

# STEP

## Seafood Trade, Ecosystems and People



### Preliminary Report

An analysis of small-scale fisheries value chains, market structure and effects of this on benefit flows and distribution in the Western Visayas

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## The project in brief

Small-scale fishery governance has often taken a narrowly approach to sustainability, focusing either on managing fishing activities, or market-based interventions and overlooking the embeddedness of fishers within a broader social structure. This project uses a value chain approach to address these gaps. The aim is to improve our understanding of the interplay between fisheries governance and market dynamics, and the effects of this on benefit flows and distribution of marine ecosystem services. This report contains preliminary results and examines the social dynamics among fishers and traders that may impact benefit flows and ultimately resource extraction decisions.

The data presented in this report form part of a larger project also aiming to uncover the role of seafood markets and market actors, like traders, in mediating interactions between the social and ecological components in local Small-Scale Fisheries systems.

\* SSF here include both municipal and commercial fisheries

## 1. Introduction

Small-scale fisheries (SSF) are frequently cited as necessary for sustainable poverty alleviation in coastal areas worldwide and in academia much work has been done to understand the connections between poverty, SSF seafood trade, food, and livelihood security. Although people benefit in various ways from their involvement in SSF markets, for example access to protein, reciprocities, cash and employment, development policies have often focused on economic growth and intensifying international seafood trade links. While important, this focus does not appear to have markedly reduced poverty levels in many SSF (ibid). Case studies continuously show that small-scale primary producers receive the lowest economic benefits relative to other value chain actors. In SSF exporting to international (often western) markets, there are particularly stark contrasts between benefits gained by local producers versus the corporate interests involved.

Various factors or contextual features can impact benefit flows. For example women and men often earn different incomes and take on differing roles in the fish value chain. Benefit flows can also be affected by patron-client relationships, or other forms of credit arrangements between actors in the fish value chain. Finally, differences in end consumers impacts on the price of products but also on the market access of various actors in the fish value chain. However, which groups (beyond fishers) benefit from SSF, and how such benefits are distributed, remains poorly understood. To address this, and to disentangle the market features and social mechanisms that impact SSF benefit flows and distribution, the first part of this project asks: Who and how do market chain actors benefit from SSF? This is done in the Concepcion municipality in the Philippines (Iloilo Province).

## 2. Methodological approach

To understand who is involved, this study makes use of a Value Chain (VC) approach with a focus on gender and market interactions. A VC analysis is one way to examine market structures (i.e. identity, size and numbers of traders/fishers and product-types they deal with), while also assessing the relationships among actors and subsequently understanding the market conduct (i.e., buying and selling, pricing) this gives rise to. Simply put, a value chain is conceptualized as a set of nodes (representing a particular actor type with a particular function in the fish value chain), and the relations between them. VC analysis is increasingly employed as an approach towards developing markets to benefit small-agricultural producers.

To understand benefit distribution among SSF and market actors, net income is assessed across value chain nodes (actor types) and gender. Levels of inequality within and between actor types are then calculated.

Contractual arrangements between seafood market actors are examined as a means to understand the mechanisms behind the observed benefit flows and distribution. Academic studies across the world show that fisher-trader relations can have an impact on fishers' conduct, decision-making, and income, and thus, on the distribution of benefits stemming from seafood extraction and trade. By channeling flows of various kinds between fishers and the rest of society (e.g. market demand, cash, products, information) traders play an important linking function between markets, fishers, and fish stocks. Therefore the arrangements (i.e., contracts, deals) between traders and other actors at various points in the value chain can facilitate the channeling of benefits but can also potentially hinder them. In spite of this traders are rarely taken into account or included in formal fisheries governance.

Finally, we are interested in understanding benefit distribution beyond simply the net income of trade. As is well documented in many fishing societies, transactions in the value chain are not purely economic but also involve reciprocities and connections based on residency, kinship, and custom. Consequently, this paper also examines the broader set of relations in which the fishers and traders are situated to get a more holistic understanding of who receives non-trade related benefits (such as food, credit, and cash, flow). This analysis includes both primary (e.g., traders, fishers) and secondary or auxiliary (e.g., processors, auctioneers, and boat repairers) market actors.

A gender sensitive lens is applied in the analysis since gender emerges as an important factor to consider when aiming to understand SSF seafood trade participation and the associated benefits. Incidentally, gender has often also been ignored and unrepresented. This has resulted in women’s market chain functions, and their contributions and dependencies, often remaining invisible. However, if SSF governance is to contribute to sustainable livelihoods and food security across a broad demographic, the roles of gender and market relations need to be considered as a means to unpack current benefit flows.

## 2.1 Description of cases: The Small-Scale Fisheries of Concepcion

This study relies on primary data collected through surveys and semi-structured interviews with fishers and trading actors within the Iloilo Province, largely around the municipality of Concepcion in the Philippines, from hereon Concepcion (September-November 2015) (See figure 1). Respondents were selected based on their involvement in the value chain and were interviewed at landing sites, markets, ports and at their homes (see Figure1 for a map of the areas covered and Table 1 for respondent numbers). Traders in this study refer to trading actors such as brokers, barangay buyers or collectors, mainland buyers, retailers and wholesalers.

Not all nodes or node groups within the chains could be captured for various logistical reasons. In the Philippines, downstream markets spread throughout Panay Island and the greater Visayan region and exporting or processing companies were difficult to capture. Sites included eight Barangays: Lo-ong, Polopina, Tambaliza, Bagongon, Botlog, Malangabang, Taloto-an, Macatunao. Concepcion Port, Estancia Port and Poblacion, Agnaga, Lemery, Sara, Aglusong, Ajuy, Bacjawan Sur, Banate and San Dionisio.

Table 1: Respondent information for fieldwork campaign 2015

Country/Site	Respondent Type	Gender	Total n sampled
<b>Philippines: Concepcion</b>	Fishers	Female	20
	Fishers	Male	240
	Traders	Female	21
	Traders	Male	15
Total n Concepcion			296

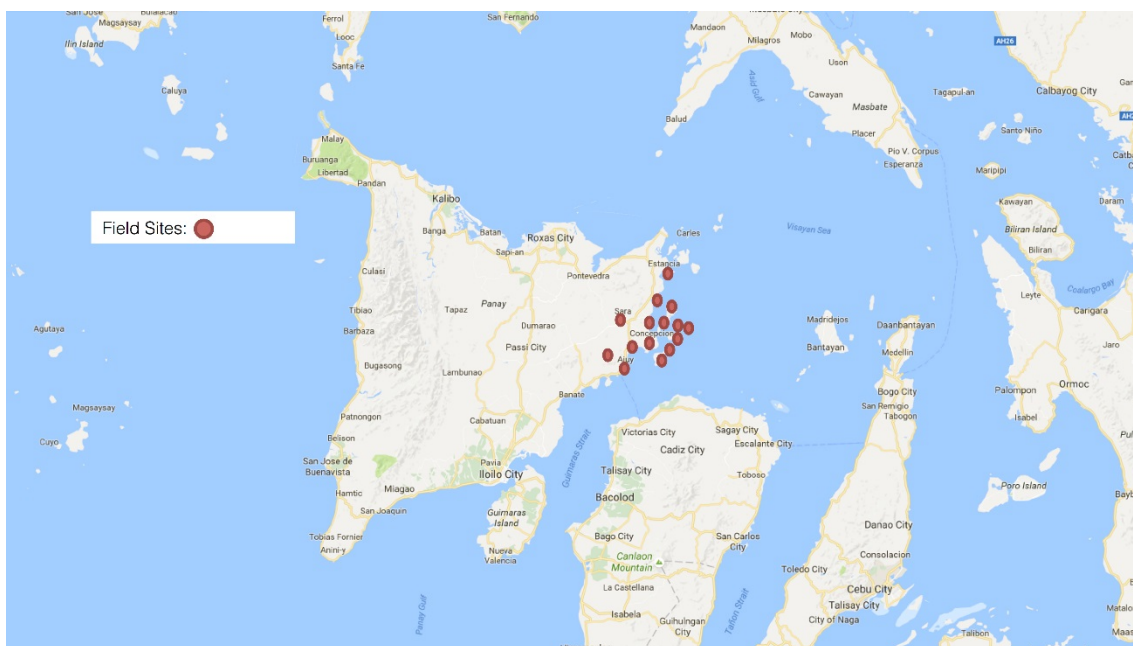


Figure 1: Map of the area studied with field sites marked in red.

## 2.2 Market Structure

All survey data was entered into Microsoft Excel and subsequently imported into Microsoft Access for easier handling, storage, and querying. Actors were characterized into different types (from hereon referred to as nodes) based on a range of factors. The research followed Bolwig et al (2010) and used 'nodes' to denote a point in the VC where a product is exchanged or goes through a major transformation or processing. For fishers, gear types, vessel-use, vessel sizes, propulsion, species groups, secondary vessel use, gender and location type were combined to identify fishing styles or segments. In the Concepcion, trader types were quite apparent and respondents were able to explain node types to the interviewers, i.e. brokers (take commission on sales prices), buyers (based at home and can often dry), wholesalers, dryers (often women and mainly in the barangays), and retailers (have stalls in markets). Figure 2 graphically illustrates the value chain nodes (the actor-groups and their processes or functions they carry out) sampled by this study.

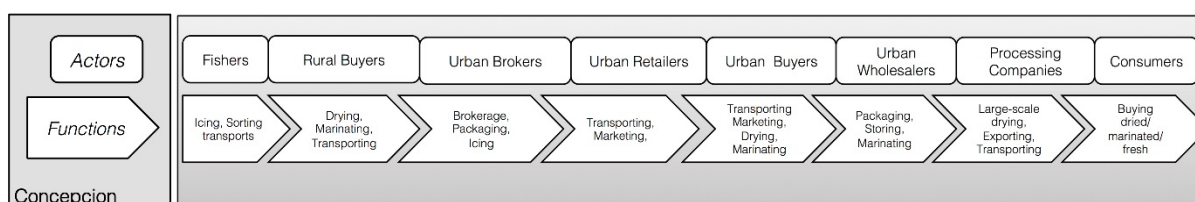


Figure 2: The nodes of the value chain studied in Concepcion (as defined by the project and respondents themselves)

## 2.3 Analysis of income and relative inequality

Income analysis was conducted in two parts. First, trader and fisher net incomes were calculated using running costs (R), average kilograms landed or traded per day (Q), crew or partner numbers (P) and average sales and/or buying prices per day per kilo (Sp-Sales, Pp-Purchases). Quantities and prices were averaged according to biannual seasons in each location based on either trade or monsoon winds. All income data was converted to International US Dollars from Philippines Peso

using the appropriate purchasing power parity PPP conversion factors (C) (Factfish 2016). PPP refers to the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as U.S. dollar would buy in the United States (Factfish 2016). This conversion thus allows us to compare income data from the Philippines with other countries. Fisher Net Income (If) in International US Dollars per person per day was then calculated as:

$$I_f = [(S_p / C * Q) / P] - R$$

Trader net income (It) calculations additionally included purchases prices (Pp):

$$I_t = \{[(S_p - P_p) / C * Q] / P\} - R$$

The resulting income data was then examined through scatter- and boxplots and all outliers individually checked using original questionnaire manuscripts to ensure their validity. Responses that were identified as incorrect or highly implausible were not used. Data normality was analyzed in R (Ripley 2001) with Shapiro Wilks tests, histograms and Q-Q plots prior further statistical analysis. Then tests for statistically significant dependencies were done between income and the variables gender and location type. For the latter, rural was defined as villages and landing sites relatively far away from central ports or markets, or offshore; and urban was defined as the central market and port environments of the region under investigation. This was done with a non-parametric Mann-Whitney-Wilcoxon-test.

Degree of income inequality was examined within and between nodes of the value chain using Lorenz curves (graphic measure) and the corresponding Gini coefficients (Gastwirth 1972, Kakwani 1977) to assess economic benefit distributions or flows within the different fisheries. Lorenz curves were made in Microsoft Excel by graphing the cumulative percentage of income (Y axis) against the cumulative percentage of people within the sample (X axis). The resulting curve was compared to the line of perfect equality, which represents 100% income equality.

To understand what factors may be driving the patterns of inequality observed the differences in income between actors based on gender, and primary market channel targeted (broker-, consumer-based) were then examined. Gender was included because of the documented gender division within seafood. Furthermore, the VC mapping revealed that actor types could clearly be differentiated according to primarily urban or rural operations. This variable was therefore included in the quantitative analysis to examine if location matters in explaining within and between group income inequalities.

## 2.4 Market Conduct & Assistance

Both fishers' and traders' predetermined sales deals (an agreement, contract or exchange, formal or informal between two or more actors which is potentially favorable to one or more of the parties) were examined to understand market conduct, e.g. the 'suki' system, where fishers market to one particular trading actor in return for favors i.e. loans, fuel. Fishers ultimately become 'tied' to these trading actors, unless they repay favors. The suki system is a form of the well-described patron-client relationship existing in many SSF in the Philippines (Pomeroy 1992, Pomeroy & Trinidad 1995, Carnaje 2007, Ferolin & Dunaway 2013). To capture additional benefit flows (beyond economic benefits of market participation) in the fisheries system assistance between and among actor types (nodes) was tracked. This assistance included both material (i.e. fishing gear, vessels, money, fish, food) and/or services (processing help, transport help, assistance at sea, vessel aid etc.).

### 3. Results

#### 3.1 Value Chain Structure

Who is benefiting from involvement in the fisheries? To answer this question we first mapped existing market structures. Figures 3 and 4 show that quite a diversity of actor types are involved in the trade of mixed reef (coral reef associated smaller bodied species e.g. Opusan, Lagaw), small pelagic (e.g. Bulaw, Tabagak) and squid around Concepcion, Iloilo. Here the value chain incorporates brokers (those who facilitate buying and selling by taking a percentage of the selling price), large-scale wholesalers, dryers, buyers (buying and selling, no commission taken, based in their homes), large retailers or supermarkets (at the provincial level), processing companies and additionally exporters (typically more squid and small pelagic species than mixed reef species moving to large-scale export from the province) (Figure 3).

A large proportion of the initial sales are channeled through a small number of brokers (ca 10-15) in the central fish port in Concepcion; 50% of interview fishers' sales and 50% of the interviewed island buyers' sales. Connections to the global seafood market are seen via export to China, Taiwan and Japan.

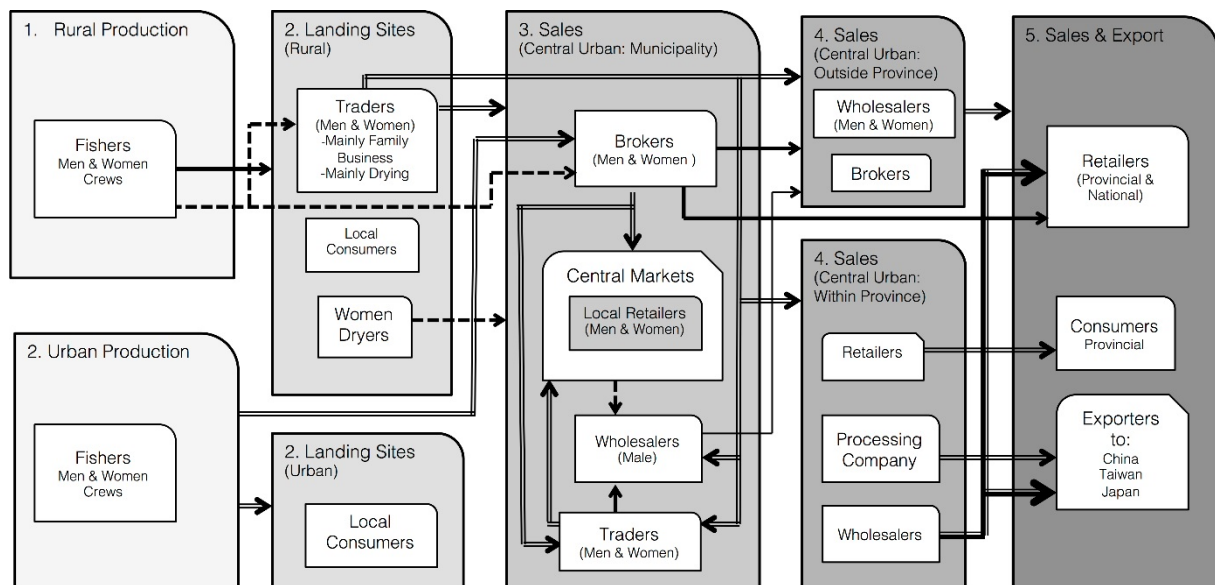


Figure 3: Value chain map of the fishery products studied. Arrows represent the movement of products from landing up to sales and export according to the frequency responses of the interviews. The different patterns of the arrows are just for differentiation purposes. (Outside province: Roxas city, Manapla, Bacolod, Cadiz, Manila, Gensan, Davao. Inside province: Barotac Nuevo/Viejo, Banate, Ajuy, Sara)



**(a) Concepcion**

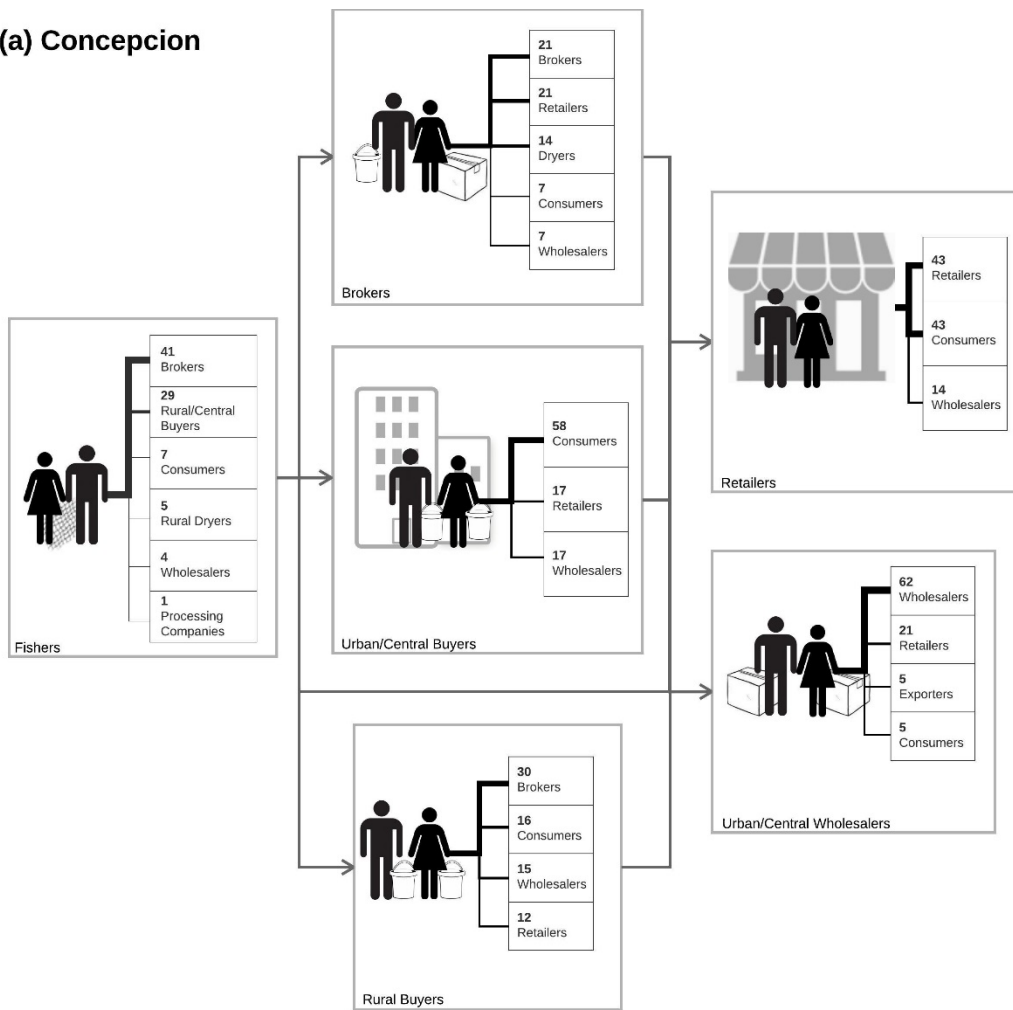


Figure 4: The Market structures for Concepcion. Each box represents the nodes in the study systems and then within the boxes in the tables, the various nodes to where they sell. The different sized lines in the diagram represent qualitatively the commonality of these sales to each node mentioned by respondents, seen in the small tables within the boxes. Numerical values stand for the % response frequency. Not all nodes included in the smaller tables were interviewed, only those nodes or node groups represented by the larger boxes and illustrations.

While gender is often an important factor structuring the participation of women in various economic activities in fisheries across the world, in Concepcion gender does not appear to matter for value chain participation. From Figure 3 and 4, it is apparent that men and women participate in the same nodes. Fishing usually takes place in wife-husband, or family crews on the vessels. During trading, women and men in Concepcion work in the same nodes, either together as husband-wife partnership or alongside one another, selling and buying largely through the same channels. There are no import channels identified in Concepcion for the mixed reef, small pelagic and squid chains as products tend to move out of Concepcion.

### 3.2 Barriers to entry

When asked what is needed to participate in the fisheries value chain, 100% of the male fishers claim that they require some type of social capital i.e. knowledge or apprenticeship experiences. Very few male fishers needed physical assets such as gear, equipment or a vessel (See figure 5 below) to enter the fishery. Instead they needed knowledge of gear deployment, swimming, vessel operation and/or an apprenticeship with their family rather than equipment to start fishing. Female fishers in the Philippines reported the same requirements as males to become fishers, namely apprenticeship experiences and knowledge. This highlights the initial field observations where in the Philippines fishing appears as a very family related experience or even institution, where children start fishing very young (3-4 years old) on the vessels with both their parents. Most rural fishing households process the fish caught, before selling it to the traders.

Trading actors reported needing mainly financial capital to entering the business.

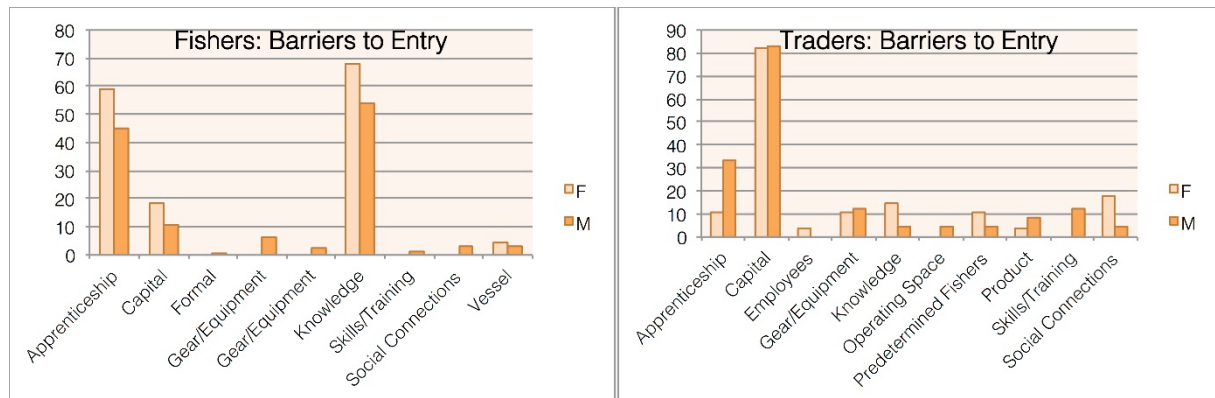


Figure 5: Categories for barriers to entry into the value chains in Concepcion according to respondents interview answers. Traders here include brokers, buyers, retailers, wholesalers. F represents the female actors in lighter orange and M the male in the darker shade.

### 3.3 Benefit distribution and inequality

#### 3.3.1 Net income distribution and inequality across gender

Examination of income inequality among actors showed a high Gini coefficient for Concepcion (0.673) indicating that at the level of the entire fisheries, 67% of the population hold only 18% of the wealth (net income) and 90% of the population hold only 40% (see Figure 6 below). A Gini coefficient value greater than 0.35 is generally interpreted as indicating inequitable distribution of incomes where wealth is concentrated among a few individuals (Alfoabi 2007, Dilon and Hardaker 1993).

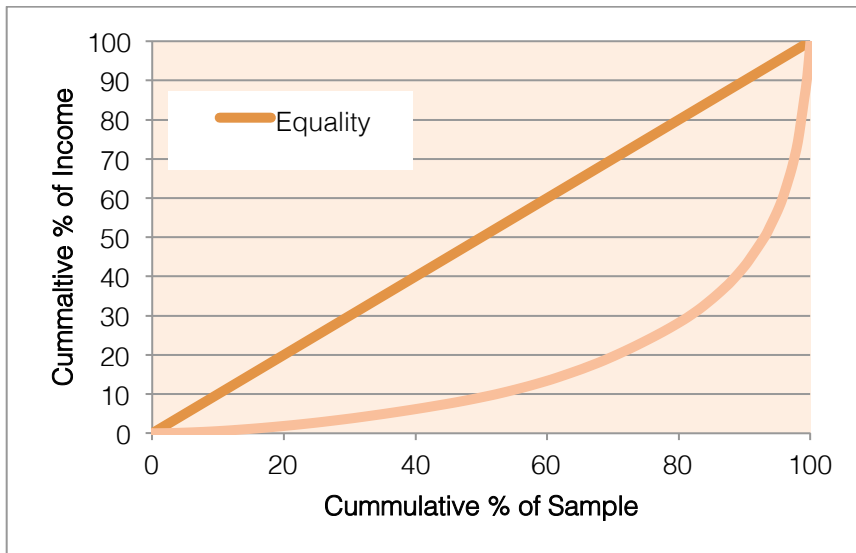


Figure 6: Lorenz curve with Gini coefficient inserted for all actors interviewed in the field campaign 2015. The dark orange straight line represents the line of perfect equality where all actors share the wealth equally. The further the curve is from this line the more unequal a system is.

When broken down into trader and fisher groups the Gini coefficient was still high and very similar amongst fishers and trading actors (Figure 7). The driving force behind the high inequality of the overall aggregate fishery in the Concepcion sites was primarily the large difference in income between fishers and traders. Fishers on average earn significantly less per day than trading actors however with a skewed distribution and various outliers (Figure 8).

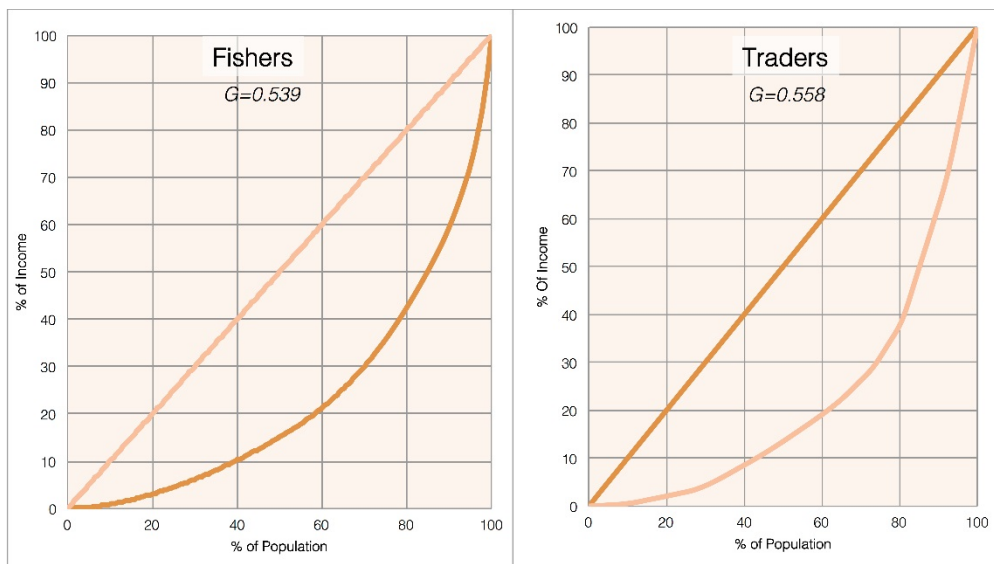


Figure 7: The Lorenz curves and Gini coefficients for the fishers (left) and the various types of trading actors (right) within the sample from 2015.

Although in Concepcion women appear to be able to take part in all of the value chain nodes, their average net income is nonetheless significantly lower than that of their male counterparts for fishers (Figure 8).

Fishers with above average incomes appear to be those with larger mechanized vessels using Bobo and Palubog. Fishers targeting all three types of fisheries examined (i.e mixed reef species, small pelagics and squid), also have above average earnings.

There was no significant differences between genders at the trading level and as with fishers, traders dealing with all three types of fisheries have above average incomes.

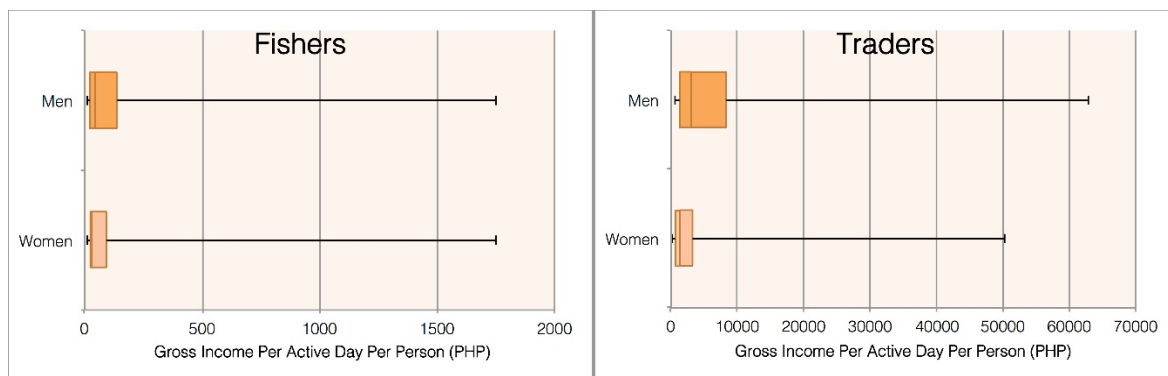


Figure 8: Box and whisker plots for gross income in Philippines pesos for fishers and trading actors interviewed differentiated by gender; a large variation exists within both groups.

### 3.4. Factors mediating benefit flows and distribution

#### 3.4.1 Predetermined Deals

As patron-client type relationships tend to be frequently observed in SSF examining the nature of these predetermined deals, and their prevalence, is important for understanding how, if at all, they affect the benefits that actors capture as a result of their market place participation. Regardless of the degree of formalization surrounding such trade-actor relations, they have the potential to both affect net income, as well as be a source of additional benefits (as elaborated below). This section first outlines the nature of the relations and then assesses their prevalence.

The large majority (see figure 9) of Concepcion fishers reported selling their catch through predetermined deals. The majority of these predetermined sales deals were with the brokers in Concepcion (48% of fishing respondents) and barangay buyers or collectors (36%).

When fisher participants were asked about the flexibility of these deals, and if they could terminate them or not, Concepcion fishers felt they could not, mainly as a result of the loans they have with the trading agent (referring to all the different trader types here) in question (34.6% of those who felt they could not stop). Additionally, almost 20% of these fishers agreed that a “sense or debt of gratitude” towards the trading agent meant they could not stop, i.e., the fisher ‘owes’ them because they provided them with help. Remaining responses brought up factors such as distance (i.e. the physical closeness of the available trader, particularly relevant for fishers based on the offshore islands), “suki support” (the financial and material support fishers can receive from a linked or predetermined trader), or the fact the trading actor was their relative.

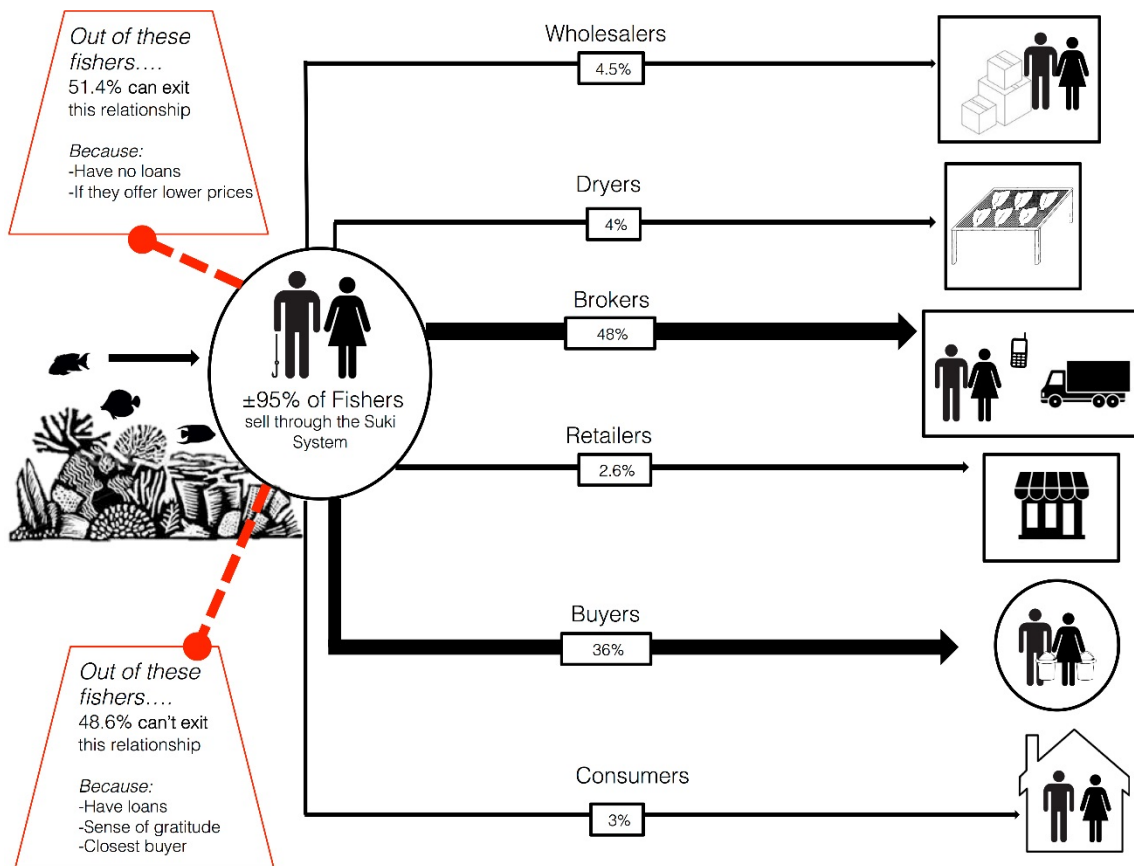


Figure 9: Percentage of deals between fishers and different trading actors. The red boxes exhibit the reasons behind having to stay within the suki system or not. Black arrowed lines qualitatively represent the most frequent types of deals.

Examining downstream actors (i.e. various types of fish traders), trading agents marketed almost exclusively through suki deals in Concepcion, largely to brokers and buyers further along the supply chain, rather than to consumers in the locality (see Figure 10). Female trading agents in Concepcion are equally a part of these sales agreements (100% of men and 93% of women).

When asked about the ability to terminate predetermine sales arrangements, trading agents in Concepcion responded that they lacked other 'outlets' to sell their fish to or that they already had a base of regular customers. The frequency of feeling stuck in deals was very similar amongst trading and fishing respondents in Concepcion (only a 1.4% difference).

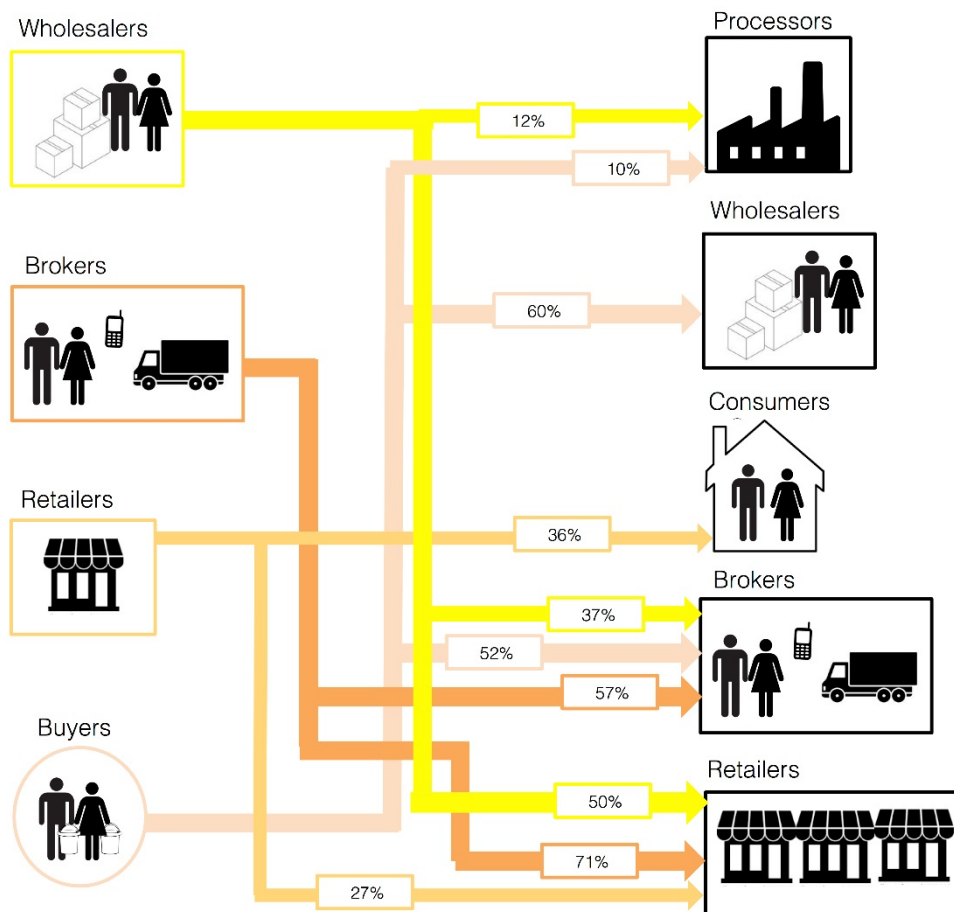


Figure 10: The suki sales between trading actors interviewed and the downstream nodes in the value chain according to frequencies in interview responses.

### 3.4.2 Beyond sales: benefit flows through assistance

Assistance in this study entails the frequent exchange of material or service provision between actors in different value chain nodes. It is used to identifying the informal, non-economic benefit exchanges that take place within the fish market system. These types of exchanges provide benefits to market place actors, above and beyond the net income derived from the trade.

As evident in Table 2 below respondents in Concepcion typically engage in these informal assistance exchanges with their sukis and support is rather one sided .i.e., traders frequently provide support (as defined here) but do not receive it back. However fishers did see the consistent delivery of their catch as support. Interview respondents stated that they only provide or receive help to or from fishers or traders within the market (i.e. no auxiliary actors were identified), with the help largely flowing from the traders to the fishers.

Here exchanges are based more around finance and all respondents are obliged to payback through their sales or via cash repayments or both (100%). Around 40 percent (41.4%) of traders who provide fishers with frequent support require delivery of their catch directly as a means of payback.

Within-node assistance is quite frequently cited in Concepcion, fishers predominately help each other, but rather than money this help is provided by securing vessels on the shore at low tide, getting tows at sea, borrowing gears, and providing bait. Fishers also state that they must repay this

assistance by offering it themselves to their colleagues. Trading respondents frequently provide each other with financial assistance.

Compared to other, similar SSF Concepcion exhibits a rather limited web of support, both in terms of actors involved and reciprocity, with a more financial focus, hierarchical or dependent on VC position.

Table 2: The different types of assistance frequently shared between market actors in the Concepcion fisheries. Rural represents the Island barangays and urban the Banwa/mainland. The frequency that actors interviewed both receive and provide help into the informal support network. The help is described in detail in the orange box under the table.

Assistance between Market Actors in Concepcion		
<i>Actor Type</i>	<i>% Receiving</i>	<i>% Providing</i>
Rural Fishers (F & M)	75.5 (n=200)	5.5 (n=200)
Urban Fishers (F & M)	51 (n=51)	3.92 (n=51)
Rural Traders (F & M)	25 (n=20)	100 (n=21)
Urban Traders (F & M)	0 (n=17)	50 (n=17)
<i>Help Type Description</i>	<i>Payback</i>	
<u>From Traders to Fishers:</u> Cash loans for fuel, for buying gear and for general use, Credit at Trader's store (i.e. pay later for products), 'suki support' (providing loans, vessels, gear, advanced payments, family support etc.) and food.	Deducted from sales, cash when possible after sales, delivery their catch to the trader.	
<u>From Fishers to Traders:</u> Cash loan (one respondent), fish for home (one respondent) and helping secure trader's vessel on shore at low tide.	Trader helps in return, traders provide loans.	

#### 4. Discussion & Reflections

Summarizing the findings, the Concepcion small-scale fishery and market place is highly contractualized. Fishers and traders are predominately tied to each other via these predetermine deals, and products are directed towards wholesale and retail. In addition, there is a high concentration of buyers within the market. Economic exchanges revolve primarily around provision of financial capital, although social standing and obligations play a strong role in determining market structures. Below we discuss what these general features of means for the participation of various actors in the seafood trade and how these observed structures affect benefit flows and distribution.

##### 4.1 Seafood market structure, participation, and benefit flows

In terms of structure, female actors in Concepcion occupy the same types of nodes as men within the observed value chain. While fishing and fish trading as occupations are generally dominated by men in the Philippines, it is not uncommon to see women in joining their husbands on fishing expeditions, hauling nets, lines and installing/maintaining gear (Siason 2000, Suntornratana 2003). Women will also often handle their husbands' catch through small-scale marketing, in addition to processing and

retailing it. These types of responsibilities are reflected by the positioning of women in the value chain in Concepcion (Figure 3).

However, while access to, and participation in, the fisheries value chain of Concepcion by women is high, female fishers are reporting lower earnings than the male fishers, and female traders similarly report lower earnings than male counterparts (Figure 8). When the data is further unpacked, a likely reason is the fact that women fishers are using smaller vessels and more typically handline type gears- resulting in lower quantities.

While noteworthy, it is important to recognize that accurate records of costs and prices are usually not maintained in SSF due to limited regulations requiring such information (Brewer 2011). It is also possible that incomes are exaggerated due to overestimation of landings. This phenomena can be seen across a number of SSF case studies where interview estimates of landings can be double or triple that of the observed catches, linked to actors' difficulties in estimated and cultures that might encourage the over-estimation of catch (Lunn & Dearden 2006, O'Donnell et al. 2012). As such, strong conclusions regarding the differentiation in net income across gender in Concepcion may not be advisable until confirmed by other studies and methods of data collection.

#### 4.2 Informal Institutional Arrangements and Benefit Flows

Predetermined sale deals are widespread within Concepcion where the vast majority of sales take place through pre-arranged deals as oppose to spot-transactions. These type of deals (vertical contractualization) are commonplace in SSF worldwide, often referred to as patron-client relationships (Johnson 2010, Ferrol-Schulte et al. 2014, Nurdin & Grydehøj 2014). In the Philippines, this form of contract is referred to as the *suki* system and is common within various commercial contexts, not only fishing, as a market-exchange partnership (Dolan 1991). Filipinos will regularly buy from specific sellers who in return will offer good quality produce and reduced prices (ibid). This relationship can involve social and family ties between the *suki* and client thus running deeper than simply an economic arrangement (Pomeroy 1990, 1992).

While a significant amount is known about the nature of these relations this study attempted to ask how the presence (or not) of such predetermined sales arrangements affects benefit distribution. However, in Concepcion too few of the respondents reported not engaging in such predetermined deals (<10 in the entire study) to be able to test this relationship.





Picture 1: Interviewing Brokers in Estancia who are in suki arrangements with fishers from Concepcion Island Barangays

A key finding of this study is that the relationships between fishers and buyers or brokers are far more deeply rooted than purely economic transactions and credit provisions. Isolating such arrangements is not realistic and examining fisher-trader relations only through a patron-client lens means this more nuanced information is omitted.

A common argument encountered in the SSF literature, and even by progressive sustainability focused movements such as Fair Trade (Bailey et al 2016), is that traders are largely responsible for poverty, strife and poor performance of capital-based fisheries development and/or institutional services like cooperatives. However, such conclusions may signal researchers' and managers' limited ability to understand the complexity of the traders' role and relationships in small-scale fisheries and market systems.

As data from this study shows, actors selling through the suki system are able to access a wide range of loans and credit, tightly linked to the sales process, with a rather complete reckoning of counter obligations. Some argue that this clear repayment aspect of the loans makes the *suki* system observed in Concepcion potentially quite stable, as it reduces the risk of conflict (and subsequent break-down of relationships) due to lack of benefit compensation, and therefore could be more predictable and beneficial for involved actors in the long term (Thomas and Worrall 2000).

Feelings of social obligations mixed with economic imperatives appear to underlie sales deals, as data presented here show. Within these interlinked systems of personal transactions the possible discovery of dishonesty, unwillingness or avoidance by an agent in one transaction is potentially very costly for him or her in terms of the spillover effects threatening other transactions and the general loss of goodwill within these relatively smaller rural villages or towns (Platteau & Abraham 1987). This highlights the important realization that while the somewhat inflexible structures created by these arrangements can serve to lock market actors into debt and unsustainable fishing behavior, they cannot be assumed to always be exploitative. Traders may stand to lose as much (in terms of trust and credibility, and effect of this on their access to fish), as the fishers in some cases.

Our preliminary analysis suggests that the support network, and the assistance mechanism it provides, is deeply intertwined with formal economic transactions and reinforced through repeated individual transactions over time. It adds more evidence to the growing body of work that shows the complex web of social and economic relations in which SSF market actors are embedded. Aspects of

these reciprocal arrangements may be important as social insurance mechanisms for individuals. But while informal loans may be more favorable (i.e., interest and collateral free) than other options (if at all available), there is a hidden cost in the form of lower prices received (see also Pomeroy 1990).

The degree to which systematically lower incomes among fishers lead to increased resource extraction remains unanswered, but pertinent questions are:

*If the lower economic sales-benefits are balanced in the long term by the other benefit types that fishers or traders may receive from their contractual relationship?*

*If brokers or middlemen are to be replaced by formal unions or financing organizations can these bodies provide the flexible and reactive support that fishers need?*

*And if they are not, what does this mean for the long-term social and ecological trajectory of these small-scale fisheries systems?*

Any attempt to dismantle parts of fisher-trader relationships in an effort to weaken their exploitative aspects and improve fishers' livelihoods should therefore take account of the wider social and economic functions that these relationships play, and analyze existing and new proposed alternatives with an eye to how this will affect the long-term flexibility, adaptability and ultimately ecological impacts of small-scale fisheries actors.

#### 4.3 Income disparity & distribution

Remarkably few studies exist, in which to situate our findings on income inequality and distributional characteristics within SSF in the Visayan Sea. One Kenyan example (Wamukota et al. 2014) witnessed a relatively high Gini in the Kenyan octopus fishery and attributed this to the small number of agents controlling the procurement and marketing of octopus on behalf of local processing plants, whom often provide fishers with gear and employment directly on their behalf. The slightly higher inequality observed at the aggregate level in Concepcion is probably due to a large proportion of sales moving through a small number of established brokers (in fish ports) and buyers (in island barangays), who employ the suki system to engage fishers (a relationship-type frequently less pervasive in East African cases), thus impacting income equality through prices and indebtedness (Pomeroy & Trinidad 1995, Carnaje 2007, Ferolin & Dunaway 2013).

Therefore, although the Concepcion value chain structure appears to support more equal gender participation, aggregate income disparity within the fisheries is higher than that observed in a parallel study of a highly unequal trading system (in terms of gender participation) in Zanzibar. A high degree of market concentration (i.e. potentially oligopolistic market conditions) and strong vertical contractualization likely generates the large differences in income distributions in Concepcion where fishers earn significantly less than traders. This current market concentration in Concepcion is not unique within the Philippines, and has been previously seen in Manilla and Leyte (Torres et al. 1987, Pomeroy 1990). Furthermore, the fact that fishers report significantly lower incomes than the traders reiterates the general findings in SSF case studies over the past decade (Bjørndal et al. 2015).

### Other data collected by STEP (Seafood Trade, Ecosystems and People)

The study reported on here is part of a larger project aiming to uncover the role of seafood markets and market actors, like traders, in mediating interactions between the social and ecological components in local Small-Scale Fisheries systems.

Additional data also collected by the project includes:

<ul style="list-style-type: none"><li>* Actor ambitions to change value chain positions or activities</li><li>* Investment costs</li><li>* Running Costs</li><li>* Material Style of Life</li><li>* Landings</li><li>* Details on gears and vessels (sizes, uses, ownership)</li></ul>	<ul style="list-style-type: none"><li>* Quantities sold or consumed Fishing Effort information</li><li>* Processing Activities</li><li>* Pricing</li><li>* Sales paths</li><li>* Decisions around purchases, sales and prices</li><li>* Household income sources</li></ul>
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Picture 2: Community Dialogues September 2017 based on the results of this report. Bagongon Community Hall.

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The contents of this document are the sole responsibility of the authors and can under no circumstances be regarded as reflecting the position of any of the funders or the University of Stockholm, Philippines Visayas or Connecticut.

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