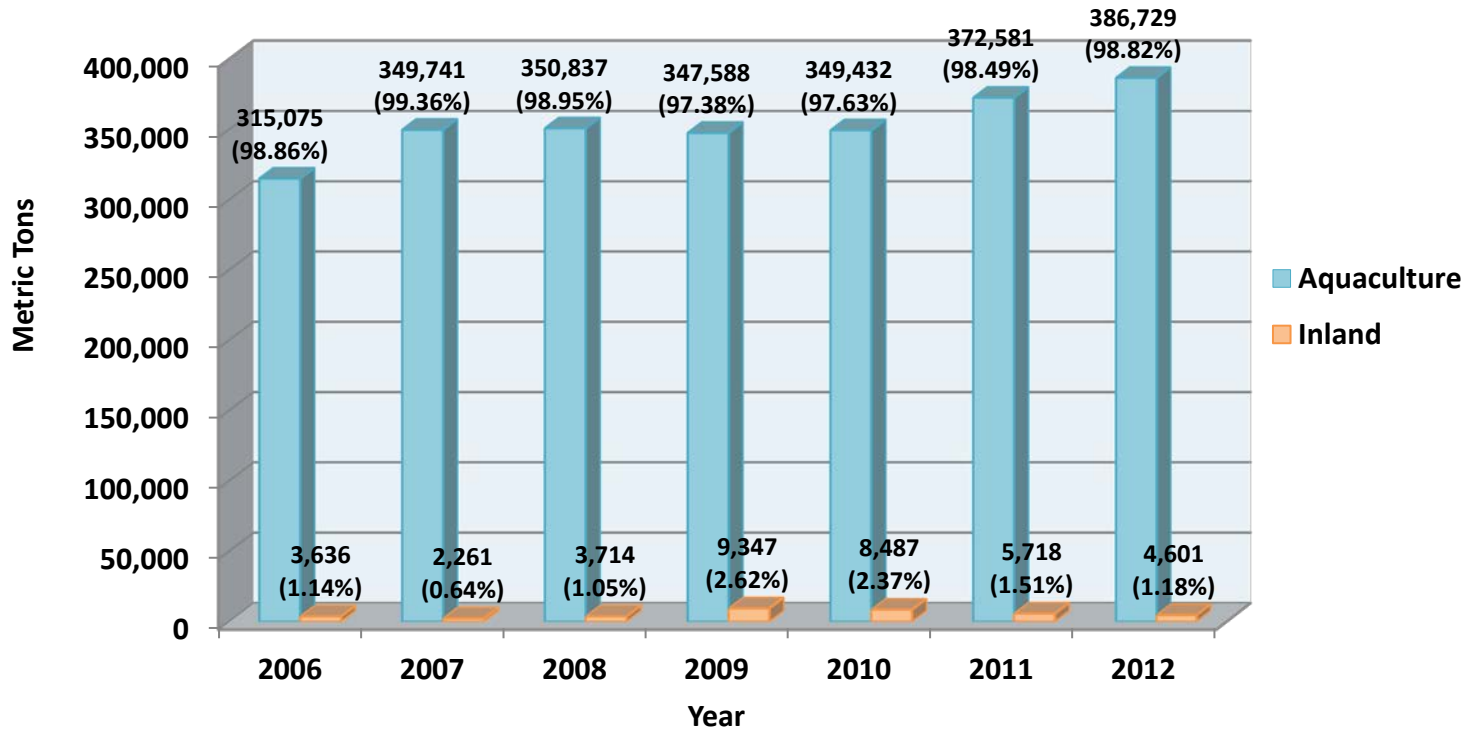
- to determine the following:
 - key customers and their requirements
 - major players and their roles;
 - flow of product, information and payment
 - activities and processes and gender roles
 - opportunities and constraints



Industry Assessment



Figure 1. *Bangus* Production: Aquaculture and Inland, Philippines, 2006-2012



Source: countrystat.bas.gov.ph

- ✓ *Bangus* in the country is almost entirely farmed
- ✓ During the 2006-2012 period, aquaculture's share was an average of **98.50%** while inland fisheries' share was an average of 1.50%

Bangus Production in Region 10

- marine pens and cages are generally increasing with volumes dramatically going up from only 6,200 MT in 2003 to 13,475 MT in 2012
- Lanao del Norte, Misamis Oriental and Misamis Occidental are the top *Bangus* producing provinces in Region 10
 - **Misamis Oriental** leading in mariculture owing to their wide span of coastal areas
 - The creation of the **Balingasag Mariculture Park** in Balingasag Bay, Misamis Oriental in March 2007 further boosts *Bangus* mariculture in Misamis Oriental.



Mariculture Park Development Program of the Philippine Bureau of Fisheries and Aquatic Resources (BFAR)

Context:

Dwindling fishery resources and climate change

- to address the need for an alternative source of income and sustainable livelihood among fishers
- for food security
- for stimulating a good investment climate in fisheries

Source: Perez, Garces, et. al., 2012



Potential of Bangus as a source of livelihood

As processed products

- sardines
- smoked fish
- marinated deboned bangus
- fillet
- longganisa, etc.



For exportation

- ❑ Top 5 Bangus destinations:
 - US, Canada, UK, Korea and Australia
- ❑ Bulk of total exports were in frozen form, in whole or in pieces
- ❑ Exportation is **less than 2%** of Philippine production due to barriers posed by quality standards

Locational Map of the Study Site



Cagayan de Oro

Iligan City

Balingasag
Mariculture Park
Misamis Oriental

★ Main distribution areas

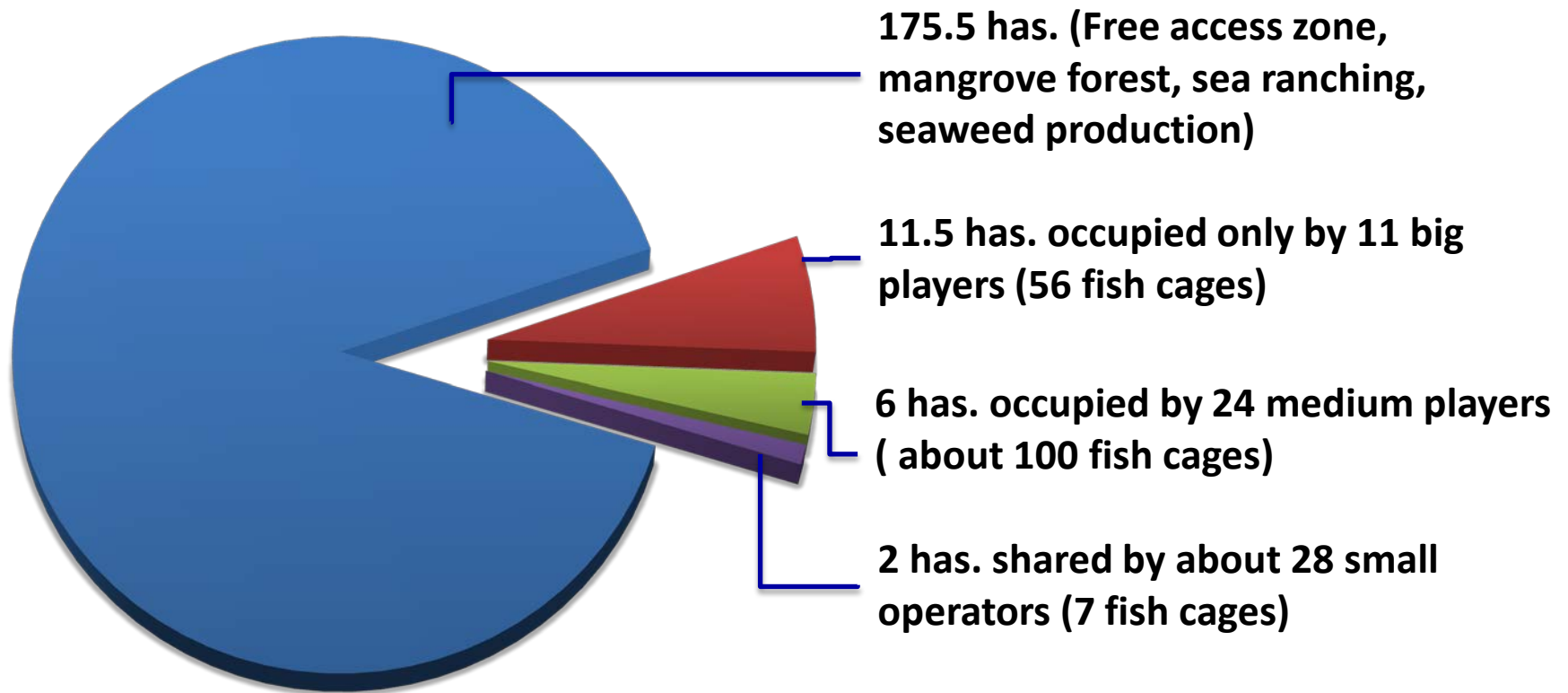
Balingasag Mariculture Park: Main source of Milkfish

- Launched in 2007



Balingasag Mariculture Park

Total Area: 195 hectares



■ Multiple Use

■ Big Operators

■ Medium Operators

■ Small Operators

Key Customers of Milkfish and Their Product Requirements

- ◆ **Households** of Balingasag, Cagayan de Oro City, Iligan City, and Marawi City
 - ✓ prefer small sizes on ordinary days (4-in-1 kg; 3-in-1 kg)
 - ✓ prefer big sizes on special occasions (2-in-1 kg or bigger)
 - ✓ freshness is non-negotiable
- ◆ **Hotel and restaurant operators; hospitals** in Cagayan de Oro City, Iligan City, and Marawi City
 - ✓ prefer small sizes for fried dishes (4-in-1 kg; 5-in-1 kg)
 - ✓ prefer big sizes for *sinigang* (2-in-1 kg or bigger)
 - ✓ freshness is non-negotiable



KEY PLAYERS IN THE VALUE CHAIN

Fish Cage Operators



Brokers/traders



Wholesalers



Retailers



Fish cages of big & medium operators



Small operator in a watch house near his fishcage

Those contacted by the fish cage operators during harvest time to purchase the milkfish for distribution; they may also take the initiative to contact operators. Some of the big operators also serve as brokers and traders

Those who sell bangus on 5-6% commission on the selling price to retailers or who buy at wholesale prices and then dispatch the fish to retailers.

They are located towards the end of the chain and link with the final consumers – the households, hotels, restaurants or *carenderias*.



The Fish Cage Operators

Characteristics	Big operators	Medium operators	Small operators
No. of operators	11	24	28
Age	40s to early 60s	40s to early 60s	30s to mid-60s
Education	College	College	Elementary to High school
Gender	All men	Mostly men	All men
Capital	Private	Private	Grant*

*20 beneficiaries of Bureau of Fisheries and Aquatic Resources (BFAR)

8 beneficiaries of the Southeast Asian Regional Center for Graduate Studies and Research in Agriculture (SEARCA)



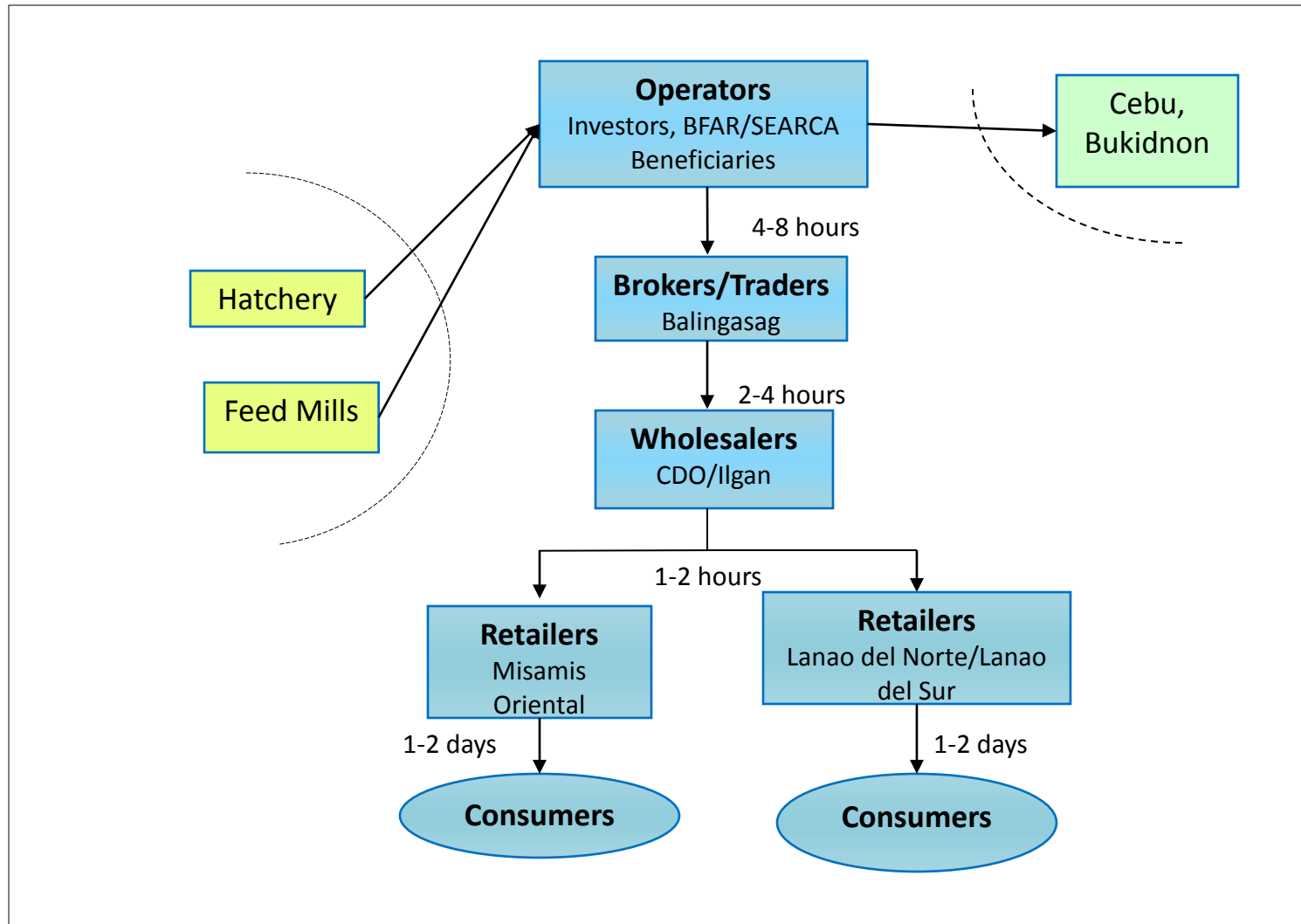
... and their fish cages

Characteristics	Big operators	Medium operators	Small operators
No. of fish cages operated	7 to 14	2 to 6	7 shared by 28 operators
Material used	HDPE, GI pipes, bamboo	Gi pipes, bamboo	bamboo
Size	Circular: 10m, 15m, and 20m diameter	Square: 10mx10mx5m	Square: 5mx5mx5m: 4 operators in a 10mx10mx5m fish cage; a group of 3 beneficiaries operate a fishcage on a rotation basis
Fingerlings stocked	D=10m: 15,000 D=15m: 35,000 D=20m: 60,000	15,000	5,000
Yield	D=10m: 7.5-8 m.t. D=15m: 17 m.t. D=20m: 30 m.t.	7.5-8 m.t.	≈ 2 m.t.

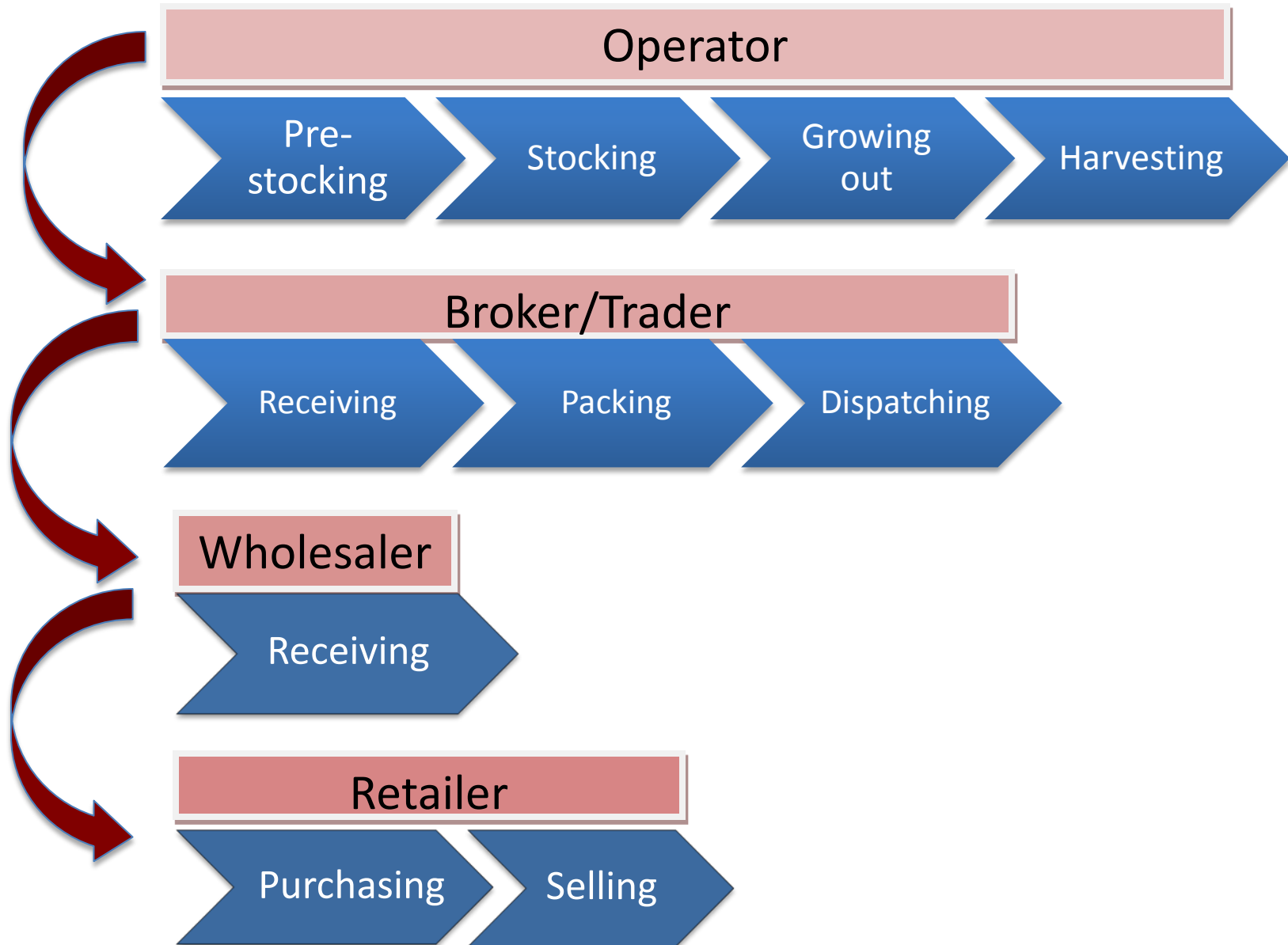
More on the small or marginal fish cage operators: BFAR/SEARCA livelihood beneficiaries

- each is entitled an assistance of Php 45,000 per cropping; Php 5,000 is retained by the LGU-MAO for repairs and maintenance and other unforeseen expenses; sometimes the retained amount goes to household emergency expenses
- assistance granted insufficient for one cropping so a group of 3 beneficiaries agree to operate on a rotation basis
- common arrangement is the one who operates for a cropping period borrows the funds of the other 2 beneficiaries and pays a total interest of Php 3,000 on the amount borrowed












































Milkfish Spatial and Product Flow



Key Value Chain Players and their Activities














































Gender Role in the Milkfish Value Chain, Region 10

PROCESS	ACTIVITY		
Pre-stocking	Preparation of fish cages		 
	Sourcing of fingerlings		
	Counting of fingerlings for transfer to fish cages	  	
	Transfer of fingerlings to towing cage		 
Stocking	Transfer of fingerlings to fish cage		  
Growing out	Feeding of juveniles		 
	Monitoring and maintaining fish cage		 
	Guarding fish cage		  
	Mending the nets; fabricating nets	 	
Harvesting	Contacting harvesters		 
	Raising the net		  
	Putting fish in chilling tanks		  
	Bringing chilling tanks to the shore		  
	Preparing food for the harvesters	  	

Note: This is mainly for the small operators. Women visibility is weak in big & medium operations.

Gender Role in the Milkfish Value Chain, Region 10 (continued)

PROCESS	ACTIVITY		
Receiving (Buyers)	Sorting fish according to size & recording volume		
	Negotiating prices		 
	Tendering payment to harvesters		 
	Tendering payment to fish cage operators		  
Packing	Storing of fish in styro boxes & standardizing weight		  
	Placing ice in styro box, sealing & loading in fish cars		  
	Delivering fish to fish landing area		  
Dispatching	Negotiating prices	 	
Wholesaling	Receiving payment and recording sales	 	
	Hauling fish to the wet market		 
Retailing	Unpacking styro boxes and displaying fish	 	
	Removing fish scales, slicing and deboning	 	
	Receiving customer payments and recording sales	 	
	Re-icing fish and storing for selling on the next day	 	

Note: This is mainly for the small operators. Wome visibility is weak in big & medium operations.

Balingasag *Bangus* Processing Plant



- ✓ Built by BFAR to augment income of the members of the Federation of Balingasag Women, generally wives of Balingasag fishers.
- ✓ The facility is equipped for *Bangus* deboning and for processing smoked *Bangus* and sardines.

While hotels, restaurants and groceries are potential markets of processed *Bangus*, certification requirements (GMP, HACCP) serve as barriers to entry to the lucrative processed food market

Synthesis of gender roles

- In big and medium fish cage operations where the operator can afford to hire laborers/caretakers, women visibility is weak or missing
- In small/marginal fish cage operations, where the operator cannot afford to pay for additional labor, women members of the family form an important part of the labor requirements, and comprise the unpaid family labor
- In key activities where labor requirement is heaviest (harvesting and packing) men do the work; where heavier labor is needed (preparation of fish cages) women assist men; otherwise, women work alongside men (sourcing of fingerlings and sorting of harvest according to size and recording of volume according to sizes)

Synthesis of gender roles, continued

- In activities requiring patience women are generally more involved (counting of fingerlings, fabricating and mending fish nets, negotiation of prices during the harvest season)
- Women lead activities in wholesaling and retailing; as wholesalers, they generally set aside a portion of profits as their personal earnings. In retailing, women do not set aside personal earnings
- Women take the lead in processing, where much of the value is added and product quality can be determined.
- Similar with other VCAs (e.g., FAO-conducted) work demanding strength is associated with men, while work requiring patience is associated with women. However, studies in other parts of the world (e.g., Ghana) would show men to be more active in trading

Value adding along the chain

	Operator	Broker/Trader	Wholesaler	Retailer
	Pre-stocking → Stocking → Growing-out → Harvesting	Receiving → Packing → Dispatching	Receiving	Purchasing → Selling
		Php 92	Php 105	Php 110
PRICE (PhP/kg)				Php 125
COST OF INPUTS (PhP/kg)	74.07	92	105	110.00
OTHER INPUTS (PhP/kg)	6.82	0.95	-	Cgy: 3.18 Ign: 2.54
VALUE ADDED CAPTURED BY THE VC (PhP/kg)	11.11	12.05	5.00	Cgy: 11.82 Ign: 12.46
% VALUE ADDED TO TOTAL COST	13.73	12.96	4.76	Cgy: 10.44 Ign: 11.07
TIME	4 months	1 day	1 day	1-2 days
Volume sold	7.5 tons	7.5 tons	7.5 tons	400 kgs

Note: For the marginal players, they sell only roughly 2.0 m.t. after 4 months. There are two cropping periods in the Balingasag Mariculture Park.

INPUT costs for the fish cage operators

Cost of direct materials and labor:

Fingerlings @ Php8.00/pc

Feeds @ Php640/sack

Payment for caretakers, watchmen, harvesters = Php 9.80/kilo

(For small or marginal operators, the above is generally family labor)

Other inputs:

Mainly overhead expenses, repairs and maintenance

INPUT costs for the brokers/traders and wholesalers

Cost of milkfish and labor

Overhead expenses: depreciation of fish cars, fuel, ice blocks, etc.

INPUT costs for the retailers

Cost of milkfish and labor

Overhead expenses: stall rental, electricity, water, crushed ice, etc.

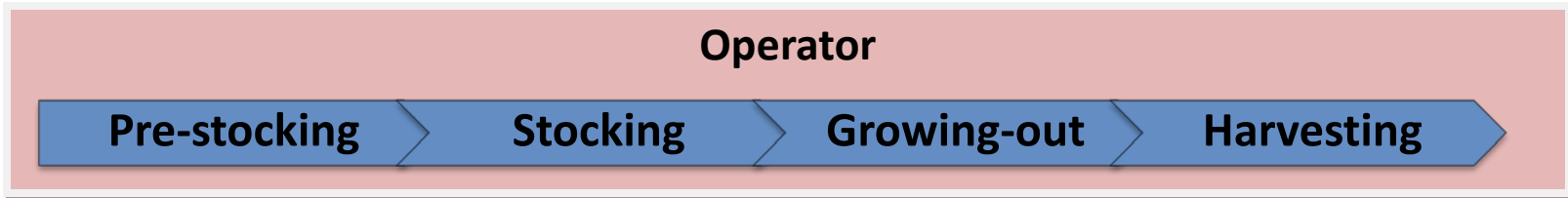


V alue Chain Analysis

- The *highest value added/kg of Bangus* in this chain is captured by the retailer in Iligan, which is PhP12.46 per kilogram, earned over a period of 1 to 2 days. However, volume of production is only 400kgs.
- *The second highest value added/ kg* is captured by the broker/trader, earned only for a day. Considering the volume of bangus (7.5 tons) which is being traded, however, the aggregate net income (i.e., for the whole business volume) of broker/traders is largest among the different players in the value chain.
- Note that a 10x10x5m fish cage yields a value-added of PhP11.11/kg after a period of 4 months. One fish cage of such size is being operated by 4 small operators. Each small operator therefore earns only about $\frac{1}{4}$ of the earnings of the private operators.

- The distribution of income over time along the *Bangus* mariculture value chain gives a powerful insight on the reasons behind the persistence of poverty among small (marginal) players on one hand, and the capital accumulation among medium and big players on the other hand.
- This supports Kaplinsky and Morris' (2001) assertions that VCA also helps us understand certain scenarios in the world, to include the nature of income distribution.

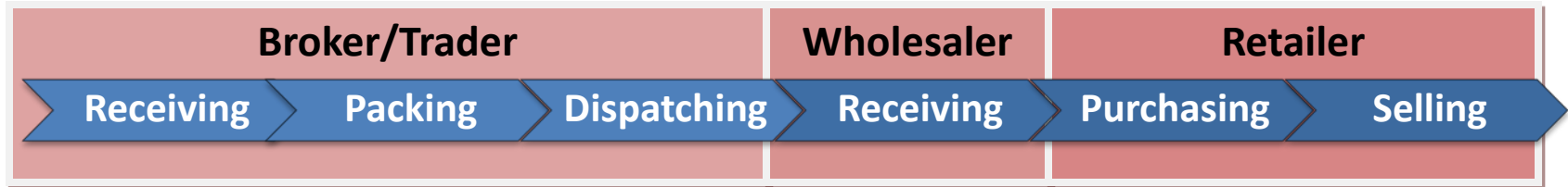
Major Constraints of the Operator in the Value Chain



CONSTRAINTS

- **Difficulty in sourcing fingerlings**
- **High cost of feeds, but higher for marginal operators as purchases are in retail (up to 67% of cost of production)**
- **Extreme weather conditions destroys fish cages, causing juvenile/mature milkfish to escape (may lead to early harvesting)**
- **Simultaneous harvesting results in declining prices**
- **Broker/trader can influence prices, especially of the marginal operators**
- **Insufficient financial capital of marginal operators prevent maximizing stocking capacity of fish cage, renders repair and maintenance of fish cage and bancas difficult**
- **Marginal operators lack management and technical training**

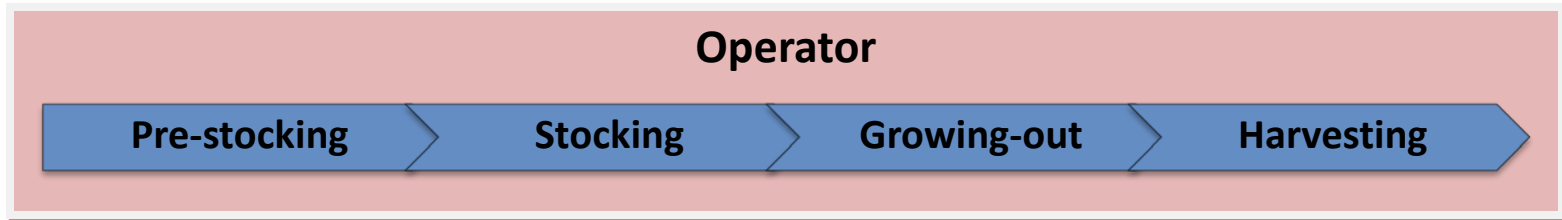
Constraints of the Broker/Trader, Wholesaler and Retailers in the Value Chain



CONSTRAINTS

<ul style="list-style-type: none"> •Some difficulty in collecting proceeds of sales from wholesaler • Marketing of <i>Bangus</i> when supply is high possible only at lower prices 	<ul style="list-style-type: none"> •Some difficulty in collecting proceeds of sales from retailers •Shrinkage in fish weight 	<ul style="list-style-type: none"> •Rainy season dampens sales forcing them to sell at breakeven point •A few brokers/traders also do retailing at slightly lower price •Shrinkage in fish weight
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Opportunities of the Operator in the Value Chain

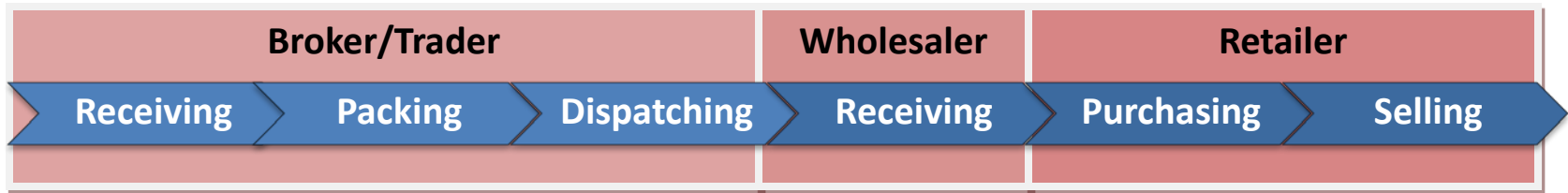


OPPORTUNITIES

- Developing a hatchery
- Production of own feeds
- Fabrication of fish nets
- Fabrication of fish cages
- Insurance for fish cage operations
- Milkfish grown in marine fish cages better tasting and preferred to those raised in inland fish pond
- Establishing post harvest facilities (storage and ice plant)
- Exportation of milkfish especially to countries where there are many Filipinos

Note: Marginal operators find it difficult to respond to these opportunities.

Opportunities of the Broker/Trader, Wholesaler and Retailer in the Value Chain



OPPORTUNITIES

- Processing of milkfish
- Exportation of milkfish especially to countries where there are many Filipinos

- Delivery of milkfish to other areas of Northern Mindanao

- Processing of excess milkfish into Daing (marinated milkfish)
- Deboning of milkfish for a fee

Synthesis

- ❑ Bangus mariculture in Region 10 has oligopolistic structures as a few big players dominate production; there are even a few who also play a role in the wholesale and retailing, thereby capturing all the value-additions in the chain
- ❑ Marginal players face so many barriers which prevent them from having efficient operations
- ❑ The objective of benefiting marginal fishers in the development of mariculture park apparently come only in the form of the fishers providing cheap labor to big players unless appropriate assistance is provided
- ❑ While value adding is highest in processing, this is not optimally done.

Interventions

**Focusing on the poor and marginalized
...and as they see it**



- ✓ augment financial assistance to marginal operators so they could operate regularly rather than on rotation basis
- ✓ price control measures:
 - price floor for farmgate prices of *Bangus*
 - price ceiling for feeds
- ✓ marketing assistance from the Mariculture Park management so the marginal operators can directly deliver to retailers in nearby city markets thereby shortening the value chain and allowing the marginal operators to capture the value added by brokers and wholesalers
- ✓ Input support for the marginal operators to develop their low cost backyard bangus hatcheries
- ✓ R & D into low cost fish feeds to make marginal maricultural operations more viable
- ✓ capacity development for women in bangus processing to meet certification requirements for entry into lucrative markets



Acknowledgment

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