

Seaweed, Power, and Markets:  
A Political Ecology of the Caluya Islands, Philippines

*by*  
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A handwritten signature in black ink, appearing to read "Philip Kelly". The signature is written in a cursive, flowing style with a prominent loop at the end.

# **Seaweed, Power, and Markets: A Political Ecology of the Caluya Islands, Philippines**

## **Abstract**

The integration of remote places around the world into common markets and the expansion of market based economies is one of the most transformative processes of the global capitalist age. While South East Asia, and the Philippines in particular, have long been part of international trade and related processes of agrarian transition the degree and speed of integration of remote areas directly into commodity flows and globalised markets is a newer phenomenon.

Rural areas in the Philippines are being integrated into market relations through diverse and varied processes such as the capitalization of agriculture, land titling and privatization, and the commodification of nature and lifestyles. The site of this study, the Caluya Islands, Philippines, offers a glimpse into the contingency and complexities of market integration experiences for socio-ecosystems. The aim of this study is to interrogate the differing processes and outcomes of two forms of market integration vying for the same space in the Caluya Islands: seaweed cultivation for export and international tourist development.

Political ecology frames the analysis of market integration in Caluya and help me interrogate the importance of material nature, the centrality of power, and the interplay between local and extra-local forces. Unlike, experiences with cash crops elsewhere, seaweed cultivation has been overwhelmingly beneficial in Caluya. I argue this is due to a particular ‘constellation’ of factors: the material characteristics both of seaweed and the space of Caluya; local social structures; and extra-local factors. This configuration has resulted in a sustainable, hybrid economy. In contrast, imminent tourism development pushes market relations into the centre of life here, potentially undermining stable socionatural structures and disrupting the constellation of conditions that keep this system viable. By exploring the contrasts between the two, my research contends that certain conditions and configurations can be identified that link market integration to positive benefits, rather than to marginalization and environmental degradation.

## **Foreword**

The undertaking of this research and MRP work has contributed to fulfilling the learning objectives set out in my MES plan of study. Specifically, it allows me to gain empirical research experience, obtain my Graduate Diploma in Asian Studies, and create an original piece of scholarship that is based of thinking, learning and acting environmentally

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## Table of Contents

<i>Section</i>	<i>Title</i>	<i>Page</i>
Section 1	Introduction	1
Section 2	Theoretical Framework: Political Ecology	6
Section 3	Development, Aquaculture and Seaweed in the Philippines	12
Section 4	Research Context: Caluya Islands, Philippines	23
Section 5	Seaweed Cultivation in the Caluya Islands	29
Section 6	Global Cash Crop Meets Local Socionatures	48
Section 7	Tourism Comes to Caluya	60
Section 8	Conclusions	70
	Works Cited	73

## 1. Introduction

*Mr R: Of course, [tourism] can only help us in the start.*

*Mrs A: Tambalang[seaweed] never stops from helping.*

*Mr R: That is what I said...that if we don't have rice but we have tambalang we can dry it, sell it and use the money to buy rice... If I think of it, I do not agree; [tourism] is bad.*

*Mrs A: What if they just pay us [for our seaweed area] now then no more, then what?*

*Mr R: We earn a living here.*

*Mrs M: ...You can't complain anymore. They[the developers] said in the meeting that if you have a problem you have to complain there and no more murmurs about it after, because there is a meeting already...*

*Mrs E:... Like, those who have a degree can work, then I said, "how about us that don't have a degree?" "How can we work?"*

*Mrs O: Just sit down and watch.*

*Mrs E: They answered that we can do massage...I said that I don't want to do that.*

*Mrs M: ...People will just follow it.*

*Mrs O: ...They just follow it...*

*June 20, 2007. Conversation  
with seaweed planters on Sibolo Island, Caluya*

The integration of remote places around the world into common markets and the expansion of market based economies is one of the most transformative processes of the global capitalist age. While South East Asia, and the Philippines in particular, have long been part of international trade and related processes of agrarian transition (Kelly 2000; Reid 1993), the degree and speed of integration of remote areas directly into commodity flows and globalised markets is a newer phenomenon.

Rural areas in the Philippines are being integrated into market relations through diverse and varied processes such as the capitalization of agriculture, land titling and privatization, and the commodification of nature and lifestyles. The site of this study, the Caluya Islands, Philippines, offers a glimpse into the contingent and complex nature of market integration experiences for socio-ecosystems. While local developments are increasingly linked in this way to global forces, they are not solely determined by them. Rather, unexpected outcomes often arise as local contexts articulate and assimilate extra-local processes. Because of this, global generalizations and totalizing discourses that either accept market integration as intrinsically beneficial or reject it as completely negative fail to seize the opportunity to fully interrogate and try to understand the relational processes at work. I argue that is more helpful to look at *how* and *why* specific socionatural relations are changed and produced through processes of market integration so that we may understand which conditions are more likely to lead to marginalization and when conditions may have more sustainable and just outcomes. The aim of this study is to interrogate the differing processes and outcomes of two forms of market integration

ving for the same space in the Caluya Islands: aquaculture cash cropping and international tourist development.

Export-oriented aquaculture is rapidly spreading, especially in South East Asia, and is being increasingly framed in rural development terms. Aquaculture, as Barton and Staniford (1998) argue, can no longer be overlooked as a transformative force in rural change. This is certainly true in the Philippines, and the Caluya Islands are now a major producer of *Eucheuma* seaweed for carrageenan production and export. As fisheries, and concurrently, coastal livelihoods are threatened and declining, aquaculture will continue to expand as countries simultaneously try to tap into foreign markets and address food security. Ecosocial problems with many sectors of this phenomenon have been widely documented (e.g. Bryceson 2002; Escobar 2006; Rivera et al. 2002; Santos et al. 2003), but rapid expansion continues and academic research can help clarify the myriad socionatural changes that result. In South East Asia, shrimp farming has been the focus of the majority of critical research on aquaculture. Comparatively little research has focused on plant aquaculture, though it is the second largest global aquaculture product by volume (FAO 2006). My research seeks to address this dearth in the scholarship, by focusing on seaweed, the Philippine's largest, yet most invisible export aquaculture crop with approximately 150 000 families involved in the sector (Ferrer 2006). My study of this crop in Caluya asks if seaweed farming here has successfully alleviated rural poverty as the government and industry suggest that it does. Further, does it go beyond providing for basic necessities and also lead to empowerment and reshaping of rural inequities?

While seaweed cultivation is clearly a cash crop and shares characteristics of capitalist market relations, my research reveals that it does not fit with other documented cases in which export crops led to marginalization for small communities. In contrast, the expansion of this export crop in Caluya has led to the maintenance and rejuvenation of rural livelihoods and reduced the precarious nature of life there. The analysis of my empirical research seeks to explain why. How are seaweed as a crop and the local context intertwining to create a situation of relative stability?

Research also revealed that while seaweed cultivation has proven overwhelmingly beneficial for the Caluya Islands, the socioenvironment there is still vulnerable to ecosystem changes and shifts in political economic dynamics. Recent land purchases and development in Caluya, led by the Philippines largest land developer, seeks to displace seaweed cultivation in favour of tourism development. This threatens to reverse the positive outcomes achieved there of market integration through seaweed cultivation. The top down process and details of the tourist development proposal reveal a much different form of market integration than seen with seaweed cultivation. As such, the tourist development offers a counterfoil to help us understand how and why seaweed cultivation, even as it integrates Caluya further into global market relations, has created positive opportunities rather than dissolving and rupturing beneficial socionatural structures.

The following research questions animate my analysis of market integration in the Caluya Islands and try to interrogate the importance of material nature, the centrality of power and the interplay between local and extra-local forces.

1. How are non-human actors and spaces mutually constituting relational changes of market integration? How does nature both enable and constrain capitalization of the space and production relations?
2. How are the rules and conditions of production set in political struggles and reshaping rural power inequities? Who has the power to control and construct spaces and how is the space negotiated by different actors?
3. How is market integration occurring? Is it bringing more or less regulation, outside control of resources, vulnerability, ecosystem degradation, and social rupture?

In order to begin to understand the multiple processes, actors and relations at work, a holistic, interdisciplinary method is needed. The case of Caluya demonstrates the useful subtleties and complexities of political ecology as such an approach. In my study, political ecology helps to link detailed and local immersion learning with analysis of multiscale processes keeping both power and materiality as central focuses. To this end, ethnographic methods offer rich and varied research data that can help pry open the multifaceted networks of explanation, breakdown stereotypical or totalizing discourses, and offer a deeper understanding.

### 1.1 Methodology

This study focuses on Caluya Municipality, a small group of islands in Antique Province, Philippines. I stayed on four of the islands: Sibato, Sibolo, Panagatan, and Caluya Islands where I conducted ethnographic field work between May and September of 2007. Before leaving Canada, I made contact with Dr. Rodelio Subade at the University of the Philippines in the Visayas (UPV) located in Antique's adjacent province, Iloilo. Dr. Subade generously provided me with working space at UPV and through a chain of contacts I identified Caluya as a seaweed cultivating area that had thus far not received much attention even though it produces much of the seaweed for the Western Visayas region, itself in the top five leading production areas in the Philippines.

I was initially introduced into the community by an independent municipal council member and was subsequently warmly hosted by four families, one on each island, for the duration of my stay. I conducted semi-structured interviews with 37 seaweed planters ranging from 1.5 hours to multiple visits with some planters and families. All of these were conducted in the language most comfortable for the respondent in with the help of my research assistants. All were recorded, aside from six where notes were taken instead. Semi-structured interviews with six local seaweed intermediaries and buyers were also done. On Sibolo Island where the tourist development is most imminent, two focus groups were led by myself and my research assistant; one group of 6 women and one group of 6 men. I also interviewed 2 municipal agriculture officers and spoke to other members of the municipal zoning office and the Mayor. I made an effort to capture a range of opinions and experiences about seaweed cultivation and tourist development by trying to interview people and families from different backgrounds, social status, gender, income levels. Respondents were contacted through a snowball method and sought out as different themes developed.

Interviews with representatives of the tourist development company and their local project manager were also conducted and I traveled to Cebu for a week to interview managers at 3 seaweed/carrageenan processing companies and to tour the facilities.

Invaluable as well were my everyday observations, casual conversations, participation in community events, and working with people on their seaweed and land crops. Information was also gleaned from municipal data, interactive mapping, government reports and websites, newspapers and unpublished research at UPV.

This type of ethnographic research presents its own challenges. Negotiating my positionality as foreign, white, woman from academia was one. The islands are difficult to travel to and receive very few visitors from outside the region, much less the Philippines. A handful of foreigners stop on one of island beaches every year on a day trip from other tourist resorts, but most people's experience with researchers or Canadians is minimal to none. Assumptions about my status (especially in relation to my male research assistant), my income level, and my goals were continual points of discussion. This was exacerbated by the language barrier, which aside from a handful of people made direct conversation and explanation impossible. My choice of research assistants also made things interesting. My first research assistant was also from outside of the community and this was beneficial in some ways as we were not as attached to a particular set of family connections, but also made it difficult to delve into sensitive topics. My second research assistant was from the community and was, therefore, already positioned in a certain way within local power structures and conflicts, but due to various factors he was also able to bridge a number of status levels and familial connections. His help was invaluable in eliciting conversation about sensitive issues, figuring out complex family links and learning some of the local dialect. Conflictual and, at times, violent local politics, distrust between people and groups and social hierarchies all present challenges to understanding people's responses and actions. As well, I feel that it is important to keep in mind that variations in individual motivations, decisions, and practices makes generalization difficult, though somewhat necessary for analysis and data presentation. Nonetheless, the heterogeneous nature of communities and families should not be forgotten.

## 1.2 Organization of MRP

The bulk of this paper contextualizes and describes in detail Caluya's experience with seaweed cultivation as a form of market integration. Concluding discussions describe and analyse the emergence of tourist development as a competing form of market integration here. I then use this comparison to draw connections between this specific case study and broader lessons that may be taken away from it about rural change and integration into global markets.

Section 2 sets out the main body of academic literature and theory I have drawn on to shape the focus of my analysis: political ecology. Section 3 contextualizes seaweed cultivation in Caluya within the scope of Philippines development policy especially in respect to rural poverty and aquaculture. This chapter includes an overview of the seaweed/carrageenan industry historically and in the Philippines. Section 4 describes Caluya's local context. My empirical research about seaweed cultivation in Caluya is covered in section 5. Section 6 moves on to discuss how seaweed is a unique cash crop



and why the social structure of Caluya has been able to assimilate it positively. There, I also discuss the vulnerabilities of the sector here that have opened seaweed cultivation to competition from tourism development. Section 7 contextualizes and describes the tourism development plan comparing its market processes with that of seaweed cultivation. In conclusion, section 8 returns to further discussion of what can be drawn from the islands experiences with market integration and agrarian change.

## 2. Theoretical Framework: Political Ecology

Understanding how Caluya's socionature relations have been affected by processes of integration into global, regional, and national markets for seaweed/carrageenan and tourism requires looking at complex range of processes involving farmers, traders, seaweed, global capital, processors and the marine ecosystem, among others. Rather than the neo-classical economic viewpoint that sees globalization of markets as timeless and spaceless (Castree 1997), an analytical approach is called for that "will allow us to appreciate more fully the importance of diversity, agency, and local context, while incorporating the significance of broader structural forces" (Grossman 1998, p18); an approach that also allows us to take seriously the productive forces of the non-human in shaping Caluya's transition. It is to political ecology that I have turned for inspiration.

Integration into capitalist markets is often portrayed as either apolitical and inherently beneficial for the poor by its supporters or, conversely, as necessarily harmful and marginalizing by its detractors. Political ecology can help to reveal more complex and contingent experiences than are portrayed by such "theory-driven polemic[s] that forces us into 'taking sides' on an issue that is more than two dimensional" (Barrett 2001, p31). Through this framework, attention can be brought to the specific networks formed and reformed between human and non-human actors, spaces and places by various processes. As Goodman (2001) argues, "this attention to how 'socionatures' are constructed broadens critical engagement with capitalist political economy, and our understanding of the heterogeneous associations which thrive under this ordering of the socioecological" (p195). Two such 'heterogeneous associations' are at work in Caluya and are examples of globalised capitals' reach into previously peripheral spaces. Before turning to the specific strands of political ecology that have helped frame my analysis, I begin below with a brief overview of the literature.

Political ecology is a wide ranging field with multiple strands of inquiry and indeed, has been criticized for its apparent lack of coherence (Vayda & Walters 1999). I cannot assume to provide an overview of the entire field here, but I will draw on those authors who insist that political ecology is still "useful and lively" (Page 2003, p357) to trace the evolution of the field as well as some of the core concerns that underlie today's political ecology and inform my methodology.

The roots of political ecology have been reviewed by a number of authors that I refer to here (Goldman 2000; Grossman 1998; Page 2003; Paulson 2005; Robbins 2004; Walker 2005; Zimmerer 2003). Though work, such as Thompson (1975) is often claimed by political ecology, the first use of the term is traced back to Wolf (1972) and it is generally seen to have emerged from the 1970s work of cultural ecology (Grossman 1998; Robbins 2004). Cultural ecology looks at the way humans adapt to environmental change and focuses on the close study of people's beliefs and behaviours to analyse human-environment relations (Grossman 1998; Walker 2005). Emerging from this type of localized study, early political ecologists strove to link the human-environment relations at the local level to broader forces of political economy. Most still point to Blaikie and Brookfield's *Land Degradation and Society* (1987) as offering the first widely used definition of the field: "The phrase 'political ecology' combines concerns of

ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself" (p17). This attempt to insert the political into studies of the environment does not just look at the formal political sphere, but also how power is exerted through a range of spheres including control of land, labour, ideas, resources, rules or conditions of production (Page 2003; Robbins 2004).

Work that grew out of this definition specifically strove to critique apolitical ecology and Malthusian views of environmental degradation. These critiques continue to be common and important themes in political ecology (Robbins 2004). The research is explicit in its insistence that socionatural changes are political processes. Proximate causes cited as reasons behind environmental degradations, such as poverty and population are not the ultimate causes but are a manifestation of broader political and economic forces and conflicts (Bryant 1997; Gezon 2005). Especially in the analysis of environmental problems many, though not all, political ecology studies are committed to an account that link such issues to the logic of economic development under the rubric of a globalised capitalist system (Bryant 1997; Walker 2005). This emphasis on the global political economy is still strong today, more recently focusing on the privatization and commodification of nature, a crucial accumulation strategy. Often portrayed apolitically as a poverty alleviation method, political ecologists have problematized this representation, questioning how power operates through the process and what inequalities are created by such privatization (Mansfield 2007). At the centre of my own study are questions about who benefits from enclosure attempts and how privatization is pursued through political struggle.

The structural focus of the 1980s though influential still was critiqued in the 1990s as too deterministic (Goldman & Schurman 2000; Robbins 2004; Walker 2005). There was a call for more attention to the everyday politics of human-environment change and a return to localized, grounded studies that drew inspiration from peasant studies, itself a transdisciplinary field made up of rural sociologists, anthropologists, agriculture economists, geographers and political scientists (Robbins 2004). Throughout the 1990s the emphasis on localized study continued, as it does today, reflecting another common theme running through political ecology research: that macro-level analysis is insufficient to understand the heterogeneous formulations and responses to socionature changes. It is the exploration of complex, interconnected and dialectic factors that contextualize socionatural changes in a "processual web" which gives political ecology work such rich and varied content (Gardner 2005, p91).

Reemphasis on the local, though, also ran the risk of 'romanticizing the peasant' and beginning in the 1990s, a healthy corrective dose of influences from varying fields helped shape the political ecology of today (Goldman & Schurman 2000; Grossman 1998; Page 2003; Robbins 2004; Walker 2005). Gender studies emphasized that gender relations are fundamental to understanding resource use, access, power differentials and environmental meanings. Social groups are by no means homogenous and intragroup conflict and variations in perceptions and beliefs create specific patterns of inequality and individual creativity that must be recognized (Goldman & Schurman 2000; Grossman 1998). The discursive construction of environmental meaning and their constitutive forces also gained prominence at this time, asking how specific ideas about society and nature constrain or enable what is seen to be true and possible (Robbins 2004). Peluso's

(1992) study of struggles over the Indonesian forests is a key text in this area. As well, eco-Marxism, science studies, social movement studies and post-colonial theory all have strong influences on political ecology today.

Of the core themes in the political ecology field today, three have shaped my research analysis and I will focus on these below: the “lively materiality of nature” (Goodman 2001), the relationship between local and extra-local forces, and the centrality of power.

## 2.1 Materiality

While the role of the environment has always been central in political ecology, some have argued that the field has strayed too far from its ecological roots and is now primarily a study of the politics of the environment without enough engagement with biophysical ecology (Vayda & Walters 1999; Zimmerer & Bassett 2003). The environment, they argue, is more than a “malleable entity molded by human activity; rather, it has significance” (Grossman, quoted in Robbins 2004, p140). The human influences on the environment are important to consider, but there also needs to be recognition of the biophysical variables themselves and how they, in turn, shape socionature relations. In fact, there has been a turn recently to retheorize how ‘matter matters’ more generally in the critical social sciences and this is reflected also in political ecology (Bakker & Bridge 2006; Castree 1995; Walker 2005). Engaging with materiality is, I feel, critical in understanding how capital is producing nature in its desired image in Caluya, and conversely, how nature is shaping the opportunities for and outcomes of market integration there. As Grossman (1998) argues, materiality is particularly important for studies about agrarian change.

The “environmental rootedness” of agriculture, he contends, has significance for understanding agency in farming, the ability of the state or industry to control labour, patterns of resource use and inequality. Goodman (2001) asserts that, agro-food studies must begin to wrestle with “the liveliness of nature, its relational properties...in the eco-social co-productions of agro-food networks” (p183). In essence, what is the difference that materiality, both biotic (human and non-human) and abiotic, makes? “Not just in its generalized form but as a highly variegated and complex set of entities and processes” (Sneddon 2007, p168). While I cannot do justice here to the current theoretical debates around materiality, a few key points are elaborated below. These are most relevant in political ecology’s effort to “articulate the natural as constitutive of the social, and vice versa, [and unpack] these relations for a better understanding of the political, ecological, and cultural” (Goldman & Schurman 2000, p568).

At the heart of the socionature debate are efforts to challenge the modern ontology that creates a dualistic separation of society and nature. Nature is portrayed as external and ‘revealed’ through science as being ‘useful’ to humans (Bakker & Bridge 2006; Goodman 1999). As Castree laments, there has been such concern with theorizing how capitalism transforms nature and produces environments, that the importance of the bio-physical world has been overlooked as a force that shapes outcomes (Castree 1995). Recent work in agriculture and agro-biotechnologies have argued that natures cannot be fully molded, or ‘produced’ by capital (Boyd et al. 2001; Goodman & Schurman 2001; Bakker & Bridge 2006). Natures can be constrictive of such efforts by being

‘uncooperative’ (Bakker & Bridge 2006) or sources of surprise, dependency or opportunity (Boyd et al. 2001). “In short, we can, indeed must, recognize the fact that capitalism produces nature, but we must simultaneously recognize the materiality – and consequentiality – of the particular natures capitalism produces” (Castree 1995, p21). In these debates there is a fear expressed of returning to dualistic relationships or a form of environmental determinism. The fact that nature never speaks for itself but is produced or “cerned” (Castree 1995, p36) leaves many confounded by how to account for the socio-economic production/construction of nature, “while simultaneously acknowledging the productive capacities of the non-human world” (Bakker & Bridge 2006, p11).

Bakker and Bridge (2006) argue for analysis that recognizes agency as decentralized away from being solely human in networks and seeks to “understand the processes through which socionatural networks are generated and maintained” (p19). Such a version of political ecology is one that makes an effort to undermine the social-nature dichotomy by focusing on the mutually constitutive relations that include both biophysical materiality and cultural representations of ‘nature’ (Page 2003, p360). This type of political ecology must take ecology, the interrelations between biotic and abiotic, seriously. My research on seaweed reveals that complexes made up of non-humans, such as fish, ocean substrate, weather, salinity, seaweed, are just as multifaceted as the concurrent social networks: the ‘natural’ is deeply embedded in the ‘social’ and vice versa. Interrogating the hyphen in socio-natural and its very real effects on actors on each side is the goal. It does not make sense, as Castree (1995) argues, to separate the two, thus, I choose to use the terms socionature, biophysical, biotic, or abiotic as consistently as possible in my work. Unfortunately, one of the main challenges to this new political ecology is the lack of vocabulary available to fully overcome the externalized nature-society dichotomy.

## 2.2 Power

Despite the difficulties and inevitable shortcomings in my efforts, it is important to tackle materiality because it influences how socionature relations proceed and many livelihoods and non-human survival relies on how these play out. As well, Sneddon (2007) argues that understanding the specific biophysical relationships that are transformed, sustained, or disrupted during accumulation is necessary to understand the conflict that so often follow environmental change (p186). Recognizing the inevitability of the construction of nature does not also imply “an *acceptance* of the inevitability of *specific* construction - of nature, of body, of self” (Bakker & Bridge 2006, emphasis in original, p19) nor does it suggest that all socionature constructions are inevitable, desirable or just (Robbins 2004). A research agenda that addresses the difference that material differences make helps to refute dominant claims about nature and society. For example, political ecology work on food security and draught have shown that scarcity or supply is seldom the root of the problem, rather there is an intersection of multiple socionatural factors such as weather patterns, political decisions, demand, scientific knowledge, economic restructuring of supply, etc (Bakker & Bridge 2006). Indeed, struggles in Caluya are not merely due to finite space, but are about who has the power to control the space available and decide its use value. Understanding power is a central focus of political ecology. Socionatural changes have uneven consequences for different

actors. For example, while resource use may be ecological degrading and socially devastating for some, it may mean profitability for others (Ferguson 2005). The actions of some carry more weight than others and socionature systems are built upon a series of highly unequal power relations. It is an acknowledgment of the material embeddedness of social action. “In other words”, argues Bakker & Bridge (2006), “this work tries to do for the biophysical world what Polanyi did for the social: that is, to show how conventional, contemporary understandings (eg, of processes such as globalization) rely on the abstraction – or disembedding – of concepts like ‘the economic’ from socionature” (p18).

### 2.3 Interscalar Processes

This is closely related to the insistence in political ecology work of focusing on the micro-level. The turn to the material also recognizes ‘place’ as material and the differences in places encountered through grounded research disrupt hegemonic notions of a flattened capitalist world. The specificities of place are “creative forces” that shape the relations between, for example, seaweed production and food production or processing and transportation. Global, or extra-local flows, are embedded within localized biophysical, political, historical processes that are a dimension of the co-relations between places and scales (Gezon & Paulson 2005). The local is not seen as acted upon or as a passive recipient of global markets. Rather, without overexaggerating the relative power of actors, there is a recognition that localized actors engage in ways that have extra-local effects. Studies such as Li’s (2002; see also Finnis 2006; Grossman 1998) of cocoa farming show that decisions to enter markets cannot always be understood as outside pressure from landowners, traders, corporations, but can be the initiative of enterprising individuals and families.

While diverse, political ecology suggests that specific networks of socionatural relations are by no means unique. Certain relational processes and inequities are repeated in different places. It is by clarifying how these relations are produced, maintained, and changed that claims about the particular may generate broader understandings. In particular, about conditions that are most likely to produce marginalization and degradation of socio-ecosystems and, conversely, those that produce sustainable market integration (Hart 2006; Robbins 2004). While social scientists are often wary of prescriptive efforts, and for good reasons, Robbins (2004) argues that it is through attention to relational linkages that such claims may be made valid (p142). Indeed, the past tendency by some social science fields to insist on waiting until socio-ecological consequences are already evident, limits research to an analysis of impacts (Ferguson 2005) and negates their role in struggles for justice and equity; awareness of the “deep and complex” dynamics of unequal power and its affects “informs the dual commitment of political ecology to both understanding and action” (Gezon & Paulson 2005, p11).

The range of political ecology work cited throughout this paper have helped to direct my focus and offered a vocabulary to understand how Caluya’s political economic systems are embedded in ecological systems. The two systems are necessary and complementary components of my analysis. To separate the two would result in overlooking critical configurations that shape and condition outcomes of Caluya’s engagement with two very different market processes. This work has also offered tools to

set the processes in Caluya within broader networks of policies and markets that have power to shift socionatures in the locale. It reminds me that power is not just located in the formal political sphere, but flows unevenly between actors as they compete over resource control and is reflected on the ecology.

The broader context that Caluya's market integration is set in emerges in the next section of the paper.

### 3. Development, Aquaculture and Seaweed in the Philippines

The Philippines is regarded as one of the poorer nations in South East Asia, well behind Malaysia and Thailand in income per capita, and with larger income inequality than Indonesia (Irz et al. 2006). In terms of absolute poverty statistics, the National Statistics Office estimates that 37% of the population lives under the national poverty line. In 2006, a family of five in the Philippines needed a monthly income of 6,274 PhP to meet their basic needs. This figure has risen 23% in the last three years alone ([www.nscb.gov.ph](http://www.nscb.gov.ph)). This sharp rise in income level needed can be traced to the rampant inflation of consumer prices in recent years, especially on basic commodities such as rice, corn, sugar, cooking oil and meat (NEDA 2004), that has accompanied the sharp devaluation of the peso. At the same time, household incomes have steadily declined in real terms since 1995 (Macabuac 2005). From the Marcos era on, the Philippines development strategies have accumulated massive debt that now stands at US \$96 billion, claiming 5 pesos for every 10 pesos of income for debt repayment (Macabuac 2005). Unemployment is high, having tripled between 2002-2004, now comprising 10 million workers who are un- or underemployed (Macabuac 2005).

According to the National Statistics Coordination Board (NSCB), rural areas are disproportionately poor and the situation for coastal dwellers has been exacerbated by the degradation of marine resources ([www.nscb.gov.ph](http://www.nscb.gov.ph)). Fish catch by small-scale, municipal fishers has declined since the 1970s as coral reefs and seagrass beds have sustained heavy damage from industrial and tourist developments, mining, deforestation, aquaculture and illegal fishing (Rivera et al. 2002; Primavera 2006; La Vina 2001). While it was once easy for municipal fishers to net an average of 10kg of fish daily, they are now only coming home with 2kg a day (Escobar 2006; Rivera et al. 2002). 85% of municipal waters are considered overfished and more the 400 kms of the country's coastal areas are now heavily eroded, silted and sedimented (La Vina 2001). This decline in available marine resources as well as income and employment in the fisheries, is especially devastating for the Philippines where 55% of the population lives in coastal areas and at least 3 million people are employed (formally or informally) in the fishing and aquaculture sectors (Rivera et al. 2002).

In order to tackle the apparently persistent poverty of rural peoples and especially coastal populations, the Philippines government has been promoting the development and expansion of high-value, export-oriented aquaculture. This strategy is part of a broader national economic agenda that adheres to a neo-liberal framework, described by Kelly, as "faithful debt-servicing, reduced expenditure, deregulation and export-oriented development" (2000, 39). Kelly (2000) succinctly traces the shifting nature of this relationship from the pre-colonial period, through Hispanic colonialism (1521-1896), the American colonial period (1898-1946) and into the post-independence Philippines. He argues that the historical context of the Philippines is reflected in its contemporary, globally-focused economic policies. He does not, however, present a case of a country being shaped by external forces, but rather a picture of ongoing 'hybridization' of outside influences encountering a culturally complex society. The historical legacy left today, among other things, includes an economy geared towards export and an entrenched elite oligarchy now legitimized by democratic processes, but still benefiting disproportionately from land holdings and neo-liberal economic strategies (Kelly 2000). Philippines



economic policies are also encouraged by international financial institutions. In 1994, the World Bank praised the Philippines economy for being one of the “most deregulated” economies in Asia set to be economically recovered by 2000 (Macabuac 2005). As the previously cited statistics seem to demonstrate though, the fiscal measures imposed by international institutions and embraced by national elites, have not yet stemmed absolute and relative poverty in rural areas. Nonetheless, policies continue to stick closely to the same logic. Pursuit of increased tourist dollars and seaweed cultivation as a cash crop are only two current reflections of the Philippines’ effort to tap into global markets.

### 3.1 Export-oriented aquaculture as development

In the coastal Philippines, global market integration through export aquaculture is increasingly evident as more communities become involved. Aquaculture has been touted as “The Blue Revolution”- a source of critically needed food security and a way to halt the drastic decline of worldwide marine stocks. In 2006, aquaculture accounted for 32 per cent of the global fishery supply and over 40 per cent of the world’s food fish supply compared to only 8% and 11%, respectively, in 1984 (Ahmed 2006; Barton & Stanifordt 1998). The global industry grew at a rate of 9 per cent a year between 1970-2002 with shrimp farming, in particular, seeing a huge boom in the mid-eighties (Ahmed 2006). Although people throughout Asia have been farming fish and crustaceans for centuries, such extensive forms of aquaculture which have contributed to local food supplies are quickly being supplanted by input intensive, high productivity forms of aquaculture that cater to international markets (Flaherty & Vandergeest 1999). Primevra (2006) has shown that this shift from small-scale, family-owned aquaculture to a predominately corporate controlled, food extractive industry happened within the space of a decade.

By 2002, 91% of the world’s farmed seafood was harvested in Asia and the vast majority of global seafood trade now consists of high value food fish flowing from the South to the North (Ahmed 2006; Primavera 2006). While poorer countries produce 85% of internationally traded fish products, industrial countries consume 40% of the world’s total fish supply (Macabuac 2005). The inequity of protein distribution mirrors global inequity with the richest fifth of the world now consuming nearly half of all meat and fish, leaving only 5% for the poorest fifth of the population (Macabuac 2005). Since the 1980s, international financial institutions using rhetoric of poverty alleviation have promoted this boom in production and the aquaculture industry, for its part, makes every effort to frame the debate in scientific terms and easily defined export and job figures. Much of the traded fish products from aquaculture, states the UN Food and Agriculture Organization (FAO), are produced almost entirely in rural areas and “developing” countries and, “thus trade presents an opportunity to help rural communities” (FAO 2006, p28). Moreover, “market failure is largely a consequence of poor governance, poverty, lack of resources and infrastructure” (FAO 2006, p29). There exists explicit assumptions that trade is always good and that the market is the solution to everything if allowed to work ‘properly.’ The EU, also promotes preferential trade policies for certain third world exporters of fish products to help “increase export earnings, promote industrialization, [and] accelerate economic growth” (Ahmed 2006).

There is now a sizeable scholarship devoted to analyzing and documenting the impacts of export aquaculture. Much of this work focuses on highly socially and ecologically destructive sectors such as shrimp and salmon farming. I will only briefly touch on these impacts here. In terms of promised food security, researchers have found that such aquaculture actually has a net deficit of protein (Lebel 2002; Stonich & Bailey 2000; EJP 2004; FAO 2006). High use of chemical inputs and antibiotics also characterizes intensive aquaculture as well as salinization of agricultural land and introduction of invasive species. Socionatural relations in intensive aquaculture areas can also be radically changed due to blocked access to coastal resources, the privatization and common lands and waterways, conversion of agricultural land, rural displacement and migration (Stonich & Bailey 2000; Primavera 2006). Human rights abuses, conflicts and violence have also been documented around high-value, export aquaculture operations (Stonich & Bailey 2000).

Evidence for the benefits of aquaculture is mixed at best and the debate continues to rage about the economic and social benefits of aquaculture. Despite negative experiences with shrimp farming, researchers maintain that there are some benefits accruing to rural populations from aquaculture. While, employment of locals is often limited to low-paying, unskilled jobs, the income generated may help alleviate poverty. Production links both upstream and downstream of aquaculture farms create further employment. Extensive forms of aquaculture, rather than intensive, and farms that focus on herbivorous species, mollusks, and seaweed are less capital and input intensive, lower impact and create fewer barriers to entry for the rural poor (Escobar 2006; Irz 2006). Thus far, there has been very little critical social science scholarship devoted to such aquaculture production. This is despite the fact that aquatic plants are the second largest global aquaculture product by volume (FAO 2006). Much of this volume is made up of edible seaweeds and represents a vast number of people involved and large areas of ocean devoted to it globally. The Philippines is one of the world's largest contributors to this volume and now, after the bust of shrimp aquaculture, the Philippines government, has started to look towards other export aquaculture such as seaweed cultivation to fulfill its goals. Cultivated for processing and export, seaweed in the Philippines is part of global agri-food markets and, given the impact it is having on rural areas, it is important to explore whether it, too, follows the same patterns described above in other export aquaculture sectors. The following section describes the current government policies in the Philippines that support the seaweed sector.

### 3.2 Current Aquaculture Policies

Although incentives continue to flow from the government to shrimp farms, there has been recognition of the environmental impacts of intensive aquaculture by the Philippine government. The last decade has seen policy shift, at least on paper, from a resource maximization focus towards marine conservation (for a history of Philippines fisheries policies see, Escobar 2006; Rivera et al. 2002). The two main policy tools governing the aquaculture sector are now the Agriculture and Fisheries Modernization Act (AFMA) of 1997 and the more recent Aquaculture for Rural Development (ARD) program.

Both acts are characterized by arguably contradictory policies promoting a 'modernized, globally competitive' aquaculture with principles of social equity, food security and resource conservation. The AFMA has focused on promoting public/partnerships to invest in technology and research necessary to increase productivity and trade of aquaculture in the face of declining capture fisheries (Escobar 2006). Such policies have had mixed results. In Aklan province, for example, the result has been a push to move small-fishers out of fishing as a way of life into pond workers or farmers (Rivera et al. 2002). As Rivera et al. argue (2002), the "government's 'safety net' programs may be able to address livelihood problems at a local level, but they sidestep the question of whether trade itself is contributing to the crisis of the fishers" (p13). Perhaps at cross-purposes, the AFMA also requires the formation of community based fisheries management groups in every coastal barangay to address equitable sharing of resources. To date, while there are many on paper, very few of these groups have actually convened in reality (Rivera et al. 2002) and there is no evidence of one in Caluya.

The government claims that the ARD is a departure from previous production-oriented and technology-based policies and it is supposed to promote aquaculture with the following features: community based, simple environment-friendly technologies, low capital investment, and market focused (Escobar 2006). Again, while this program looks good on paper, fisher groups, researchers and community organizations have criticized its implementation. They question the ARD's stated goal of converting "wastelands" (which include swamps, sand dunes, sunken or flooded land, lahar-covered areas) into fishponds; the various fiscal and non fiscal incentives that continue to be given to medium and large-scale operators of high-value products like shrimp; and the practice of ignoring environmental laws for expediency (Escobar 2006). The process also continues to be top down and, as in the past, municipal fishers and coastal communities were not involved in developing the program goals even though they are the ones to bear the socio-environmental cost. One of the largest undertakings from the program has been the establishment of mariculture parks, which are large areas of intensive fish cage operations. The goal has been to create employment and food fish, but because of the high capital investment needed most of the parks are owned by businesses while fisherfolk are instead employed as hired help. Of course, such employment boosts poverty statistics, but may not offer viable and stable livelihoods. As well, because of a lack of municipal resources to enforce good practice, unsustainable stocking and feeding practices may be repeated causing a repeat of past fish kills in the areas (Escobar 2006).

A clear problem that plagues Philippines fisheries and aquaculture management is fragmentation and contradiction. There are multiple agencies and government departments with overlapping responsibilities pursuing different policies in the same spaces. Even within laws there are contradictions, often a result of consensus with lobby groups. For example, in the Fisheries Code, waters from the shore to 15km are reserved for strictly municipal fishers and local users, but another section in the same document allows commercial fishers to start fishing 10km away from shore (Escobar 2006). With increasing competition for coastal spaces between industry, fishers and gleaners, tourism, etc such fragmentation only serves to exacerbate conflicts. This fractious policy atmosphere is having profound effects on local areas.

The government's own Medium Term Philippines Development Plan recognizes institutional weakness in "a) continuing over-centralization, b) fragmented and

overlapping functions and activities, c) an inflexible commodity-based organizational structure, and d) a highly politicized, unstable and underequipped national bureaucracy” (NEDA 2004). It is one of the factors behind the struggle for coastal spaces in Caluya where two government-promoted sectors, aquaculture and tourism, have come into conflict.

While many of the policies are still fashioned at the state level, they are to be implemented by local government units (LGUs) and this aspect of organization has proved to be especially problematic since the devolution of powers from the national government to the LGUs in 1991. LGUs now have considerable control over environmental protection and fisheries resources, but are underfunded and lacking in expertise that has long been concentrated with the central government (La Vina 2001). The oligarchic and elite control of local government also has a major impact on coastal management. For example, community based management programs opposing environmentally damaging proposals and trying to create sustainable aquaculture often face significant barriers from LGU elites (La Vina 2001). Election turn over in LGUs also causes such initiatives to lose momentum, making it nearly impossible to establish socially equitable allocation as the norm (Rivera et al. 2002).

The highly politicized situation at the local level in Caluya is certainly affecting livelihood choices and environmental changes there. Very few elites control the LGU and all environmental regulation and use policies are ultimately decided by them, therefore, local peoples’ affiliations and access to the powerful condition much in their lives.

Despite such policy and power issues, aquaculture production in the Philippines still shows enormous growth (Figure 1). In 2004, it had an output gain of 17.9% compared to gains of only 2.43% in municipal fisheries and 1.86% in commercial fisheries (BAS 2004). Consistent growth in the industry is attributed to the seaweed sector, which contributed 71% of all aquaculture output by volume in 2005 and continues to grow (BAS 2005) (see Figure 2). Interestingly, despite continued overall growth, the FAO laments the fact that the Philippines has not maintained its global position in aquaculture, falling from 4<sup>th</sup> largest producer in 1985 to 12<sup>th</sup> leading producer today. “In this age of international trade and competition”, it counsels, the Philippine aquaculture industry needs to plan and implement a development and management programme with a global perspective” if it is to continue to bring foreign exchange earnings, provide employment and food security (FAO 2002). The seaweed industry must deserve high praise then, for it has not only continued to grow, by an average of 7% per year between 1998 and 2002, but the Philippines remains globally competitive in this commodity, leading the world in carrageenan seaweed production (FAO 2002).

Figure 1. Reported aquaculture production by volume in the Philippines, source FAO (2002)

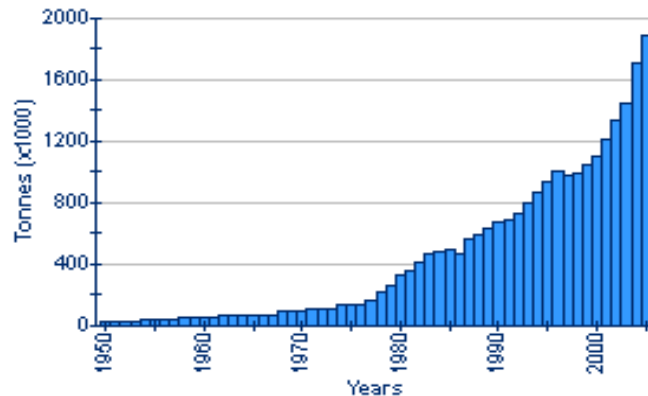
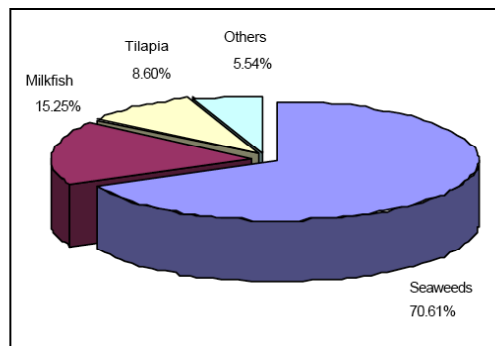


Figure 2. Per cent share of aquaculture volume by species 2005  
Source, Bureau of Agriculture Statistics



### 3.3 Export Seaweed Cultivation in the Philippines

In contrast to other forms of aquaculture, seaweed has been praised as clearly a pro-poor option for coastal populations. Seaweed farming is characterized as “one of the most productive and environment friendly forms of livelihood among the coastal population” of the Philippines (BAS 2005). It is labour intensive and requires low capital inputs and “family labour is gainfully employed” (Delmendo et al. 1992), thus making it an “appropriate livelihood for coastal fisherfolk” (Hurtado et al. 2001). “Infused with the proper modern technology”, argue some researchers, seaweed farming will help ease poverty in rural, coastal areas (Orogo 1994).

Even some of the most adamant critics of Philippines’ aquaculture see possibilities in its promotion. Primavera, a long time mangrove researcher and anti-shrimp farm campaigner, argues that mangroves and aquaculture are not necessarily incompatible (Primavera 2006). Seaweeds can be grown amongst mangroves and such small-scale aquaculture is well suited for family-based, community managed conservation projects (Primavera 2006). In other export aquaculture and land crops the high costs of fertilizer and seeds or fry is prohibitive for small holder producers. The price for fertilizers in the Philippines is nearly double that of the world price due to corporate concentration (NEDA 2004). Since seaweed farming does not need fertilizers

or other high priced inputs, not only has it gained an environmentally-friendly reputation, its low capital costs make it accessible to rural small holders and its high productivity allow for a doubling or tripling of one's initial investment in a matter of months (Blanchetti-Revelli 1995; Escobar 2006).

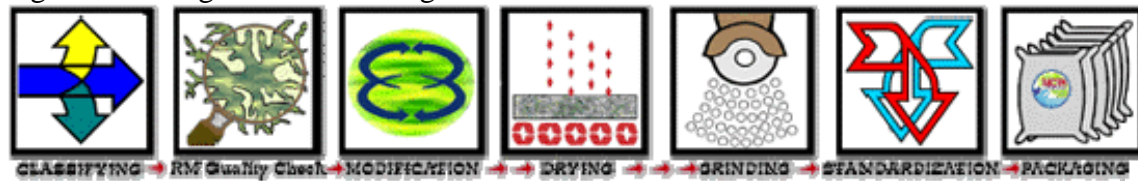
In particular, the seaweed cultivation in the Philippines focuses on *Eucheuma* seaweed. The Philippines is now the number one producer of *Eucheuma* seaweeds, generating 72% of the world's supply with approximately 58 000 hectares in cultivation (SIAP 2007). In 2005, the Philippines produced 1.3million MT of this type of seaweed (BAS 2005) and it is *Eucheuma* seaweeds that underpin the US \$10 billion global carrageenan industry (Bryceson 2002). Carrageenan, is an essential component of global agri-food networks tied especially to the rise of processed food products.

Carrageenan is a gelling agent that is used as an emulsifier, a binder, or for suspension and stabilization in a range of products. It is added to products either by itself or after being blended with other additives such as bean gums, sugars or calcium carbonate depending on what the product calls for. The list of products that carrageenan is used in is mind boggling. To name a few:

- processed meat products – chicken nuggets, glazed ham, hotdogs, fish burgers
- dairy – milk, ice cream, chocolate milk, canned coconut milk, mousse
- breads and pastas, cake glazes
- ketchup, dressings and other sauces
- fruit juices and concentrates
- dry and wet pet foods
- toothpaste and shampoos
- beer production
- sugar cane processing
- air freshener gel
- laboratory gels
- textile printing
- medical supplies
- pharmaceutical capsules, cough syrup

The actual processing of carrageenan from dried seaweed is basically a process of washing, grinding, heating, dissolving in a mild alkali solution (this step is to clarify the gel and can be skipped for less refined carrageenan), filtration, drying again and again grinding the dried seaweed down until the desired level of refined powder is reached See Figure 3). There is nothing added to the final product nor are there any chemicals used in the processing. There are two basic types of carrageenan: kappa carrageenan derived from *Eucheuma cottonii* and iota carrageenan from *Eucheuma spinosum*.

Figure 3. Carrageenan Processing



source: [www.mcpicarrageenan.com](http://www.mcpicarrageenan.com)

Carrageenan has been described as a ‘ghost’ commodity (Blanchetti-Revelli 1995). It is a commodity that is little known to the general public despite the fact that it is increasingly found in our food. People do not commonly know it is in their food and if it is noticed on the ingredient list, there is no indication that it is derived from seaweed. It is an ‘invisible’ yet essential component of the increasingly global agro-food industry. As processed foods and spatially distant food systems have become the norm for the world’s middle classes, the global hunt for the needed raw materials has led to increasingly remote areas. Although, it is in high demand with a current undersupply in the market, companies cannot raise the price in the same way as other ‘visible’ commodities. Colloids that have similar properties can be substituted for many processes, therefore companies must seek a delicate balance between technical properties and costs (Blanchetti-Revelli 1997). Unlike, other highly visible commodities like shrimp, consumer demand does not have a strong influence on the market prices or, for that matter, on the continuation of people’s livelihoods who grow seaweed. The next best colloid may come along tomorrow and be substituted for carrageenan with little awareness by the end consumer. Despite this, the market price has risen slowly over the years and global demand for carrageenan has been steadily rising at a rate of 5-7 per cent per year for the last 15 years and is projected to continue grow (Hurtado et al 2001; also, interviews with processing companies).

Since seaweed offers a niche in global competitiveness and is in demand, the Philippines government has decided to pursue an expansion of the seaweed industry. The *Seaweed Development Program* of the Bureau of Fisheries and Aquatic Resources (BFAR) was started in 1996 with three main focus areas: research and development, management, and institutional development (Ferrer 2006), though it was not until the last few years that the program started to make strides. A sub program has now been formed, the *National Integrated Seaweed and Seaweed Products Development and Promotion Program*, that is creating provincial and regional seaweed development councils with goals to increase the number of hectares farmed per year, and the creation of new processing plants and marketing opportunities (Ferrer 2006).

Many of the government intentions on paper, however, have been hindered by the afore mentioned issues of contradictory and fragmented government policies as well as inability or corruption at the local government level. In fact, throughout the industry’s history much of the expansion has been led by the private sector processing operations and university research projects. A fundamental turning point in the global colloid industry happened in the Philippines with the establishment of the seaweed cultivation. Previously the carrageenan industry depended on seaweed gathered from the wild leaving it more susceptible to inconsistent supply and fluctuating prices (Blanchetti-Revelli 1997). The first seaweed farm was established jointly in 1969 by US based Marine Colloids Inc.(MCI) and Professor Maxwell Doty, from the University of Hawaii. This

was in the southern Philippines province of Tawi-tawi (Ahmed 2006). Today MCPI (formerly a subsidiary of MCI, but now a wholly Filipino owned corporation) and SIAP, the Seaweed Industry Association of the Philippines, which represents many of the carrageenan Philippines processors have both been particularly active in starting demonstrations farms, finding new cultivation areas, and pushing for trade agreements at the international level.

It is important to remember that while seaweed cultivation differs in significant ways from other cash crops, it is still an export-oriented commodity and part of an international economic structure. The desire to capture foreign exchange earnings has been a motivating factor in the government support of this industry as in other extractive industries. As such, it is affected by currency fluctuations and disputes between international capital. Most recently the appreciation of the Philippine Peso (PhP) has had some exporters predicting huge decreases in profitability. Benson Dakay, president of Shemberg, the largest seaweed processor in the Philippines, and head of SIAP said his company could lose up to PhP 200 million in 2007 noting that the Philippines is now competing with cheaper raw material and labour in the Indonesian and Chinese industries (Cruz 2004). In a reflection on the lack of concrete actions, despite much paper success, Dakay has given up on asking for the government's help in supporting the sector and protecting small farmers. "I think the exporters are no longer important to the government, with the \$15 billion dollar remittances from the overseas Filipino workers. We (exporters) are now left on our own," Dakay argues. Instead, he said, the exporters would have to find ways to cut down production cost and increase efficiency to remain globally competitive. He also states that reducing farmgate prices might also be necessary (Cruz 2004). Like in other extractive industries, smallholders and local level socionatural relations are somewhat at the mercy of global financial vagaries and competition.

Lanfranco Blanchetti-Revelli's work on the seaweed industry has shown that while this is true, at the same time, international capital is not hegemonic (Blanchetti-Revelli 1997). Actors are constantly renegotiating their position in the system. The colloid industry is essentially an oligopsony at the global level, with only a handful of players. However, without denying the exploitative nature of the modern world economy, he argues that their dominance has been neither fixed nor absolute. Antagonism between dominant interests, in fact, created vacuums where subordinate players were able to take advantage of their context and emerge as independent players at higher levels (Blanchetti-Revelli 1997). This led to the emergence of domestic processing in the Philippines and is a key reason seaweed farmers in the Philippines enjoy a higher degree of market stability and demand than farmers elsewhere in the world who sell directly the transnationals.

### 3.4 Global Capital Conflict: From Canada to the Philippines

Brought to Canada by Irish settlers, the practice of 'mossing' (gathering wild Irish Moss seaweed) was once widespread in the Maritimes. When carrageenan rose to food processing fame during World War II, the mossing quickly became commercialized. Agar, also derived from a species of seaweed, was the popular colloid for food processing at the time, but Japan controlled nearly the whole supply (Blanchetti-Revelli 1995).



Research into carrageenan as a substitute for agar broke open the market and the demand for carrageenan has risen accordingly with the demand for processed foods.

Between 1948-1974 Canada was the world's largest supplier of carrageenan seaweed and 5 processors controlled the market, 2 in the US, 2 in Denmark and 1 in France (Blanchetti-Revelli 1995). The market was characterized by high and rising demand, tight corporate control of prices, and ever decreasing wild stocks. Over the years 'mossers' were forced to invest in ever more expensive technology to reach seaweed beds further and further afield, but the corporate prices were not increasing at the same rate. Corporations began to scout the world seas in order to diversify their seaweed sources. At the same time they invested in research on seaweed ecology (Blanchetti-Revelli 1995). The possibility of cultivation offered a solution to the instability of raw material supply and, finally, to the detriment of Canadian seaweed harvesters, the ideal place was found in the Southern Philippines. A native *Eucheuma* seaweed grew there which produced quality carrageenan and ecological conditions made cultivation possible. It was a web of economic, political and socio-natural factors that facilitated the shift from Canadian dominance in production to the Philippines becoming the world's supplier.

Canadian coasts are not suited to cultivation of seaweed. So while Canadian mossers were limited by supply and technology, the production process of seaweed cultivation favoured small holders and spread like wild fire when introduced in the Philippines (Blanchetti-Revelli 1995). The lower cost of labour in the Philippines relative to Canada also attracted the companies to shift their buying there. Although initially the same corporations that controlled the Canadian market, tried to control the production in the Philippines through plantation style seaweed farms, they could not compete with small, family run farms (Blanchetti-Revelli 1995). This is due to the flexibility of labour needed for seaweed farming and the difficulty of controlling the seedlings and technology. The labour for seaweed cultivation must be highly flexible to work on the cyclical time scales of tides and the moon, making it difficult to pay workers stable wages. It is assimilated easily into diverse and adaptable labour patterns of small holders. Since seaweed is grown from cuttings, it is almost impossible for agri-businesses to control the needed inputs in this way. This, combined with low capital and technology needs for entry, allowed seaweed cultivation to spread rapidly in the Philippines and control of production was seized from corporate interests. These important characteristics that make seaweed a unique cash crop will be further explored in the context of Caluya Island in Section 6 of this paper.

The shift from Canadian to Filipino production demonstrates the mutual constitution of local and extra local processes in global markets and reveals the interplay of multiple factors: world agro-food markets, biophysical properties of seaweed, livelihood strategies, international finance conflict and so on. The Philippines processing and export sector has continued to grow, now boasting close to 30 companies some of which are joint ventures while others are wholly Philippines owned.

As Kelly (1997) argues, global market integration is not new to the Philippines and has become a central tenet of its economic policy in the form of commodity exports, foreign investment, and the exportation of its own people as migrant labour. Indeed, in order to begin to understand seaweed farming not only nationally in the Philippines, but in the specific locale of the Caluya Islands the relationship between the local and extralocal scales and processes must be seen as interwoven and fluid. Decisions and

outcomes need to be, as Li argues in another context, “grasped historically as the product of transnational pressures, regional processes of class formation, and particular localized constellations of power” (2002, p417). Local realities of people engaged in growing export crops are not simple “epiphenomena of global processes (Blanchetti-Revelli 1997, p6). Nor are global realities a dominance that is unchallenged and fixed, devoid of the ‘messiness’ of ecosocial relations. Lagendijk (2004) makes a very clear argument that no economy can escape local reality because it is only through the local that economic relations are materialized. The next section turns now to the local context of my study: the Caluya Islands.

#### 4. Research Context: Caluya Islands

Caluya is an island municipality in the province of Antique (Map 1). It lies between the islands of Mindoro and Panay, about 4-5 hours by ferry from both of them.<sup>1</sup> “The furthest and last town of the province” (Municipal Development Plan), Caluya is not well known outside the area and often gets left out of statistics and maps of the province, despite having a sizable population of more than 20 000 (NSO 2000). The most likely reason people know of Caluya is because the island of Semirara is home to the largest coal mine in South East Asia.<sup>2</sup> Seaweed has not put it on the map, even though Caluya produces a sizeable amount of seaweed relative to its population. This is not surprising as most people, even in the Philippines, have little exposure to seaweed farming.

Aside from Semirara Island, whose economy revolves around the coal mine, livelihoods in Caluya include: subsistence farming and fishing; cash cropping of copra, nipa, some vegetables and seaweed; commercial fishing; wage labour for seaweed buyers, fishing boats, and construction; work at the municipal hall on Caluya Island; mat weaving; entrepreneurial businesses such as sari-sari shops, tricycle driving (only on Caluya Island); teaching at the high school, newly opened college or one of the elementary schools; and midwifery. Of course, this is not an exhaustive list and many people supplement their main income with trades such as carpentry, boat building, sewing, etc.

Most people who live in coastal barangays of the municipality are involved in the seaweed industry, either growing it full or part time, buying and trading it, or working as labourers. The provincial data show that about 38 per cent of the population are 14 and under. Therefore, the 2500 full time seaweed planters makeup about 27 per cent of the adult population outside Semirara.<sup>3</sup> Again, even this high percentage does not include the many families who farm part time or who otherwise gain income from the seaweed industry (boat transport, labour, collecting and drying seaweed that breaks free, buying and trading). It seems as though almost everyone you meet is somehow involved with seaweed and it clearly plays a central role in the islands’ economy and socionatural relations. Even children are involved with helping on their family’s seaweed plots and collecting their own bags of seaweed that has been washed up on shore and selling it for pesos.

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<sup>1</sup> Although the islands are often labeled on maps as Semirara Islands, I will be referring to the group as Caluya Islands as they are more commonly known to residents and in nearby municipalities.

<sup>2</sup> While most things about the company’s operation there are kept quiet with the help of armed guards and information blackouts, it has been in the news recently. Community opposition in Antique stopped a plan to fill old coal pits with garbage shipped from Manila.

<sup>3</sup> Not only is Caluya spatially remote, it seems to be ‘statistically’ marginalized. There are very few data sets available for the area. Data about local production, planters, etc throughout the paper is derived from my own detailed collection of numbers and harvesting detail from planters, local buyers, and the Cebu processors.

My own research concentrated on the main seaweed farming areas: Sibato Island and adjacent Imba barangay, Sibolo Island, and the Panagatan cays (see Map 1 for general seaweed areas). Since Sibato and Sibolo differ in important ways from Panagatan, I will treat them separately in my analysis and descriptions.

#### 4.1 Sibato and Sibolo Islands

Although separated by an hour and a half pump boat ride, Sibato and Sibolo share many similarities. Maps 2 and 3 show the land use and seaweed areas for each island. Both islands have an upland mixed agricultural area where families have plots of land. The islands also have rocky land in parts and cliffs that restrict suitable seaweed sites. Map 3 of Sibato also shows Imba barangay across the pass which shares kin relations. Seaweed areas stretch between the two islands. Well-kept houses line the few sand roads that skirt the shores of the island (Figures 4 and 5). The house construction materials vary with a handful fully concrete, most mixed concrete and wood/nipa, and many nipa/thatch houses; about half have aluminum roofs.



Fig. 4 A mixed material house on Sibolo Island.



Fig. 5 A nipa house on Sibato Island.

Houses generally have a small yard area surrounding the house or shared between groupings of houses where people do laundry, dry and tie seaweed, have flower gardens, have outdoor cooking and eating areas, and in a few cases have CRs (toilets are known as ‘comfort rooms’, these are concrete outhouses with squat toilets and water buckets). There is no electricity on the islands and no piped water. Sibato has a barangay generator that connects those houses close to it for 120 pesos per month. It runs on sporadic evenings from about 6pm to 9pm. On both islands, a couple of families also have their own generators, which they will run when they want to watch TV or charge cell phones. There are only two or three TVs on each island and when they are on, it is common to find many neighbours crowded around the set to watch as well. Sibolo also boasts a videoke set owned by the main seaweed buyer and is an attraction during the good seaweed season when people have more money.

Much time is spent, when not working, around the plazas where there is pickup basketball nightly from about 5 to 7 (Figure 6). Children congregate here to play after

school as well. Each island also has certain houses or beach huts where groups are often found chatting, taking care of young children and resting after working. Gatherings of the whole community or certain kin networks are frequent occurrences on the islands and usually include food sharing. Such events include the annual fiesta, other festival or saint days, birthday parties, wakes, weddings, and holidays.

Each island has an elementary school, grades one to six, split into three classes. The schools are in disrepair and the teachers have very few resources and very little funding, but there are increasing attendance rates since seaweed planting became the norm and families have money for high school and college. The school on Sibato, was build by the residents with donated labour and materials when it was apparent that the municipal government was not

going to provide one. For high school, children must board on Caluya or Semirara during the school week. There is no health clinic on either island and people rely on the clinic on Caluya Island, which is lacking essential equipment and medicine. The doctor actually lives on Mindoro and is very rarely in town and the two midwives who run the clinic have very little at their disposal. A common complaint voiced during interviews about the clinic was a lack of any medicines other than aspirin. Public health nurses do come to Sibolo to immunize children every few months, while Sibato residents are expected to go to Caluya, only a 15 minute pump boat ride away. For serious medical concerns residents must travel to Mindoro, a five hour, 400 peso boat ride away. Often it is too late before people decide the illness is serious enough to make the trip and such an unscheduled trip is expensive for residents. The cemeteries on the islands attest to the high childhood mortality rates documented in the Municipal Development Plan; most families have lost a child, mainly to preventable diseases.

Child mortality is also due to the lack of drinking water, especially on Sibolo. On Sibato there is a community deep well that is safe for adults to drink (babies and young children need to have the water boiled until they build up an immunity, bottled water is also sold in the sari sari stores). Again, this necessity was not provided by the government, but was dug by a family and paid for with their seaweed earnings. People walk up the hill, 10-15 minutes to fetch water daily and to wash in fresh water or they can have water delivered by water buffalo for 10 pesos per 30 gallon jug (Figure 7). There are a couple other wells on the island, but the water is salted and only used for laundry and washing. On Sibolo, there is no fresh water available. They have salted wells, which they use for cooking, laundry and washing, but their drinking water is collected rain water when they are lucky, or brought by boat from Caluya or Sibato for 25 pesos per 30 gallon jug. One of the sari sari



Fig. 6 Pick up basketball; youth first then the older men. Notice the seaweed drying in the foreground on the court.



Fig.7 Water delivery, Sibato Island

stores now sells bottled water as well. Garbage is usually burnt and propane stoves or wood is used for cooking.

The residents of these two islands all share the same kin relations. There are 10 original settler families (some older folks estimate that families came from Palawan and Panay in the mid 19<sup>th</sup> century) and a few other families who are considered the original inhabitants. 10 surnames account for almost all residents and they own almost all the land on the islands and have complex intermarriage webs of relations. Sibato has approximately 120 households and Sibolo has approximately 140 with populations of about 600 and 800 respectively.

Every household on the islands, with the exception of a couple of fishing families, plant seaweed as their main income often with 2 or 3 people in the household (for example both the husband and wife and older children) each planting their own area. Inland from the coastal strips of housing on both islands is the 'bukid', a large upland area consisting of forest, planted trees and crops, and coconut farms. Households have access to plots of land and maintain food crops for consumption or trading, such as corn, cassava, dry rice, melons, squash, cucumber, fruit trees. Many also fish and glean other marine resources for consumption and keep chickens, a pig, or a goat. Sari sari stores run by seaweed buyers also sell canned and dried food items and other sundry.

By all accounts, though still lacking in some basic necessities, the standard of living on the islands has risen dramatically since people here took up seaweed planting in the early 1990s.

#### 4.2 Panagatan Cays

The three small islands that make up Panagatan (Uno, Dos and Tres), unlike Sibato and Sibolo, have been settled only recently with the first families coming to plant seaweed in 1986 (Map 4). It is a coral atoll with islets that are rocky volcanic mounds, sandy in parts with a few remaining trees and some mangrove cover. The large shallow area between the islets has a coral and seagrass bottom and offers perfect conditions for seaweed planting. The entire population, of about 1500 people, has moved there to plant seaweed.

The original settlers actually used sledgehammers to break down the sharp rock and level areas for housing. Compared with Sibato and Sibolo the scene is chaotic. Houses are arranged haphazardly and most are flimsy looking buildings (Figure 8). Most people here have larger seaweed areas than those on Sibato and Sibolo and, subsequently, make more money, but since they only live on Panagatan temporarily the standard of living is not as easily read from the landscape. There are a handful of families who have made their permanent home there and have concrete houses, but most



Fig. 9 A view of the more haphazard and rocky setting on Panagatan Uno.

families' gains from seaweed wealth are not visible here. Instead they are investing in building concrete houses in the home communities and investing in businesses there.

People have come from all over the Philippines to plant here. Migration and settlement arrangements are still governed by kin relations as they are on Sibato and Sibolo, only with a much larger spatial reach. The social networks and housing clusters of the island are arranged generally around place of origin (see Map 4). There are many people from inland barangays of Caluya Island who plant here and travel back and forth. There is a large portion of the population from Cebu some of whom planted seaweed there before, but were enticed to Panagatan by better waters, and many of whom gave up lucrative, but dangerous, compression fishing work there. There are also more recent settlers from Semirara island whose seaweed areas there have been damaged by pollution from the coal mine, as well as people from Mindoro, Panay, Zamboanga, and Manila. The transient nature of the island creates a much different social scene than elsewhere in Caluya. Although there are whole families living together and planting seaweed, there are many people who have come temporarily without their family to plant, especially single males. This gives a different feel to the island – more of a work hard, play hard type of atmosphere. There are a few privately owned generators on the island offering TV and videoke, which is especially popular combined with drinking and gambling at night since there is really nothing to do but plant seaweed and there is a large amount of cash floating around on the islands. There are no banks in Caluya. The nearest banking facilities are in San Jose, Mindoro so there are vast amounts of cash on all the islands since seaweed planting started. This has reportedly led to some conflicts and robberies, but a more wide spread problem is a lack of money management skills. Some people amass quite a bit a wealth in the good growing season and have difficulty saving it in the atmosphere on Panagatan. Those who have people to send it to or who have students to invest in tend to do better.

There is no agriculture on the island, food is sold at the main store on the island owned by Mrs. Belloria, the biggest seaweed buyer in Caluya. She now lives on Panay, but regularly supplies the store with food and goods from Manila and Mindoro. There is also a baker's oven and one of her employees makes fresh bread and baked goods every few days. Like Sibolo, there is also no fresh water on the islands for drinking and only a couple of areas where people can draw brackish water for washing. Water is brought in from Caluya in large jugs for 30 pesos per 30 gallons. This water is also slightly salted because the jugs are dragged behind the boats for the one and a half hour boat ride, though bottled water can be bought at the store. Thus, hygiene and water related diseases are problematic on the islands especially for the young children.

There was a one-room elementary school on the island, but it has been closed for the last year after a political dispute between some residents and the barangay captain (Panagatan is part of a barangay on Sibay Island). The teacher was pulled out by the municipality and many people feel they are being punished for not supporting the correct candidate in the local elections. Most families send their children back home for schooling or to board on Caluya. Those children who remain on the island have not been able to attend school, but there is widespread hope that the new mayor will reopen the school. There is no health care on the island.



#### 4.4 Local Government Structure

Caluya is a municipality and as such, has municipal hall located on Caluya Island that houses the various government departments. The municipal government, or Local Government Unit (LGU), is composed of a mayor, vice mayor and 8 councilors, who along with the youth council form the Sangguniang Bayan, or municipal council. All are elected for terms of three years and cannot serve more than three consecutive terms. The mayor holds considerable power and can veto legislation put forth by the council. This veto can be overridden by a 2/3 majority vote on the council. Since the devolution of powers to the LGUs, the municipalities now have the power to enact local policies and laws and enforce them (Rivera et al. 2002). In general, Philippines' politics has been characterized as oligarchic with only 134 families controlling the nation's congress over the past century (Macabuac, M 2005). Frequent accusations of crony capitalism circulate as well as reports of corruption and abuse of public resources for private gain (Macabuac 2005).

Caluya has not escaped the scandals of politics. Two families have dominated local politics for almost 40 years and the most recent elections in May 2007 were fraught with tension and accusations. RJ Lim, whose brother held the mayor's post for almost 20 years during the time of Marcos, retook the mayor's seat for his family from the Frangue's, a husband and wife team who have been mayor, one after the other, for 15 years. His victory was not without contention though. Vote buying and fraud accusations put the decision on hold and the new mayor was not inaugurated until July 1 2007. This shift in power has been cause for much speculation and hope on the islands that municipal services will improve. It has also resulted in many civil servants at the municipal hall losing their jobs and being replaced by Lim's supporters. The power struggles at work in the municipality have direct consequences for people who anxiously awaiting news of shifts in policy, new mayor's permits to pay for and decisions about zoning. Currently people are awaiting word about zoning changes to allow for tourism. The Frangue's have already rented their land to the development company and the ex-mayor reportedly used his last few weeks in office to open policy towards tourism. The Lim family is also thought to be involved in development plans with the company.

The smallest level of government in the Philippines is the barangay. It consists of a neighbourhood of about 100 families and is governed by an elected council of 8 barangay officials, or *kagawads*, and the barangay captain (BC) who are in charge of various committees such as peace and order, or sports. As well there is a barangay treasurer and barangay secretary, which are appointed by the council. Each of these positions comes with a part-time salary. The barangay officials play important roles in people's lives in Caluya, resolving disputes and influencing families' access to resources and services. The next section moves forward to present my empirical findings about seaweed cultivation in Caluya.



## 5. Seaweed Cultivation in Caluya Islands

The first sac of seaweed was brought to Caluya in 1986 by a local fisher who had observed it being grown in Palawan. He learnt the technique from friends there and decided to invest in a sac of seedlings and materials from them becoming the first seaweed entrepreneur in Caluya. His seaweed farm flourished and the technology spread quickly through friends and family. He went on to become the first seaweed buyer in the area, selling directly to the Cebu buyers on their way to and from Palawan. By the early 1990s seaweed planting as a livelihood had expanded to all coastal barangays where conditions are suitable. The spread of seaweed farming still continues in much the same way today. Word of mouth about the opportunity and help to start out is through kin relations and there are always new entrepreneurs looking for a chance to start their own seaweed farm. Statistics about seaweed production in Caluya are few and far between, though the main Cebu buyer estimates that it produces much of the volume for the Western Viasayas, which is the fifth largest producer in the Philippines (BAS 2005) at about 55 000 MT annually. I have estimated annual production totals for Caluya based on my interviews with three of the area's buyers, data from Cebu companies and harvest data from planters. The annual volume produced is approximately 11 000 MT of dry seaweed.

### 5.1 'How to' Guide to Seaweed Planting

Seaweed cultivation takes place in ocean waters that are relatively sheltered. Ideally, the bottom should be firm sand with patches of coral or a good growth of seagrass. At low tide the area to be planted should be about half to 1 meter in depth and at high tide no



Fig 11. Seaweed lines, Panagatan.

deeper than 4-5 meters. In the case, of the Caluaya, each island has a large shallow area protected by a natural breakwater of fringing coral reef before a drop off into deeper water. It is shallow enough to plant in but also open enough that there is considerable wave action and current which is essential for nutrient mixing in the planted waters. Light, water quality, temperature, salinity, and wave action are all important factors in a seaweed site.

Farmers in the Caluya Islands use the bottom monoline method (figure 11). Nylon lines of 15-20 meters are staked at each end to the bottom with enough slack that the line floats at the top of the water at high tide. Small cuttings of seaweed, called seedlings, are tied to the line at about 5-6" intervals using "strawless", a kind of plastic twine. Also at intervals, pieces of styrofoam are also tied on to float the line at the desired level in the water. There is enough slack in the lines to allow them to move with the tides and, if a storm is predicted, to tie them tighter. This brings them under the surface by about a meter and away from the worst of the turbulent wave action.

After the line is 'planted' in the water, it will be left to grow, ideally for 1 and half to 2 months, before it is untied from the stakes and brought into shore for the seaweed to

be sun dried (Figure 12). Seaweed is dried for 2 – 5 days depending on the weather and it is important to keep it sheltered from rain during this time since the fresh water breaks down the cellulose and it loses volume and quality. Not all the seaweed harvested will be dried. Cuttings from each bunch will be taken and retied on the lines, thus starting the



Fig 12. Seaweed drying, Imba barangay, Caluya.

growing cycle again. No fertilizer or herbicides are used on the seaweed and during the growing phase the farmer has to visually check the planted seaweed lines every few days to catch disease outbreaks, collect any ‘washout’ – pieces of seaweed that have broken off the line - and check for damaged lines.

Tambalang<sup>4</sup> can be grown in Caluya year round, but grows better during the cooler and drier months of October to March (Also September and April depending on seasonal weather). At this time of the year people will have as many lines

continuously planted as they can manage. In the hot and rainy months from about April or May until August or September, people will maintain enough lines to keep income coming in, but will spend more time repairing lines, growing seedlings, as well as on land crops and other activities. The seaweed does not grow well at this time because of the change in winds and wave action. Still water at this time does not mix nutrients well and the rain brings salinity below the desired levels. The increased temperature of the water also makes the seaweed more susceptible to disease. So rather than lose money, seaweed, and labour time to disease they have learned techniques to nurse their seedling stock and usually harvest just enough through this time.

## 5.2 The Labour Cycle and Division of Labour

The labour cycle varies seasonally and among planters. Heaviest times of work include initial set up of the planting area, and during high season planting and harvesting. To set up a seaweed plot, the area must be cleared of large rocks and urchins, and then 1.5 meter wooden stakes must be made or bought and pounded into the area’s substrate at intervals. To plant 100 lines, for example, 200 stakes are needed. Depending on the depth of your area, much of this work will be underwater – not easy! As well, nylon lines need to be cut to the desired length and prepared with the ties at intervals. Once you have set up an area, maintenance labour takes much less time. Ropes and stakes can be maintained for many harvests and urchins are regularly fended off. Because the coral in the area has been so damaged from illegal fishing, black spiny *Diadem* urchins have come in huge numbers. This is common in areas where coral ecosystems have been degraded and

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<sup>4</sup> ‘Tambalang’ is the local term for this type of seaweed. It is called ‘guso’ and ‘gulaman’ in other areas of the Philippines.

urchins with no check will create ‘urchin barrens’ eating all the flora and fauna around. Some researchers feel that human collection of these urchins is helpful in restoring the corals (Mandagi & White 2005). The urchins collected are not wasted since they are a food source here. One morning, I was working with a family on their seaweed area, after we harvested seaweed, we collected urchins and had a fresh urchin, rice, and *kinilaw*<sup>5</sup> picnic with fish caught in cages set out that morning (Figure 13). This important type of family time and rest time afforded to seaweed planters is due to the flexibility of labour and harvesting patterns that seaweed as a crop allows for. A further exploration how such material characteristics of seaweed shape life here follows in later discussion.

The division of labour is also variable and is related to ownership of lines, kinship relations and other labour duties such as child care and land farming. Lines of seaweed are owned by individuals, both men and women, or families. Within some families there are individual plots owned by the different adults, while other families own and work their area together. There is no particular age range for seaweed planting. Young and old have their own seaweed areas. I spoke with people as young as 13 who have their own plots and my oldest interviewee was 75 years old. She still maintains 50 lines and is out in her boat everyday. While she still does most of the labour, she has a young relative who helps her by diving down to untie her lines. This type of labour sharing is very common amongst relatives and friends and part of the enjoyment expressed to me about planting seaweed is the communal aspects of it. The labour of tying the seedling cuttings onto the lines is usually shared by the family or done in a group of extended family and friends. It is common to see large groups of people tying



Fig 13. Enjoying an urchin picnic, Panagatan.



Fig 14. Tying seaweed, Panagatan.

together and this time is also a time used to share knowledge and technique and to talk about local news and politics.

Labour swapping also happens during planting and harvesting to ease the workload. Swapping depends on others’ availability if someone from outside the immediate family is needed. It is also completely acceptable and common to pay friends and family for their labour time. The going rate is 8 pesos/line tied and 150 pesos/day when harvesting and planting.<sup>6</sup> Paying people ensures that no indebtedness

<sup>5</sup> ‘Kinilaw’ is a type of fresh fish salad popular in this area of the Philippines. It is made with fresh, raw fish that is cut up and instantly pickled by squeezing it with vinegar, and then it is mixed with onions, sometimes lime and chilies.

<sup>6</sup> This labour rate reflects the high standard of living that seaweed planters here are enjoying relative to elsewhere in the Western Visayas. Wages in the Western Visayas are

or confusion remains if labour swapped is unequal for example. It also acts as a wealth redistribution method on the islands. People who have small seaweed areas or who cannot maintain one for a particular reason are able to make cash in this way. It is even a way that children here make pocket money before and after school and a means for mothers who are caring for young children and not able to take them out on the water to earn cash as well.

There are no strict rules that divide labour by gender here either. As I mentioned, both men and women have their own seaweed lines and labour reflects this. Some women, especially older widows, may find themselves at a disadvantage, because of a lack of swimming or boat skills. In this case they are restricted to shallower, less productive waters, and they may have to pay more often for labour help. This was the case with a couple of women I met that were widows or whose husband had left the island. Their areas were in deeper water, since their husband used to do the boat work, and now they either couldn't use it or they were paying male relatives to help with the work. Other women who have areas are quite proficient with their boat skills and have no problems. Couples who have no children or whose children are in school are often found out on the water together. As well, the labour of land farming is shared between genders as well. Fishing is usually done by men, while household maintenance and childcare is usually done by women or people who gender identify as women.<sup>7</sup>

### 5.3 Household income

Income from seaweed depends on how much initial capital is available for materials and seedlings and how large an area is available. Some people are limited by area while others by capital. Most planters in Caluya have between 100 and 200 lines planted in the peak season (Table 1).

Table 1. Number of lines per planter

Number of lines	Number of planters (%)
10 – 50	8 (22)
50-150	15 (41)
151-250	6 (16)
251-350	1 (2)
351 or more	6 (16)

*Source:* interviews with 36 planters

100 lines of seaweed takes up about .25 of a hectare. Most people will build up the number of lines they have from their initial investment in materials. Seaweed grows at an astonishing rate compared to other cash crops, ready to harvest at full volume after 1- 2 months by which time it will have tripled in weight. So an initial investment of even 10 lines, for about 2000 pesos can be grown out, cut and replanted to make about 100 lines in as little as 4 to 5 months. At which point, 100 seaweed lines could be dried and sold

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one of the lowest in the country, at an average of 100 pesos/ day (Irz et al). 150 pesos a day offered in the seaweed sector is significantly higher.

<sup>7</sup> I met a number of transsexual people on the islands who work as nannies for relatives.

for about 15 000 pesos (or 10 000 pesos if a third of the seaweed is kept for seedlings). I spoke to quite a few farmers who had started with the very basics like this and built up, easily paying off their initial investment, and any credit or groceries they had taken in the mean time, in 6 months. People coming from very poor situations can even get credit for the initial capital/material investment if they need it. Many people saved a much larger sum before they invested in seaweed planting, either from other work they were doing, or perhaps from wedding gifts. Table 2 shows the costs of materials based on an investment for 100 lines.

Table 2. Cost for 100 line start up farm

Item	Number	Unit cost	Lifespan	Total (pesos)
<b>Just the Basics</b>				
Wooden stakes	200	1.50 p	1 yr	300
Strawless	13 rounds	80.00 p	1yr	1040
Nylon lines	13 rounds	280.00 p	10 yrs	3640
Seedlings	800 kg	7p/kg		5600
Floats	5kg	100/kg	1 yr	500
Tarp (for drying)	2	50/m	10 yrs	1000
Total				12080
<b>Extras</b>				
Boat	1 no motor	6000	5yrs	6000
Bamboo(drying rack)	10 lengths	50	5yrs	500
Nets	2	70	10yrs	140
Tarp	2	50/m	10 yrs	1000
				7640
<b>Total</b>				<b>19720</b>

Once a 100 line farm is established, it will cost an average of 500 pesos/ months to maintain with some months of the year incurring the bulk of the costs and other months having no maintenance costs. The main expenses incurred once a farm is established are fuel for motor boats, labour costs, and materials replacement. The majority of planters I spoke with who start out with a paddle boat were able to buy a motor, costing between 15 000 and 30 000 pesos, within a year or two.

The average income a 100 line seaweed area will yield is 120 000 pesos/year. In the Western Visayas region this is just above the annual poverty threshold of 119 000 pesos for a family of five and well above the regional average annual income estimated to be 112 000 pesos ([www.nscb.gov.ph](http://www.nscb.gov.ph)). In Caluya, most family's food consumption comes primarily from their own land crops and fishing, so this income would be more than sufficient to meet their basic needs. Tables 3 and 4 show a detailed household budget for a mock family of six living on Sibato Island. The information was put together from a number of detailed household expense and income inventories I went through with a variety of families. Our example family has two children attending high school on Caluya Island where they stay in a boarding house during the week and two children in elementary school on Sibato. They have 100 lines of seaweed. This would be considered a very low amount of seaweed for such a large family, but there are some families that

survive on this, therefore, this estimate represents the very lowest income strata on the islands.

Table 3. Expenses for a family of six on Sibato for one month

<b>Item</b>	<b>Amount</b>	<b>Unit Cost (pesos)</b>	<b>Total in pesos</b>
Rice	1.5 sacs	1180/sac*	1770
Fish/meat	Must buy ~ 12 kg per month	30/kg	360
Other groceries			750
Water delivery		10/container	200
Clothing		300	400
Fuel	Kerosene for lamps Motor gas 10ltr	20p kerosene/mth 45p/ltr	470
Electricity barangay generator			130
Transportation	3 trips to Caluya 16 trips-high school	80/trip 8/school trip	368
School Fees If in college			
School Living Allowance/boarding cost		100/child to board 100/pesos per child weekly allowance	1000
Taxes			
Seaweed materials and maintenance			avg 420
Other farm/fishing inputs			
Labour payments(or in kind)		8p/line tie x 20	160
Credit taken from stacker/buyer			~1000
Loans to others – for rice or collateral, family help etc			~500
Medicine			100
<b>Total Expenses**</b>			<b>7628</b>



\*\* Expenses that could be added to the basic table vary from family to family but a few more common items mentioned in interviews include children's college tuition and living expenses, hired labour for land crops, cell phone load, alcohol, videoke, church donation and boat repairs.

Table 4. Monthly Income for family of six on Sibato Island

Source	Amount high / low season	Unit Price	Total in pesos high / low season
Seaweed harvested	275 kg / 130kg	30p/kg	8250 / 3900
Seaweed washout collected	120 kg/60 kg	30p/kg	3600/1800
Fishing For consumption		30p/kg	Equivalent of 800 if bought on market
Farming For consumption			Equivalent of 600 if bought on market
Other*			
<b>Total Gross</b>			<b>13 250 / 7100</b>
<b>Gross - expenses</b>			<b>5622 / -528</b> (covered by credit)
<b>Annual Income</b>			<b>122 100 pesos</b>

This family can earn 122 000 pesos annually from their seaweed and farming/fishing alone.

\* Other income may come from many sources. Reported in my interviews was secondary income from copra, chain saw services, labour on others' seaweed or land farms or hauling for buyers, sari-sari<sup>8</sup> store, charcoal making, remittances, boat making, carpentry, mat weaving, and barangay positions.

The above example budget is for a family living on Sibato. Commodities, rice, and drinking water on both Sibolo Island and Panagatan are more expensive due to transportation costs of bringing these items from Caluya or Mindoro. This makes the cost of living considerably higher, especially on Sibolo Island. On Panagatan people generally have larger seaweed plots, at least 200 lines, thereby making up for the higher commodity costs. The price of seaweed is the same on Sibato, Caluya and Panagatan because there are buyers who sell directly to Cebu on all three islands. It has been between 30-32 pesos/kg for the last year<sup>9</sup>. However, the price on Sibolo Island is significantly lower at 26 or 27 pesos. Since there is no buyer selling directly to Cebu on Sibolo, the intermediaries give a lower price to cover the cost of fuel to deliver it to Sibato, an hour and half away. Planters on Sibolo have areas that are a bit bigger on average than on Sibato and they claim the seaweed grows better, but it is also, more costly for the population to enjoy the same standard of living as in other parts of Caluya.

<sup>8</sup> This is a small sundry store

<sup>9</sup> According to communication in March 2008 between myself and the main Cebu company that buys from Caluya, Kerry Food Ingredients Inc., the price has recently gone up by 3-4 pesos due to a shortage of seaweed being produced in the Mindanao area.

#### 5.4 Access to areas and credit

Unlike many other types of aquaculture, which takes place in fully privatized ponds, seaweed cultivation takes place in common resource areas. In Caluya, there is no official allocation of planting areas, although attempts have been made to map and regulate areas through the municipal Department of Agriculture. Essentially, when seaweed cultivation began to spread in the early and mid-nineties, whoever wanted to get into the business and had capital to buy equipment was able claim an area as big as their materials budget allowed them. First come, first serve. Generally, the families who entered into seaweed farming in the early years from 1986 to 1992, and who remained in the business through the low prices offered at this time, are the families who still hold the largest areas. Those families who claimed areas in the mid-1990s seem to have around 1 to 1.5 hectares while those entered the business more recently have between .25 hectares and 1 hectare.

Accessing a seaweed area has since become a much more complicated process because most of the areas with good conditions have long been taken. Figure 15, below, is an image of the best area to plant off of Sibolo Island. Low tide reveals the lines of seaweed sitting on the seagrass and how tightly packed in the seaweed is. This area has about 5000 lines planted during the high growing season.



Figure 15. Seaweed lines at low tide, Sibolo Island.

Access is now for the most part governed by ties with family and friends who already have an area. This is particularly true on Sibato, Sibolo and Caluya Islands where the planters are all residents of the islands or of the neighbouring island. Planters I interviewed or spoke with who had recently started farming seaweed, had all been given an area by a relative who was not using the whole area anymore. Everyone in the ten original families on the islands are related in some way through intermarriage, therefore, there is usually an older family member who was one of the first planters. They will hold a large area and may not be planting all of it anymore, but will give it to younger nieces and nephews, etc. This serves as a start up area for newcomers, but expansion is still limited by a finite area and people are waiting for turn over of areas still. On Panagatan, in contrast, there were many reports of areas being sold to newcomers or even rented by owners who were leaving or not using the area anymore. This could be due to the fact that Panagatan is made up of transient planters and not governed by the same familial rules of ownership as the other islands. Prior to 1986, there were no inhabitants on the



islands, consequently there is no entrenched social structure. That said, each group of residents from different areas and groups of families bring their own relational ties with them to the island. Most people have come to the island through word of mouth and a guarantee by relatives already there that they can share an area. It is people who arrive without strong family ties established that need to buy areas and often the knowledge about who is selling is also received through family ties, making it difficult for some people to break into the market. A one hectare area may sell for 3000 to 5000 pesos. I met several families who had been waiting for months to find an area to plant in and were just struggling to survive by collecting octopus to sell or working as labourers for other planters. Panagatan, is the only island I found that also has tenant planters. These seaweed planters are either newcomers to the island or have lost the ownership of the area through debt to the buyer. The seaweed buyer and tenant farmer have arrangements of profit and expense sharing in these areas. One buyer I interviewed had amassed 2000 lines in this way and he pays for the materials needed to plant, while the planter does the labour. They split the profits 50/50. This is still fairly unusual though, and is often the result of planters mismanagement of money, generally through gambling losses.<sup>10</sup> The planter can get their area back once the credit is paid back to the buyer.

Familial relations also govern access to credit. Planters receive credit in the form of cash, good, or groceries from seaweed buyers and intermediaries called stackers between harvests. There is then an unwritten contract that the planters will sell their seaweed to that buyer at harvest time. After the credit is taken out of the price, the planter receives the remaining amount in cash as usual. Seaweed that is covering credit is paid for at the same price as regular transactions and there is no interest on credit given. In order to access credit from a buyer or stacker, a new planter must have a solid reputation. Most people know each other already, but if new people come to the island and ask for credit the buyer will ask around to friends and family before granting them credit. Without a source of reference it is difficult to get credit, though not impossible. Buyers will start the person off with a small amount and if they consistently pay their credit, they will be trusted to take larger amounts.

## 5.5 Politics and Regulation of Seaweed in Caluya

The arrangement of areas through kinship mimics the centre of power on the islands. This 'centre of power' partially stems from generations of control by the original families, but is also occupied by families who have moved up the social ladder through their seaweed success. Now, 20 years into the seaweed boom here, these hierarchies are being challenged further. This centre of power is not just figurative, but also spatial. The most powerful families on Sibato live in the barrio with access to the barangay generator and the best beachfront while the less powerful family members and newer residents are located further and further away from the barrio on the rocky areas of the island as well

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<sup>10</sup> Although, gambling is a frequent activity on other islands as well, as I stated earlier, the situation on Panagatan is somewhat less controlled by family responsibilities. I observed card games every night where people, both men and women, were betting vast sums of money, 5000 to 20000 pesos, compared with a few hundred pesos on other islands.

as further away from the good seaweed areas, the water source, generator and seaweed buyers. On Sibolo, it is much the same though on a smaller scale and with less stratification among families. The family hierarchy of the islands flows through the local politics and access to anything (goods, electricity, credit, or barangay positions) is governed by it.

An example of this power structure is a recent extension service offered by the Department of Agriculture (DA) and administered by the Municipal Agricultural Officer (MAO). In 2004, the MAO was given money by the Philippines' Bureau of Fisheries and Aquatic Resources (BFAR) to assist the 12 neediest members of 2 barangays (Sibato and Imba barangay on Caluya). Four families received materials worth 8000-10 000 pesos plus 5000 pesos to start a nursery farm while 20 other families received rolls of rope, floats and 1000 pesos for seedlings to start a ¼ ha 'demo farm'. Families were to be chosen according to statistics kept by the municipality showing health and income status along with suggestions from the Barangay Captains (BC).

The MAO was very helpful throughout my research and, in this case, supplied a list of the 24 families that were given the assistance, complete with the amounts each family received so I could interview them. Interestingly, all of the 24 recipients on the list had been either barangay officials at the time or closely related to the barangay captains (BC). In fact, one of the BCs themselves had received a nursery grant worth 12 700 pesos. For the most part the barangay officials already enjoy a high standard of living on the islands and do not seem to be the most appropriate candidates for the program. This example speaks to the patronage practices of politics in the area, as in other Philippines municipalities, but it also speaks to the lack of skills and support given to local government units. The DA officer has very little at his disposal to actually implement and monitor such a program in the intended way. The BCs are supposed to know which families are more needy, and certainly do, but they often have more power than low level municipal officers like the DA to control money as it flows through them supposedly for distribution. A few of these families genuinely benefited from this assistance, but it was clear from my research the most needy families in the barangays had never heard of the assistance program.

One of the planters who received the assistance (brother-in-law of the BC) said that it definitely helped his family. Although he had paid off a start up loan he received from his sister (a stacker and the BC's wife) after one harvest, the assistance meant that he did not have to take another loan to expand. Interestingly, he described the MAO assistance received as part of a sharing agreement. Him and five other planters heard about the program and agreed that he would get the assistance this time and share the materials received with another family. This he did and in the next round another planter would do the same. In this way what appeared to be helping only one family was actually spread further than records indicate. Unfortunately, the next round of funding from BFAR has yet to materialize.

Questionable motives and implementation are also behind the local government's effort to regulate seaweed planters' access to areas. People reported that over the years there have been a couple of efforts to make planters pay officials. The Lim family claim

ownership of Panagatan Islands<sup>11</sup> and for a few years were making some planters (not all planters reported this) pay them 1 pesos/kg of seaweed sold. There was also a couple of years where people were made to pay a mayor's permit for planting seaweed. This is closely intertwined with the very conflictual, at times violent, politics of the area. Two families, the Frangues and the Lims, have controlled municipal politics here for over forty years. Oscar Lim was in power for twenty years between 1972-1987 (shortly after the people power revolution ousted Marcos the people of Caluya sought a return to elections), and again from 1988 to 1992. The Lim regime is remembered, by some, for violence and killing, especially on Sibay Island. Nikita Frangue was then elected to mayor and stayed for the maximum number of terms, three three-year periods, until replaced by her husband for two terms. In May 2007, Oscar Lim's brother, Renanta Lim won the local elections. While I was doing my field work in June, the elections of May 14<sup>th</sup> were still being contested and accusations of vote fraud had been leveled at Lim. People spoke of vote buying. This is, apparently the first time vote buying has happened in the municipality and people were rather surprised even given the contentious nature of politics here.<sup>12</sup> It was not until July 1<sup>st</sup> that Lim was inaugurated as mayor.

The latest attempt at regulation is an effort to measure and map each seaweed area and create a permit system. Each family would be allowed only one hectare and any extra hectares would be redistributed. This has been started on Sibato and all the areas have been measured and marked down. The DA officer diligently worked on the island for two weeks doing his duty and taking his directions for which areas belonged to whom from the BC. Most people knew that this had happened, but planters had not been informed of the results and did not seem to think that it would ever materialize into actual regulations. Indeed, the whole process was on hold awaiting the outcome of the municipal elections since the new mayor was expected to fire most of the municipal staff, who had been appointed by the old mayor.

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<sup>11</sup> After the islands were declared a conservation area, another family challenged the Lims in court and had the islands declared municipal property. Nonetheless, many people on the islands are not aware of this decision and are still fearful that the Lim will ask for money.

<sup>12</sup> Vote buying claims during the May 2007 elections were in the news daily while I was there and, anecdotally, people felt that it was getting worse over the last few years. The price for a vote in Caluya was high at 1500 pesos compared to the university town I was staying, which people reported as being 300-500 pesos. The vote buying in Caluya was, reportedly, backed by 5 million pesos from the coal mining company on Semirara and a further 5 million from the governor. According to hearsay, both amounts were given to one candidate, a former BC on Semirara. It is not surprising that the Caluya mayor post is so sought after. This is not because people want to control seaweed, but rather because Caluya is the richest municipal government in the province. They receive 50 million pesos annually from the coal mine under the law, a part of the 3 per cent of gross revenue that by contract goes to the Department of Energy ([www.semiraramining.com](http://www.semiraramining.com)). According to some municipal council members, though, not a peso of that money has ever made it to the budget meetings of the council. The state of basic infrastructure and lack of necessities like running water, electricity, roads, and health care, is all the more neglectful when faced with this possibility.

According to the DA the impetus for the regulation came from planters who had complained about too many conflicts over areas. I did not speak to a single planter who had requested such a process and most felt there was not enough conflict to warrant the regulation. Some planters who had small areas felt that it would be beneficial to break up the large areas and give more people a chance to enter the market, while those who had big areas felt that it would be unfair since they had done the hard work of clearing the area.<sup>13</sup>

## 5.6 Conflict and Common Resource Areas

How are privately owned seaweed lines integrated in an open access space? This was one of the main questions my initial research set out to clarify. To the untrained eye, the hectares upon hectares of lines surrounding the islands seem to have no boundaries demarcating them from one another. How does one planter tell their lines from another; how does one know if an empty area really is empty or just not in use or used as a boat lane perhaps? The usual answer to these questions was that everyone “just knew” whose area was whose. Upon further inspection, I did discover that some people marked their areas with long sticks, or flags in one corner. Others used a particular type of float on one end of each of their lines like a green plastic bottle, for instance. Some planters have washout nets fixed on the bottom for the length of one side of their area to catch pieces of seaweed that breaks away from their lines. These nets act to demarcate certain areas, but still many areas just seem to flow into one another and conflicts arise from this lack of clear ownership to the planting areas.

Conflicts arise when planters overlap or ‘inch’ into neighbouring areas; when someone plants in an area that has seemingly been abandoned by the former owner only to have them return to reclaim their area; when areas that have been lent are not returned to the lender upon request; or when seaweed lines are stolen out of people’s areas. Since the seaweed farming is not regulated by a particular organization there is no official mechanism to deal with conflicts between planters. Almost all of the planters I interviewed had at one time experienced such a conflict and described various means of resolution. Most conflicts were sorted out between the people involved by a compromise of some sort. Surprisingly, the original owner of the area often seemed to be the one who just gave the offender part of the area rather than escalating the conflict. This may have been because the encroacher was from a more well connected family and the owner felt that they might lose the area entirely if the conflict was taken to the Barangay Captain (BC) for resolution or, as stated to me, simply because the owner was no longer using the whole area and was satisfied with their current situation.

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<sup>13</sup> Some mentioned that it was the BC idea and, in confidence, people shared that they felt the real reason was “envy” the BC felt towards the planters from Caluya Island who used the Sibato waters. The regulation would give first priority to residents and residents with more than one hectare had the option of giving their excess to a relative before handing it to the DA. Thus, the ‘transient’ farmers, as they were called even though many had been planting there for 8-10 years, would be forced out. This reflects the ongoing tension between residents and off-island planters.

Conflicts not solved by the parties themselves are taken to the BC for a resolution. The Barangay Captain will often ask friends and family to verify the claims to ownership and how recently the owner had been planting on it in order to come to a decision as to who was the rightful owner. It is a rule of thumb in the community that areas abandoned for more than a few years can be used by someone else, especially with permission of the owner's relatives. If the original owner returns and really insists on planting in an area again then usually a compromise of some sort is worked out through the BC.

A very few of these conflicts have escalated to violence including stealing lines, damaging boats, spreading rumours, a stabbing, and even a shooting. On Sibato and Sibolo, where most people are related and the communities are more tight knit, many such conflicts around seaweed actually spring from long histories between families or from previous incidents not involving seaweed. Conflicts between residents and transient planters from Caluya Island also arise on Sibato and are often framed in an us versus them rhetoric.

Conflicts on Panagatan, however, were almost always talked about as being between people from different areas, particularly between Cebuanos and more local planters. A handful of planters from Cebu, were originally brought to the area in the late 1980s by a Cebu processing company to ensure a larger share of the seaweed volume came to them rather than going to local buyers who were selling to Manila at the time. Even though this happened at least 15 years ago, it is still mentioned on the islands. Since then Cebuanos and others who migrate here do so through family connections.

Interviewees from Cebu often expressed feeling a lack of power in such conflict situations. They did not think taking the conflict to the Barangay Captain would be helpful and felt that the captain always favour the local Kinaray-a speakers over the Cebuanos. Although, Panagatan has well over 400 households on the three islets it has not been deemed a barangay with its own officials, but is under control of a barangay on Sibay Island, an hour away. Issues have arisen between the BC there and planters on Panagatan. The elementary school was shut down by her in the last two years. Some say it was because people on Panagatan did not vote for her. This is much more of a hardship for families who live on Panagatan full time or who come from further afield. Since the closest elementary school is on Caluya, the local planters from Caluya or those that have friends or family there can send their children to board with them. The others have to pay to board their young children in Caluya with a stranger or send them back to their home island elsewhere in the Philippines. The transient planters seemed to have received the message and those that experience conflicts over areas often give up their claim feeling that there was no fair mechanism to resolve it.

Despite these power issues around the ownership of seaweed areas, communities here have successfully integrated private ownership of a resource with communal access of surrounding area. Several activities all take place in and amongst planted seaweed lines. Access is open to anyone. They need not own the particular lines nearby. Such activities include: octopus fishing, gill net fishing, and setting fish traps; sea cucumber collection, abalone collection, anemone collection, urchin collection, and ornamental fish collection; seaweed washout collection; boating access lanes; washing of seaweed lines; and toileting.

It is only the lines themselves that are considered private property and as long as no damage to seaweed occurs traditional activities continue. Resources customarily collected from the sea both for consumption or selling have not been disrupted by seaweed farming

### 5.7 Local Economics of a Cash Crop

Seaweed farming economics in Caluya Municipality is governed by a kin based credit system and run by a series of intermediaries and buyers. The relationship between the planter and the buyer is not just one of buying and trading seaweed. The buyers basically control much of the economy of the islands and the farmers are reliant on them for cash, credit, groceries and other goods.

Figure 16. Local Economic Flows

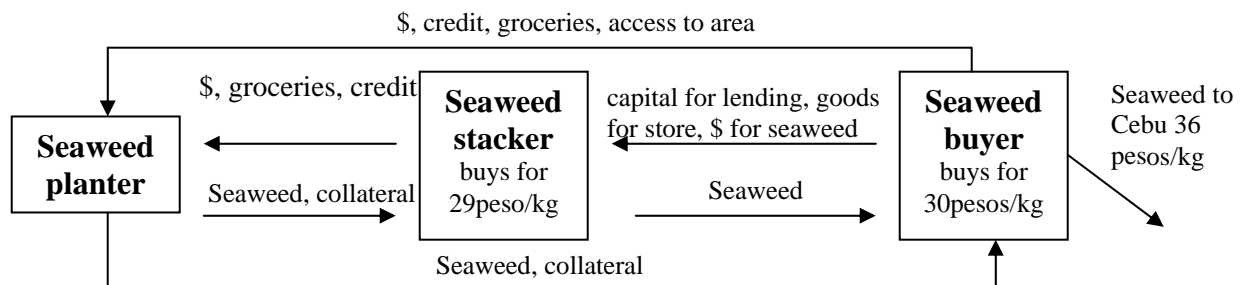


Figure 16 shows the movement of seaweed from the farm to the local buyers of seaweed who then sell it to processors in Cebu. A seaweed ‘stacker’ is an intermediary between the planters and the local buyer and, is usually attached to one particular buyer because of capital loans from them and family loyalty. ‘Stacking’ seaweed refers to the practice of stocking many sacks of seaweed over a series of harvests before selling them to a buyer. A seaweed stacker is so called because they buy seaweed over a period of time from, perhaps, 10-30 planters who live in their vicinity and ‘stack’ it before moving it to their buyer in a bulk sale. For example, on Sibato Island there are two buyers of seaweed living on the island, the Barrientos family and the Arelanos family. The Barrientos have 21 stackers throughout the municipality, 7 on Sibato alone. Buyer Joe Barrientos explains, “here there is a relation system. When one of the stackers has a big family and they are your stacker - you get more volume.”

Planters can also sell directly to the buyers, thereby earning 1 more pesos per kilogram, but many choose to sell instead to stackers, because a closer relation facilitates more flexible credit and emergency cash loans. As I mentioned earlier, it is generally through kin references that credit becomes available to planters, but it was not always so. Stackers and buyers learnt the hard way that they had no back up when someone defaults on credit. In the initial years of the relationship between Caluya’s buyer and the Cebu companies, the managers from Cebu advanced capital to the local buyer so that they had enough cash to advance credit to planters, therefore, expanding the industry. These advances did not carry any interest, but like the local system this guaranteed a certain amount of volume for each company and stopped local buyers selling to competing companies. Credit was given out by the buyers to any planter who asked for it, upwards

of 100 000 pesos in some cases. It quickly became apparent that too many planters were unable to pay back their large loans and would just move to another buyer leaving people out of pocket. A few buyers were forced out of business, leaving the five buyers who remain today. Now that these buyers are firmly established and are loyal to certain companies, the Cebu buyers no longer give advances. Local buyers have enough capital to advance it to their most trusted stackers who continue the credit system in a similar manner. Other stackers use their own capital for advancing credit. All buyers and stackers are now much more wary with the credit they give, looking for people who are vouched for and only advancing small amounts up to 5000 pesos at a time. I spoke to very few planters, overall, who had major issues paying off their credit. Most people were able to recover their initial credit for start up within 6 months and are able to cover the credit they now receive with every harvest. Many no longer have to take credit.

In reality, the above diagram is somewhat fluid between the boxes. People move between planting and stacking, and buyers were once planters and stackers. Stackers and buyers often still have areas that they plant. There are no strict barriers to anyone wishing to be a stacker as long as they already sell to a buyer regularly, have capital, a few other planters willing to sell them seaweed, and a place to store the seaweed sacs. The main difficulty is saving enough capital to be able to advance credit to other farmers. Many planters have tried their hand at stacking for a few years and returned to only to planting because of the risk of losing money to defaulters. Many planters have no desire to move up the seaweed ladder and would rather invest their money in children's education and other businesses. Stackers who manage to stay in the



Fig 17. House of seaweed stacker and BC of Sibato, Local buyer lives next door with a similar house, large store.

business for awhile certainly do very well and have a significantly higher income than people who only farm.

For example, one of the main stackers for the Barrientos on Sibato buys seaweed from approximately 20-30 planters and in the good season will buy about 30-50 tonnes of seaweed per month. Even if she only makes 1 peso per kilogram on her sale to the Barrientos, she is still grossing between 30 000 – 50 000 pesos per month. She bears the labour expenses for transporting the sacs of seaweed down the island to the Barrientos at 5 pesos/ sac (30 tonnes would be about 300 sacs or 1500 pesos). With the money from her and her husband's own 300 seaweed lines they have able to save enough money to start a sari sari store, become a stacker, and eventually buy two large fishing boats with a crew of six. They now have a commercial fishing business as well and have reduced their own seaweed lines to 150. The extra area is now planted by a relative who does not to plant in the area, instead agreeing to sell the

harvest to her. This type of story is common among stackers and buyers. They start out with small areas and build them up, eventually saving enough capital to move up the chain or diversify into other ventures.

It is much more difficult for planters to move up to being buyers now that there are 5 well established local buyers who already have contracts with Cebu. A buyer needs

to amass a large amount of capital to cover the costs of buying seaweed until they receive payment from the Cebu companies, they must have a large storage area for the seaweed, and they must arrange transportation on a *batille* (large shipping boat) to Cebu. Only one of the local buyers owns their own *batille*. The other buyers pay between 1.60 or 1.80 pesos per kilogram of seaweed transported to the *batille* operators. The processing company, once the seaweed reaches Cebu, pays for land transportation. Although the difference between the seaweed farmgate price of 30 pesos/ kg and price received from Cebu is 6 or 7 pesos, in reality the local buyers margin is 1 or 2 pesos per kilo after they cover transportation, labour and fuel costs. This still works out to a substantial profit. If 80 tonnes<sup>14</sup> is being shipped the buyer will make 80 000 pesos profit, which can be reinvested in goods for their store and credit system. The buyers are certainly the most wealthy in the local seaweed chain, with large, concrete houses and noticeably higher standard of living as well as a number of commodities that others are not able to buy like generators, piped water for washing, TVs, etc (Figure 17).

### 5.8 Quality Control

Like other cash crops, the processing companies expect a certain standard of quality and if that standard is not met, financial penalties follow. The risk of these lower prices is borne by the local buyers and is a further reason why the stacker system is in place. According to Joe Barrientos, local buyer,

it “is the influence of the stacker to control the quality of seaweed. For example, you can make sure the seaweed is dried already through the stacker [before it is sold to you]. If [the planters] sell it directly here, it is difficult for them because we open [the sacs] to check.”

The major buyers of seaweed from Caluya are Kerry Food Ingredients, a Philippines subsidiary of an Irish company, and Shemberg Co, a wholly owned Philippines processor and exporter. When the seaweed arrives from Caluya at a Cebu processing plant it is sorted to separate out foreign material, such as styrofoam bits, extra sand or ties on. At this point it is also tested for moisture content (how dry the seaweed is) and gel strength, the quality of which will vary depending on the maturity of the seaweed and any diseases it may have. Each company has standards set for acceptable levels of foreign matter and gel strength. Kerry Foods for example, accepts a moisture content of 40% or less and only 1% foreign matter. If a shipment of seaweed does not meet these standards then a reduced price will be offered to the Caluya buyer. If the moisture content is not low enough then the Caluya buyer has the option of redrying the seaweed themselves or taking the reduced price. The company has a large concrete area for sun redrying of seaweed that buyers can use, but they must pay for local labours to do the work. It is usually less costly to take the reduced price. Too much foreign matter in the dried seaweed will also reduce the price. As well, if the seaweed was not dried

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<sup>14</sup> During the high season for seaweed, for example, the Barrientos are shipping 80-90 MT twice a months to Cebu, while in the low season they will ship that once a month.



properly by the planters before the buyers bought it, by the time it arrives in Cebu, the shipment will have dried further and weigh less than when bought.

At one time this was a major problem for the Caluya buyers. They had already paid the going rate to the farmers for the seaweed on the assumption that they would receive the stated rate from Cebu. When they receive a reduced rate due to quality it comes directly out of their profits. The problem stems from the practices of some farmers. In order to receive more money for their sacs of seaweed, farmers would fill the middle of the sac with wet seaweed (which weighs more) surrounding it by dried seaweed, thus making the sac heavier and worth more money. Unless the buyer cuts into the sac to look at the centre they do not know. Improper drying also results in over weighted sacs. If the seaweed is not dried on a relatively clean area, there will be sand and debris within it that not only adds to the weight falsely, but is also counted as foreign matter by the Cebu company.

Such practices were stopped by buyers in Caluya through the simple exercise of marking on each sac the name of the farmer who sold it. It is easier to rely on each stacker who only handle only 10-20 farmer to do this. Thus, if the Cebu company discovers a problem it can be traced back directly to the farmer and the buyer will not buy from that farmer again if his practices do not improve. Now, it is very rare in Caluya to encounter such practices and in fact all the companies interviewed said that the highest quality seaweed in the Philippines comes from the Caluya area and is given a higher price. Distinct from other cash cropping or contract farming experiences, this is the extent of control that the companies are able to exert over the production practices of the farmers and does not require significant investment in new technology to comply with.<sup>15</sup>

## 5.9 Pricing and Market Knowledge

Once the seaweed has passed all the requisite tests, after about five days, the money is transferred to the Caluya buyers bank accounts in Mindoro. While the trend in the price of seaweed has been ever upwards since the price of 3 pesos per kilogram in the early 1990s to the current price of 31 pesos per kilo at the farmgate, it fluctuates up and down by 1 or 2 pesos every few months. This suggests someone in the chain receives less than what they bought the seaweed for. In fact, there is system of accommodation in place when prices change. For example, the Cebu company will tell a buyer that they need 500 MT, for which they will pay 36 pesos/kg. It may take months for the buyer to

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<sup>15</sup> Interestingly, the same efforts have not been able to bring the quality standards of seaweed from the Zamboanga Peninsula up. Although this is the third largest producing area in the Philippines, buyers are beginning to stop buying from there or are offering much lower prices due to the high amount of foreign matter found added to the sacs to increase weight. The problem seems to have become worse in last few years. Some speculate (Jain 2006) that this is due to the more desperate living situation of farmers there looking for as much per kilo as possible, as well as the more transient nature of the farming there as people are fleeing from conflict. This makes it more difficult to trace quality and maintain relationships with some farmers. As the planters receive lower prices, though, the practice worsens because they are more desperate to recover the price depreciation.

accumulate that much seaweed, during which time the price drops to 35 pesos. The Cebu buyer will still honor the verbal agreement of 36 pesos until the buyer fulfills the volume. The same accommodation is continued down the line, before the price changes at the farmgate. This accommodation style may stem from the long standing relationships the buyers have with the company. The five remaining buyers stuck have stuck with the company through tough times and the difficulty of forming new relationships for both sides may not be worth the possible profit to be had from shopping around. Not only does the remoteness of many seaweed-producing areas make it difficult for local buyers to form contracts with companies, but it also is difficult for processors to find trusted suppliers in a community where they are an outsider.

The Cebu companies said that price haggling was common between them and the local buyers, suggesting some power on the side of Caluya. However, the local buyers on Caluya did not feel as though they had much leeway to ask for higher prices. There has been for two years, an undersupply of seaweed in the Philippines<sup>16</sup> than required for the processors needs and it is a farmers' market. Despite this, the difficulty mentioned above of moving between companies limits the buyers and, therefore, the planters' ability to ask for higher prices.

Moreover, a lack of market knowledge on the part of the farmers also impacts their ability to ask for higher prices. The price of seaweed in Cebu is guarded closely Caluya with only the buyers. When asked, only a couple of my interviewees had a guess at the price outside Caluya and most has not thought about it. Nor did most planters, even know what the seaweed was processed into or why. Many complained that the price was too low, especially on Sibolo island, but with only a handful of buyers to sell too, there was a monopoly on pricing of sorts. This also reflects the differentials in power. While those higher up the ladder, especially at the export level, are focused on profit margin, the seaweed planters depend on the seaweed industry for their daily survival. Jain (2006), argues that it stems from a culture in the industry that has evolved over the years and still keep farmers at a disadvantage despite it being a seller's market. In Caluya, the relational ties that govern buying and selling seaweed may be the reason there is less exploitation here than in other seaweed producing areas, especially in Mindanao where many farmers are migrants from conflict situations. Here, the stackers and buyers are making a tidy profit, but are not pushing the price down to make more than 1 peso margin.

I also questioned planters about the possibility of cooperatives here. Given that Caluya is producing very high quality seaweed, a cooperative could be more powerful in asking for a higher price than individual farmers. Unanimously, people were against this idea, citing past experience. There have been a couple of attempts in the past to set up cooperatives, but they were co-opted by elite politicians who took the membership fees and ran. A 'fair trade' type of commodity chain where farmers groups could sell directly to organic niche markets for example, would be nearly impossible to implement here without local elites siphoning off the extra profits along the way. People are wary of

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<sup>16</sup> The processors I interviewed, were forced to fill their need with seaweed imported from Indonesia for the first time this past year. The seaweed from Indonesia is cheaper, but is not good quality, therefore, they would prefer to buy from the Philippines and are pushing the government to support more seaweed farmers. The rising industry in Indonesia and Malaysia are worrisome for the Philippines industry.

anything that would take their money and space away from their immediate control. This is true of the credit system as well. In its attempts to increase the number of farmers in seaweed, the government has worked with Landbank to create a loan system available to farmers. Every planter I spoke with felt that the loan system was exploitative. They would be able to take larger loans, but at high interest, and the bank would only give group loans to planters meaning that 5 or 6 planters would be cosigning. A resounding preference for individual and kin-based credit is clear. Nonetheless, I agree with Jain (2006) that “informed citizens are better equipped to take advantage of opportunities, gain access to services, exercise their rights, negotiate effectively, and hold both public and private sectors accountable for their actions and inactions” (p92).

The economic system that has evolved around seaweed planting in Caluya is relatively benign with little purposeful exploitation. In contrast, the residents' lack of knowledge both around markets and their rights is being exploited unscrupulously by the land developers spearheading the tourist project and I will return to this in the discussion to follow.

## 6. Global Cash Crop Meets Local Socionatures

Contrary to pro-liberalization rhetoric that draws conclusions from national level statistics, research on local level experience with cash crops has often revealed that the supposed amorality of market mechanisms can have very real marginalizing effects on farmers and can result in widespread environmental degradation (Winter 2004). Michael Watt's (1983) work on Nigerian famine argued that the push for farmers to grow cash crops for export played a significant role in "the rupture of local systems" (14) leading to subsequent resource degradation and decreases in social power. Tania Li's (2002) more recent work in Sulawesi, reveals that even when the adoption of a cash crop comes from within the community, agrarian class differentiation and land consolidation can still be the result. Political ecology work on deforestation in Central America has made an effort to show that it is not population pressure which at the root of environmental degradation, but rather conditions of market expansion, especially in the banana industry (Vandermeer & Perfecto 1995). As well, cash cropping has been shown to give rise to marginalization through loss of labour time allocation, increased corporate and state control of production processes, and increased food scarcity (Robbins 2004).

Seaweed cultivation is indeed part of the ongoing restructuring of global agro-food networks and the integration of once subsistence based agricultural communities into export crop markets. As such, it shares some characteristics with other cash crops. Seaweed planters in Caluya are now forced to deal with new market realities such as price fluctuation and global competitiveness in the colloid industry. The future of their livelihoods may be less determined by the quality and sustainable production of supply than by changes in product lines and substitutions at the food processing level. Colloids used in food and non-food productions have specific qualities such as gelling strength, dispersion, and compatibility with other gums, however, companies must negotiate a tenuous balance between technology, innovation, supply, and price to avoid customers switching to a new colloid product. In fact, carrageenan itself rose to prominence after its substitutability for agar was demonstrated. Typical of other cash crop commodity chains, the risks associated with the global market for carrageenan, as mentioned earlier, are borne disproportionately by the farmers with profits and exit options increasing up the chain. As well, the 'intrusion' of the global into this previously remote place has brought with it commodities such as TVs that are changing traditional beliefs and practices. Most people of Caluya welcome the figurative reduction of their isolation, but many conversations I had with people reveal the bittersweet nature of these changes to them. Many<sup>17</sup> lament the changes in traditions like wakes, the loss of traditional knowledge by the children, and the increase of vices associated with access to more cash.

Some question seaweed cultivation's ability to restructure rural power inequities where other cash crops have failed (Macabuac 2005; Jain 2006). Indeed, as Vandergeest et al. (1999) have shown is true in shrimp farming, the size of people's seaweed areas are linked to preexisting hierarchies that continue to influence people's access to plots, as

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<sup>17</sup> Since this crop has been taken up in the span of one generation, interestingly, many of these conversations were not with older residents as one may expect, but with residents in the 20s and 30s who see such a difference in their younger siblings, or their children's upbringing and knowledge compared to their own recent childhood.

well as their access to land farming areas, water, and capital. There still remains income stratification on the islands and social hierarchies. Nonetheless, as I discussed earlier, the entrenched social inequities seems to be slowly shifting and previously marginalized people have been able to take advantage of opportunities to improve their standard of living, mobility, and influence due to their increased income from seaweed farming. This is not just in the form of commodity acquisitions, but also through the transfer of new ideas. The area is difficult and expensive to travel in and out of. Previously, people without access to cash were basically restricted to the islands. Now, more people are able to physically travel to nearby cities and markets bringing back new ideas and values that influence local power structures.

This is especially true with the generation now able to attend colleges on Mindoro and Panay Islands, and even in Manila. The number one benefit of seaweed planting that my interviewees mentioned is being able to pay for their children's education. Especially on Sibato and Sibolo where there is only elementary school, now the second generation of children is able to attend high school on Caluya Island and the first generation has attended college. This change has been even more pronounced on Sibolo Island where the distance to travel to either Caluya or Semirara is an hour and a half. The elementary school only went to grade 4 until 1984 when grade 5/6 was added. Rodney, who grew up on the island, is now the grade 5/6 teacher. When he finished elementary school in 1994, he was the *only* one of his batch of 30-40 kids that went on to high school. Now, he estimates that up to 80% of his class will go onto high school this year. Despite difficulties they still face<sup>18</sup>, graduates such as Rodney are now returning successful to the islands. The first successful university graduate from Sibolo is now raising a family there and his engineering degree is being put to good use as the local manager for the tourist development company.

As Li (2002) points out and as the experience here with seaweed cultivation supports, cash crops do not *necessarily* entail class differentiation or entrenchment of inequities. In fact, this is not the only significant way that seaweed differs from other export crop experiences. The result has been a generally stable system embedded successfully in beneficial social structures. What is more, the integration of seaweed cultivation has served to rejuvenate previously precarious rural livelihoods in the area.

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<sup>18</sup> Unfortunately, while some teachers try hard to give the children in Caluya quality education, it is difficult with three teachers teaching the 6 grade levels and very few resources. As well, often the teachers from Panay Island do not show up for class because of weather or other excuses. For example, during the five weeks that I spent on Sibato no week had a full week of school with some classes missing sometimes two days a week because there was no teacher. This is reportedly very common throughout the year. By the time the students get to high school they are already well behind and the quality of teaching at the Caluya High School is questionable; one of the factors still leading many students to drop out. Students have very little chance of getting the marks needed to attend a quality government university like UP, therefore, families end up paying exorbitant amount for them to attend private universities.

## 6.1 Local Constellations

Other researchers have also challenged homogenizing globalisation discourses, critiquing both those arguments that assert the world's inequities will be flattened through market integration and those that portray marginalization and degradation as inevitable results of it (Li 2002; Lowe 1994; Mittleman 1996). Through such discourses, Grossman argues, “the real world of people, strategies, perceptions, conflicts and household relationships, and cultural histories all become homogenized before the advancing forces of globalization” (Grossman 1998, 18. I would also add that it is not just social differences that get muted, but also non-human biotic and abiotic nature that act as creative forces enabling and constraining globalizing forces. Grossman goes on to stress that studies of agrarian change must be particularly attuned to, what he calls the “environmental rootedness” of agriculture and aquaculture, which specifically contextualizes market integration experiences .

I argue that seaweed, as an export crop, has been beneficial for the socioecosystem of Caluya, due to the particular ‘constellation’<sup>19</sup> of material characteristics of seaweed itself and Caluya as a place, the local social structures, as well as extra-local factors. This constellation has created conditions that differ from other cash crop experiences and are possibly more beneficial in than other seaweed cultivating communities.

## 6.2 Seaweed's Materialism

“During typhoons even land farming is difficult because you might get nothing and it takes a long time [to recover], you can recover only the next year... [In seaweed] you can plant again right after the calamity... I'm doing land farming since I'm young in Negros, sugar cane and rice. Seaweed is better. It has no land preparation too; you don't need to plow or weed it. No expenses in fertilizer and medicine.”

– seaweed farmer on Panagatan

The very ecology of seaweed has shaped the nature of the carrageenan commodity chain. Its robustness as a crop allows it to be grown in remote areas with turbulent weather patterns. It thrives in waters that have a fair current and sizeable wave action. While other crops are irreparably damaged by typhoons in the Philippines, seaweed is able to withstand such storms. Though it may break away from the lines the seaweed that washes up on shore and can be collected and replanted with no harm done. Amilita, a seaweed planter of Sibato, describes this difference:



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<sup>19</sup> I borrow this term from Tania Li's (2002) study of cocoa farmers in Sulawesi.

“If I just depend on copra I can’t send my children to school. For example [our coconuts] were hit by [Typhoon] Seniang<sup>20</sup> and until now have no fruits. If there is no tambalang what would I use to send my children to school? [We depend on] tambalang for everything.”

The fact that carrageenan is derived from dried seaweed increases the robustness of the crop. It can be transported from remote places without major investment in technology to protect the product, as needed when exporting delicate fruits or vegetables (Figure 18). It can also be stored for months in its dried form with no effect on the product quality. This storage ability was an important factor that enabled Filipino entrepreneurs to ride out the oversupply of the late 1970s and wait for an opportunity to create a domestic processing industry. No other developing country growing seaweed has such an established processing industry, instead exporting the raw product to transnational processors at a much lower price (Bryceson 2002). Because of this, Philippines seaweed farmers have a more stable market to sell to and a domestic industry that is working with government in an effort to promote and protect the livelihood.

Seaweeds robustness could be characterized as a negative since it has enabled capital to reach into even the remotest places, but for Caluya it offers an option allowing residents to participate in a cash market without having to migrate away. Residents have long been involved in market economies, but due to their remote location, transportation costs for the goods they could produce like mats and fresh fish meant they were getting low prices. A lack of options in the area forced many people to migrate away from their families and food resources to secure the cash necessary for participation in activities other areas considered basic rights such as schooling and medical care. Caluya’s remoteness has also helped keep the production process in the hands of farmers instead of extension agents, industrial buyers or state regulators. Additional support for farmers after weather or disease calamities would be welcomed only if transparency could be guaranteed. Local politics here is widely criticized as corrupt and, as far as planters are concerned, the less government interference the better. The only extension service



Fig. 18 Seaweed drying on concrete path, Sibato Island.

to have come to Caluya in recent memory recommended two techniques to increase production, both of which were completely infeasible in the waters of Caluya and were also much too capital intensive to warrant the risk. Planters own knowledge of and creative solutions to the inherent variables of weather and environmental conditions have served them well in dealing with disease outbreaks and storms. Joe, a buyer and former

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<sup>20</sup> In December of 2006 Typhoon Seniang hit this area of the Philippines shortly after the most devastating typhoon in 11 years, Typhoon Durian came through.

planter on Sibato Island, describes an inventive way, now aided new technology, to deal with turbulent weather:

“A risk in seaweed farming, for example, is typhoons. But people now have radios and others have TV already. [When they hear news about a typhoon] they try this technique to save their seaweeds: they take off the floats so that the seaweed sinks; and if the seaweed sinks the force [of the typhoon] will be weaker, because if it is floating the force is strong. When the strong wind blows, seaweed will be washed out. That is why they let it sink; to reduce pressure. After typhoon it is still there.”

Local buyers have also benefited from their ‘rootedness’ in place. International and Philippines processing companies from other cities do not have the relational connections needed to gain trust in the close knit social circumstances. Capitalizing on this, local buyers have been able to manage trade on the islands and direct credit systems in line with traditional rules of redistribution.

### 6.3 Material Constraints on Corporate Control

As I mentioned earlier, the only control the industry is able to exert on seaweed farmers is a modicum of quality control. Again, this is largely due the nature of seaweed itself. Seaweed planters maintain control of their own inputs and are not forced, as in other export crops, to buy expensive seeds and fertilizers from agro-companies each season. Seaweed seedlings are merely cuttings from the larger plant and are always available. People maintain their own nursery lines, constantly renewing their stocks of seedlings. If a calamity such as disease or a typhoon should wipe out their seedlings, they can easily buy new seedlings from a neighbour or collect wash out to recover. Seaweed planting is so wide spread in the Philippines now that should something wipe out Caluya’s entire stocks, seedlings could be bought from elsewhere and slowly production would grow again. Corporations simply cannot patent or control the seedlings.

The only nutrients seaweed needs to grow is found in ocean areas with enough water movement, therefore, no added fertilizers or chemicals are needed. Pesticides would just wash away in the open ocean, so pest control is done by hand when inspecting the ropes. Not only does this negate the usual environmental degradation that accompanies intensive export crop farming, it helps to keep entry level capital costs low. Such farmer control over inputs is essential in keeping barriers to access low in cash crops. In the case of shrimp farming for example, the high cost of entry, relegates most rural poor to wage work on someone else’s farm. The low capital and simple technology needed to enter into the market has promoted the uptake of seaweed in a horizontal manner. This has not been a case of outside imposition of an export crop in a rural community. Residents embraced the opportunity to cash crop and spread the knowledge and technology through kin relations.

Corporate control is also constrained by the nature of seaweed’s growth pattern. Since seaweed grows in the open ocean, it is far more difficult to privatize, land title, and regulate seaweed plots than land plots. Caring for seaweed follows the patterns of tides and weather fluctuations. It cannot be governed by a set time clock of industrial



capitalism like crops that lent themselves to plantation farming. Not only has the nature of seaweed put input control squarely in the planters hands, the flexibility of labour needed to work with variations in daily, monthly and seasonal rhythms favours small holder entrepreneurs. It is not profitable for a company to hire wage labours to work on a seaweed plantation, so seaweed cultivation remains individually and family controlled. Some have argued that this type of family cash cropping creates a situation where farmers subsidize capital through self-exploitation (Macabuac 2005). I would argue that this self-exploitation is not limited to agriculture, but is common in many entrepreneurial businesses. Moreover, are the alternatives to this hybridized livelihood - full wage labour or full subsistence - either feasible or more desirable? In the case of Caluya, marginal agricultural land and declining fish stocks makes a subsistence lifestyle extremely difficult and the current offer of full proletarianization, through wage work in the tourist industry, does not appeal to seaweed planters for a number of reason discussed in section 7 of this paper. In fact, it is the addition of seaweed cultivation to people's diverse livelihood strategies that has enabled a successful revitalization of the area's agrarian and fishing livelihoods.

#### 6.4 Flexibility and Integration

The key to this assimilation is the flexible labour time allocation that seaweed entrepreneurs have. Seaweed plots take about 3-4 hours a day to maintain (though more or less may be called for at certain times in the growth cycle). This leaves plenty of time for planters to maintain land crops, to fish and glean marine resources, to care for children and the household as well as other activities. A mini case study within my larger case study clearly illustrates the benefits of the material characteristics of seaweed:

##### Seaweed and Food Security in Caluya

The Caluya Islands have always experienced precarious food security for a number of reasons. They are located at the meeting place of three seas: the Sulu Sea, the Sibuyan Sea, and the Mindoro Strait. Thus, they experience tumultuous ocean currents and waves as well as the turbulent typhoon weather of the Philippines. This leads to periodic destructions of land crops and regular storms that leave people stranded on their islands. While I was staying on Sibolo Island, we experienced a storm that isolated us on the island for six days. Seas were so rough no boats could get offshore even to fish. This is apparently common every rainy season and often can last for weeks. In fact, during the rainy season ferries through the Caluya Islands are often stopped altogether cutting people off for weeks from Mindoro and Panay Islands. Residents told me that previously, these weather events would lead to food shortages. With no electricity and, therefore, no refrigeration, fresh fish would soon run out and other food items would spoil. People were left to subsist on dried fish and root crops that could be



Fig. 19 Some of the more rocky land on Sibato. Planted here with corn.

found.

Agricultural land on the islands is sufficient to provide most of people's vegetables and fruit for consumption, but it is too rocky to grow their staple food: rice (Figure 19). The practice of *halili* is how people get their rice on Caluya. Previously this meant, people would go to Mindoro to work on the rice fields there trading their labour for rice supplies. This, as well as migration for other cash work often left their own food crop land untended. As well, in recent decades, illegal fishing, commercial overfishing, and pollution have led to serious declines in their fishing catch and therefore, their main source of protein.

With the uptake of seaweed cultivation, much of this changed. Unlike other cash crops, it is grown in the ocean and, therefore, does not displace food crop land, nor is it a case of a diet staple being exported out of the community. A major shift in labour relations has increased the amount of labour time available for food resources. As mentioned above, seaweed has offered the opportunity for people to move permanently home and still earn cash. This has meant more labour available for food crops, fishing, and food gathering and the flexible nature of seaweed planting allows for these other activities to be major parts of the work day. No longer is a member of the family away doing wage work, leaving other members entirely in charge of food and household maintenance. Now, most families I worked with share the labour of both seaweed planting and food crops.

Food sharing practices on the island also play an important redistributive role. It is common for families and neighbours to give food to each other to help with shortages, with the expectation of reciprocation in the future. More wealthy members of extended families are also expected to share their resources with poorer families and frequently do so. The time available to people during the day is essential for maintaining this food sharing (Figure 10). Community activities usually involve food sharing and these events are important parts of poorer families food strategies. Such events include birthday parties, wakes (which go on for days), and other family celebrations. These events, especially if hosted by a barangay official, are expected to provide food for anyone who attends, especially children and happen once or twice each week. Larger community food sharing events include barangay and religious fiestas.

Labour time allocation is further improved because of the flexible growth and harvest patterns of seaweed. Seaweed grows year round and can be planted at almost any time. This allows planters to plan their labour schedules according to how much time they want to spend on their seaweed, their land crops, and other activities depending on the rhythm of the seasons and social life. Furthermore, seaweed can be harvested at any time during its growth cycle. Ideally, it is best to let it grow for 1.5 -2 months in terms of quality, but there is no particular time when it is "ripe" like other crops. As this seaweed planter from Caluya Island explains,



Fig 20. Seventh birthday party of Barangay Captain's son, Sibolo. The entire island waited for their turn to eat. It took about three hours to feed everyone.

“It helps a lot because, if you don’t have rice, if you can harvest even just one monoline [of seaweed] you will have rice.”

Having seaweed really is like having a savings account; it is basically cash in hand. If there is an emergency, a planter can harvest seedlings only put in the water the day before. They can dry them and get cash right away. The ability to plan harvest times outside of a strict natural season, helps families plan financially for expensive activities like weddings. For example, many families plant a large batch of line at the end of March so they can harvest in volume in time for college tuition fees in June.

Seaweed may not displace land crops, but how does it integrate with marine resources? As mentioned earlier, though the seaweed lines are privately owned, fishing and marine resource collection happens in and around the lines in an open access system. In fact, according to locals<sup>21</sup> the seaweed is helping to regenerate the damaged coral ecosystems around the islands. The seaweed areas have now been planted over top of the damaged coral for almost 15 years. This has acted as a protective cover and stopped inshore dynamite and cyanide fishing. Lines are spaced far enough apart to allow sufficient light in so that in many places corals are visibly coming back and with them small fish and invertebrates. These are also attracted to the seaweed for grazing and to lay their eggs amongst it. In this case, seaweed has served to increase the amount of fish available for consumption and the marine resources available to sell. People discovered that octopus are particularly attracted to seaweed to lay their eggs and hide at low tide.



Fig. 21 Octopus eggs in seaweed.

Planters will intentionally bunch up their seaweed (Figure 21) to attract them since they fetch a high price on the market.

Finally, the cash flow that seaweed has brought to the area has also impacted food security. Along with immediate cash in emergencies, the cash has allowed to people to purchase canned and dried food items, which can be stored lessening the impact of weather related isolation. Commodities such as generators and iceboxes allow fish to be kept for longer and motors, unaffordable previously, allow fisher to go further afield for big fish and lessen labour time needed to travel back and forth from seaweed areas. Cash has also changed how people get their rice supply. Rather than trading labour on Mindoro for rice, *halili* is now done through cash. Caluya seaweed farmers send cash at the beginning of the rice season for Mindoro farmers to buy inputs and they are paid back in kind with rice delivered at harvest time, therefore guarantee a supply of their staple food.

Clearly, in contrast to other export crops, seaweed has positively affected food security in Caluya.

<sup>21</sup> This is corroborated by Mandagi and White’s (2003) study.

## 6.5 Co-constitution of Caluya's Socionature

As the discussion above reveals, it is not easy to split the non-human side of the equation from the social. The environment is not just a receptor of human modification (Zimmerer & Bassett 2003), rather environmental variables interact and interweave with social variables creating unexpected local livelihood shifts and unintended ecological consequences (Castree 1997). It is not only the materiality of seaweed that conditions the success of market integration for a community. Case studies from Mindanao and Tanzania show that, while communities there are benefiting from seaweed somewhat, they still find themselves in a precarious position (Bryceson 2002; Jain 2006; Macabuaac 2005). I argue that there are certain characteristics of Caluya's local social system that have, along with the nature of seaweed, co-constituted the success experienced here. The lack of local elite control of seaweed areas was mentioned earlier, other factors are elaborated below.

The kin based social structure of Caluya has created a credit system guided by relational trust and, therefore, not overly exploitative. Credit and loans are not just between planters and buyer, but also between family and friends. These zero-interest, risk-sharing strategies through loans and gifts allows families to better deal with income variation and economic shocks (Fafchamps & Lund 2003). The relational social structure also makes work easier through labour and knowledge sharing and a traditionally open access system to food resources like fruit trees, root crops and marine collection also facilitates a more even standard of living across the islands. Through these traditional structures almost all families have access to land and fishing equipment and, therefore have an established 'exit' strategy should seaweed planting become unviable. This is true here since most planters are established residents, unlike the situation in areas of Mindanao where many planters are refugees from conflict situations with no claim to land in their new area. Even on Panagatan, where most planters are not residents, many still have land and assets at home that they maintain through money made from seaweed. The planters and families in the most precarious situations in Caluya are generally those who are newcomers to their planting island and been forced to migrate because of economic hardship elsewhere.

Importantly, in Caluya the articulation between capitalist production – commodity production for the market, capital accumulation, and export led growth (Gibson-Graham 2005), and kin based social reproduction activities has produced what Gibson-Graham (2005) term a "diverse economy". By mapping out some of Caluya's diverse economy, following Gibson-Graham's method, (Table 5) it is clear that the classically recognized capitalist economic activities of seaweed are contingent on many other non-market activities. Without these diverse economic relations, seaweed cultivation as a market integration strategy may not have such a positive outcome.

Table 5. Diverse Economy of Caluya Islands

Transactions	Labour	Enterprise
<p><i>Alternative Market</i></p> <ul style="list-style-type: none"> <li>▪ ‘suki’ relations at sari sari store and seaweed buyers</li> <li>▪ sidewalk vending</li> <li>▪ seaweed paid for groceries</li> <li>▪ ‘halili’ system –seaweed farmers get credit, give capital and /or labour to rice farmers in Mindoro in exchange for rice</li> <li>▪ micro-credit lending</li> <li>▪ ‘patinga’ – advanced money for unborn animals</li> <li>▪ barter – fish, crops</li> </ul> <p><i>Non-market</i></p> <ul style="list-style-type: none"> <li>▪ food sharing</li> <li>▪ childcare sharing</li> <li>▪ animal and seaweed area caring sharing</li> <li>▪ care of household</li> <li>▪ school feeding program</li> <li>▪ gifts of money to newlyweds</li> <li>▪ ‘gala’ –sharing of fiesta expenses</li> <li>▪ donated labour and materials to build school</li> <li>▪ debt of gratitude</li> <li>▪ ‘bulos bulos’ – sharing of seaweed area from season to season</li> <li>▪ free water source built by one family</li> </ul>	<p><i>Alternative paid</i></p> <ul style="list-style-type: none"> <li>▪ self-employed – farmers, fishers, seaweed traders</li> <li>▪ ‘buligay’ – reciprocal labour sharing on farms</li> <li>▪ exchange of labour services</li> <li>▪ in kind payment – land farm help for part of harvest, seaweed labour for part of harvest</li> <li>▪ tenant seaweed farmers paid with a percentage of harvest</li> <li>▪ hired labour – 150 per day plus meals</li> </ul> <p><i>Unpaid</i></p> <ul style="list-style-type: none"> <li>▪ voluntary work to help baranagay</li> <li>▪ help with cooking and preparation for weddings, wakes, and fiestas</li> <li>▪ family labour on farms and business</li> <li>▪ household reproduction</li> <li>▪ church work</li> </ul>	<p><i>Non-capitalist</i></p> <ul style="list-style-type: none"> <li>▪ schools</li> <li>▪ NGOs (in the past)</li> <li>▪ fishing enterprise</li> <li>▪ farms</li> <li>▪ small-scale producers – carpenters, chainsaw operators, cock breeding, videoke and pool table</li> <li>▪ tenant farms</li> </ul>

The ‘transactions’ column shows the way in which goods, finances, and services flow between actors and are reciprocated and redistributed. Many of these flows are ways that people in Caluya access cash, credit and assistance with financial burdens outside of formal institutions. The ‘labour’ column includes work traditionally left out of economic valuation and demonstrates range of unpaid labour practices while the ‘enterprise’ column shows work that is not necessarily under capitalist relations of production. What is clear is that the more capitalist market relations of seaweed are supported by “a thick mesh” of traditional practices, through which “a network of bonding and bridging relationships creates complex interdependencies within and across kin groupings and neighborhoods” (Gibson-Graham 2005, 16) It is these practices, as evidenced in the food security discussion, that are indispensable for redistributing wealth and decreasing inequity on the islands.

## 6.6 Vulnerabilities of the Seaweed Industry in Caluya

The same social kin networks that support the well being of most people in Caluya, can also have negative consequences for others. Such tightly knit communities can exclude outsiders and isolate marginalized members as well as place excessive claims on group members and restrictions on individual freedoms (Turner 2007). This has created barriers to entry or expansion for some such that it is increasingly difficult for newcomers to access areas in Caluya. Consequently, though this has yet to happen in a widespread way here, possible future conflict and consolidation of scarce areas may result. This may also occur in the future if the kin based risk-sharing structure is unable to absorb large financial crises. In fact, two of the processing company managers I interviewed in Cebu felt that the lack of safety net for planters was the main reason there has been an undersupply of seaweed in the Philippines over the last two seasons. Many planters, they said, did not have the capital resources to restart after major crop losses to disease or weather events. To this end, the Seaweed Industry Association of the Philippines has been working with the government to create insurance schemes for seaweed planters.

Changes in the ecosystem seaweed relies on for nutrients may be one of the largest vulnerabilities seaweed planters face. Seaweed cannot grow in polluted waters; even slight pollution makes it more susceptible to disease. Planters on Semirara Island, Caluya have already learnt this. As the coal mine there continues to expand and create polluted runoff, planters have been forced to abandon their seaweed. I met many planters from Semirara trying to restart their farms on Panagatan Cays instead. Planters in the rest of Caluya asserted that the pollution from Semirara also affects their seaweed. Over the years, the good seaweed season has shortened and many feel that this is not just due to normal weather patterns. During certain times of the year monsoon winds in the area change direction and instead of blowing from Sibato, Caluya and Sibolo towards Semirara, they blow from Semirara, often carrying with them pollution. A number of planters reported actually being able to see a black coating on their seaweed at this time of the year. This certainly seems a credible explanation since the smoke plumes from the coal mine are visible from Sibato which is two hours away. Most interviewees who had been planting since the start of the seaweed boom trace the beginning of the downturn in seasonal productivity to the late 1990s, which coincides with corporate restructuring and increased mining activity at the Simrara coal mine ([www.semiraramining.com](http://www.semiraramining.com) and pers. com. with researchers at the University of the Philippines<sup>22</sup>) In Barangay San Roque, Mindanao, Macabuac (2005) has documented that the seaweed there has stopped growing in the shallow areas because of increased pollution as well as fresh water run off from

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<sup>22</sup> These researchers had been on Semirara in 1996 assessing the impact of an oil spill off the coast. Among them were experts on mangrove ecosystems, and since the island is usually closed to researchers, they also did some assessment of the environmental damages being sustained by the coal mining operations as well as some of the devastating social marginalization there. Once the company found out, they were told in no uncertain terms to cease inquiries and had to leave the island. Since, they have been 'informed' that their research cannot be published.



monsoon flooding. There has been no recovery for a year and poorer households do not have the capital to invest in a boat for planning in deeper waters.

Other seaweed planters in Caluya attribute this loss of productivity to overuse of the nutrients in the water. As Cecilio, a planter on Caluya Island states, “it is like rice fields if you always plant on it... No rest...” Indeed, seaweed, though relatively benign environmentally does have effects on its ecosystem. Mandagi and White (2005) show that seaweed farms can affect the amount of light available to corals or seagrass that lie under the lines and as a result of different compounds they emit while growing can push other seaweeds and organisms out of the area. At the same time new species are attracted, which changes the ecosystem dynamics of the area. Planters can also damage coral and other substrates when planting (Primavera 2006), and this was mentioned by a planter in one of the Sibolo Island focus groups as being a negative effect of seaweed cultivation. As Zimmerer and Bassett (2003) point out socionatural systems are never completely stable and are “subject to change due to the dynamic nature of the environmental world”(4).

It is not just the dynamics of non-human actors that make seaweed cultivation vulnerable, but also the ever-shifting political economic sphere within which it is embedded. It is important to understand the influence that local context has, but relative agency should not be over-exaggerated either. Seaweed planters are still marginalized within broader networks and their decision to take up seaweed planting is made within a narrow set of choices that can change quickly. Extra-local processes exert pressure sometime beyond the control of local residents. In Caluya, the largest threat to seaweed cultivation as a livelihood is the intervention of outside capital and a competing form of market integration. Though seaweed cultivation has achieved relative socioecological sustainability, planters are not protected from powerful investment interests in tourism that are politically connected. The next section describes the proposal and ongoing process against the backdrop of Philippines tourism policy.

## 7. Tourism Comes to Caluya



Fig 22. A view of the beach fronting the land bought by Fil Estates. Low tide, bottom, reveals the seaweed lines that stretch for acres. Lines are planted from the shore out to the natural coral break water, just barely visible at high tide as a dark line, top photo, on the horizon.

Ironically, the very qualities that make Caluya ideal for seaweed cultivation – shallow, sandy beaches; clear, unpolluted waters, and a coral reef to break the waves – are also considered perfect for sun, sand, and sea tourism. In fact, the characteristics overlap so neatly that the two markets are literally competing for the same stretches of beachfront. Thus far, development plans have proceeded under the watchful eye of the now former mayor, with very few people beyond his family and the development company aware of the magnitude of the proposal. The remoteness of Caluya has enabled, what is proving to be a contentious community issue, to proceed out of view of the broader Philippines public. There are no active NGOs in Caluya and, since the devolution of powers to Local Government Units (LGUs), local elite power dominates development decisions.

Philippines has consistently promoted tourism as a sustainable development alternative for rural poor and an alternative to more destructive resource extraction options. According to the government's Medium Term Development Plan, "the Philippines has a natural competitive advantage in tourism because of the warmth of its people and its natural wonders that are yet to be fully harnessed" ([www.neda.gov.ph](http://www.neda.gov.ph)). It will "aggressively" market the country as a tourist destination, striving to increase visitor numbers and liberalize the investment environment. At the same time, the Department of Agriculture is also pursuing a national strategy of community based coastal management and seaweed cultivation to reduce rural poverty. This reflects the fragmented and contradictory nature of policy making at the national level.



The Caluya Islands are only a four hour boat trip from Boracay, “jewel of the Philippines” and pride of the tourism development sector (Trousdale 1999). Now that Boracay has become over developed (Carter 2004), it seems that Fil Estate, one of the largest investors in Boracay has set out to find an new ‘unspoiled’ destination for development. “Nature,” as their website enthuses, is after all their “partner in development” (fegc.brinkster.net) and, indeed, the difference matter makes is at the heart of this analysis. Nature’s role in simultaneously enabling and constraining this new development is closely intertwined with social power tensions. The company now has proposed a five-year development plan for Caluya municipality (see Map 5) that includes hotels and resorts on Sibolo, Sibato and Caluya Islands, an international airport on Caluya Island, an airstrip on Sibolo Island, and a golf course also on Caluya Island. They have been working closely over the last few years with the ex-mayor to secure land titles or rental agreements with residents and to change the municipal zoning laws to allow for tourist development in the area.

Essentially, there is a struggle beginning in Caluya about who has the power to construct space in the image they see as most productive. Fil estates would like to erase the image of a ‘working’ socionature (Figure 23) and replace it with an image of paradise and leisure (Figure 24). It must be recalled that resources and ‘useful’ space are not inevitable products of nature, but are social created demands. The processes here that will lead to one use or another are not timeless or spaceless, but rather are products of environmentally rooted political struggle with “serious human, economic, and ecological costs impacting on real people and real environments” (Castree 1997). It is not just profits, but Caluya’s rural livelihood that depends on the outcome.



Fig.23 A couple working on their seaweed lines, Sibolo Island.



Fig.24 Looking back from the shore at the point owned by Fil Estate, Sibolo Island.

I focus here on Sibolo Island where the developer has already secured land titles and is moving forward to get permits from the state. The following information about the proposed development plans is taken from interviews I conducted with two of the project managers from Fil Estate, Manila. While I was researching seaweed cultivation, they were visiting Caluya Islands, working to secure further land titles. They were also staying at the mayor’s house and I took the opportunity to speak with the mayor about the stage of the proposal. On Sibolo Island, I visited and talked extensively with the local man whom the company has hired to be the on site manager. He is a year younger than me,

with a lovely young daughter and wife. He is deeply connected to Sibolo Island and is happy to have found a viable living on the island, which meant he could move home and raise his family there. He was the first university graduate who grew up on Sibolo and comes from one of the central families on the island; his father has been the barangay captain several times and they have donated to community infrastructure projects.

In order to achieve the space they want, the developers wish to move the seaweed planters off their beachfront; what is now the most productive planting area on the island. Having bought the land that makes up the point of Sibolo the company would like to dredge around this tip, in a sweeping half circle 100 m wide, to “clean up the rocks” and make the area deeper for watersports (interview with Manila manager). They will then rebuild the existing natural coral breakwater to make it bigger. There are about 180 people planting here with approximately 5000 lines planted during the high growing season and the common beach area is also used for drying seaweed, tying and preparing lines, resting and having lunch, sorting fish catch and docking boats, as well as numerous other resource gathering activities. Map 5 shows the direct spatial conflict. The proposed developments overlay directly on resident’s current livelihood resources. Not only are seaweed areas affected but agricultural, housing and leisure areas as well.

When asked about their intentions towards the seaweed farmers, the company representatives offered a number of different answers, perhaps indicating that they had not yet solidified a plan. At first, the local manager informed me the planters’ seaweed areas would be bought or leased by the company to make up for the farmers’ loss of profit. The company would offer 20 000 pesos for 1 ha. He was not sure if this would be a one time payment or annual fee. Planters who have heard this offer agree that it is not sufficient. Most make between 15 000 and 30 000 pesos per harvest. 20 000 pesos cannot make up for the loss of their seaweed area. One planter expressed her misgivings about this:

He [the local manager] said that they would give money to those who are affected. [I am worried] that it is for a year only; that is our yearly source of income.... What if you do not know how to handle another business?

Given that sea plots cannot be legally titled, it may prove difficult to do this. Other company representatives I spoke with seemed confident they would be able to help the people currently planting on the affected shoreline to simply relocate to different areas off the island. As we looked at the sketch map together, they pointed out the areas that were not currently planted and, therefore, available. Either this suggestion was made up on the spot to appease me or the representatives clearly had no knowledge about the island’s geography, seaweed suitable areas, or the social context of the island.

The areas they hope to relocate affected farmers to are not suitable for seaweed planting since they are too rocky or deep, hence the reason no one is planting there currently. The other area they indicated is currently fully claimed and parceled out to resident planters. It is also the main beach front of the island from which boat traffic comes and goes. Since this area can only be planted seasonally, when the winds are blowing the right way, it may at times appear to be available. Any attempt to transplant hundreds of farmers into this area would result in chaos within the careful balanced ownership and use rights that are already recognized. These problems are also true of the

company's plan to relocate the seaweed planters on the beachfronts of Imba Barangay on Caluya Island. Further infrastructure planned for Sibolo includes a 2.2 km long airstrip. This airstrip is planned on the island's only agricultural land.

## 7.1 Material and Social Constraints

The remote location of Caluya Islands, and especially Sibolo Island, presents Fil Estate with an 'unspoiled' paradise to attract tourists, but it also presents difficulties in getting them there. Until an airport can be built, Fil Estate plans to 'fast ferry' island hoppers from the Boracay, the nearest established beach destination, about 4 hours by boat. The airport infrastructure needed is a major investment and commitment on the part of the company and means persuading many more people to sell their land. Another option the company may look at is a partnership with the Semirara Coal Mining Co. who have recently built an airstrip on Semirara for their company use. Landing here still leaves people a 2 hour boat ride away from Sibolo or Caluya Islands.

Lack of electricity and clean water are two issues the company is currently trying to address on Sibolo as well. The company brought in National Power Co to survey the island and plans to have private backup generators for the resort. The current wells dug on the island date from the early 1900s and the water sourced from them is salted. People use this water for cooking and bathing, but most residents have water brought from Caluya or Sibato, as well as relying on rainwater, for drinking. This lack of potable water is a major stumbling block for the development plans, but the company has brought in a diviner in an effort source a location on their property that may provide a freshwater, deep well. Water samples have been sent to Cebu for analysis. The company representatives assured me that if a fresh-water deep well was found it would be accessible to the residents of the island for no charge.

Securing land titles had also proven problematic for the company. Original titleholders who no longer live on the islands have sold much of the land already secured. This has caused friction between remaining family members who hold use rights to the land and created a tense social situation for the company's further negotiations. Efforts were made on Caluya and Sibato Islands to hold quiet, private meetings with landholders, but in such a close knit community, secrets are difficult to contain. Existing land conflict between multiple claimants is also hindering the company's acquisition plans. They are trying to override existing land declarations by buying land titles from the Municipal Assessors Office instead. Land titles are more formally recognized than declarations, but are also expensive to acquire. Many people fear their land declaration will be bought out by the company, without their knowledge. Even people willing to sell, are offended by the low prices offered by the company. They have offered to lease the land at 3.60 pesos per square meter per year with the contract renegotiable after 15 years, or to buy the land directly for 60 000 pesos per hectare (roughly 16 pesos per m<sup>2</sup>). To put this in perspective, land prices for areas that are undesirable and undeveloped on Boracay currently range from 4000 pesos/ m<sup>2</sup> to 10 000 pesos/ m<sup>2</sup> ([www.boracayinfo.com](http://www.boracayinfo.com)). Granted, Boracay property values are high, but even land in nearby Iloilo province, 1000 to 3000 pesos/ m<sup>2</sup>. Fil Estate informed me that prices could be renegotiated once new amenities increased the value.

Although, the company has been able to buy land on Sibolo, the above land tenure confusion and physical barriers to infrastructure development may eventually prove too costly for the company to overcome.

## 7.2 Resident Perception and Power

The residents of Sibolo Island are not of one voice about the tourist development. A handful have sold their land and a few people I spoke with believed it would be a new source of jobs and income. I spoke with three girls, aged 16-18, who work seasonally on Boracay Island. They felt that tourism on Sibolo would bring opportunity. All of them worked as maids for hotels or in private houses and were paid 1500 pesos a month, but with the cost of rent and food were left with no extra money. Nonetheless, they enjoyed the excitement of the island and wanted to go back to work there in hopes of meeting a man to marry. Finding someone to marry is difficult in Caluya where everyone is related, so it is common for people to find partners through text mates, pen pals, working elsewhere, or from the visiting cargo boats. Thus, hoping to meet a husband through work on Boracay is not out of the ordinary. Older people who have children working on Boracay or who had visited it, are very worried that Caluya could possibly turn into a second Boracay. Concerns centre on the potential loss of their seaweed livelihood, but go beyond that and include concerns about changes in values and safety of their children. Concerns I heard expressed by residents during interviews, conversations and focus groups are gathered below (Table 6 ).

Table 6. Caluya Residents' Concerns about Tourism

- “Where will we be able to park our motor boat?”
- Foreigners will bring bad habits to the islands that our children and husbands might follow like drugs, more gambling and videoke, prostitutes and girls to look at.
- “The children will copy the habits they see. There will be so many people here...drugs will come...”
- No credit system anymore if the seaweed is gone
- Return to more fishing, but the area for fishing would be restricted because of the tourist development and the rocky area of the island is not a good fishing area. Also, fishing income is less sure than seaweed planting because you cannot fish during bad weather.
- People might start dynamite fishing again
- “When seaweed is gone, poverty will return”
- We won’t have money to send our kids to school anymore
- People will have to go back to looking for work in Palawan and Mindoro
- The company will spray chemicals in the water to clear away algae, like they do on Boracay
- The company will bulldoze the area off the shore they own and kill any seaweed or corals there
- Small business may not be able to compete with big business owners who come to the island
- “If my son drinks during the nights...I have hypertension and the worries about it will make it worse.”

A week before my arrival on Sibolo the local project manager and company representative had held a meeting with residents of the island. Unfortunately, word about the meeting was not widely spread around the island and only 50 people attended. News spread quickly about the plans *after* the meeting, though, and everything was still being heatedly discussed when I arrived. One evening, I spoke to a group of about 15 adults, some of whom had been at the meeting, and all of whom were opposed to the plans. When asked if they had expressed their concerns at the meeting, they replied that they “just kept quiet”, except for one man, who asked the company manager how the people of Sibolo would live without seaweed. The manager replied that they would pay the farmers who were affected, but could not give details when pressed. After the company representative pointed out that the man did not even have seaweed in the affected area, he did not ask any more questions. This group felt that they had lost their chance to complain. As one woman said,

“You can’t complain anymore. They said in the meeting that if you have problem you have to complain there and no more murmur about it after because there is a meeting already.”

During my focus group sessions, participants described residents of Sibolo as being intimidated by the company representatives. Most adults have no education past elementary school and do not feel they can speak against people with university degrees from Manila. People may also feel powerless in the face of collusion between the company and local politicians like the ex-mayor. Even the Municipal Planning Officer on Caluya Island had no knowledge of the stage the proposal was at. The mayor assured me that he had granted all the municipal permits needed, these appear never to have been approved, as is protocol, by the planning office. One planter noted,

“We can do nothing about it, because money runs the show. If the people unite they can stop it, but almost half of Sibolo is owned by the company.”

The company has yet to obtain the proper Environmental Compliance Certificate (ECC) from the Department of Environment and Natural Resources (DENR), however it has already begun to take action in the area. It has been clearing the land it now owns or rents and has begun to clear the land it is seeking title for where the Sibolo airstrip will be. They have placed markers in the water indicating the area that they plan to dredge and have told planters to move out of it. Residents are very confused about their rights and are not planting as many lines for fear that the company will take them when they want to start the project. At the meeting, the company representative implied to the residents that since the company owns the land, they also control the water. Residents were not aware of the Philippines fisheries laws which state, “municipal waters include all the bodies of water within the municipality, such as streams, rivers, ponds, lakes, and also portions of the coastal waters within fifteen (15) kilometers from the shoreline.” It is the local

government who controls these municipal waters and Sec. 2 (d) of the Fisheries Code clearly mandates the LGU “to *protect the rights of fisherfolk*, especially the local communities with *priority to municipal fisherfolk*, in the preferential use of the municipal waters” (p. xxx, emphasis added). The company and local politicians seem to be taking advantage of the lack of knowledge and confidence on the part of local seaweed planters.

### 7.3 Risk Averse Peasant vs. Capitalist Company?

Although Fil Estates is a development company from Manila, it is too easy to frame this struggle as a case of outside company against a united community. Within this clearly uneven power struggle, there are also internal differences on the islands. Some people in the community agree with the proposal, while others do not. Within families there are conflicting opinions. In some cases, decisions about shared family land have led to quarrels. Some members of the community argue that the long term life of the island will be threatened, while others look at the immediate gain they can receive from selling their land. There are those people who have not seen as much of a significant rise in their standard of living from seaweed farming as others and the prospect of money from the company is tempting. The company seems ready to exploit these tensions and is exacerbating them by making different promises to different people.

Nor is this a case of peasants rejecting capitalist intrusion in their space. Residents here have been quick to take up opportunities to farm market crops and join cash economies. People have experience with private property. Land titling exists here in different forms already and is mixed with open access commons. This is a struggle about control over access to resources and control over the related choices of livelihood strategy.

Seaweed cultivation has certainly integrated Caluya into global markets, but the spread of it as a livelihood while rapid, has been what some might call ‘organic’. It was embraced and shared by residents themselves as a new opportunity. Although, planters are producing a privately owned commodity, to do so they have not had to privatize the production area or limit access to the commons. People in this industry are entrepreneurs who own their seaweed farms and control the means of production. Some might argue whether this is indeed a capitalist society. Wood argues that a society is not capitalist unless all members are dependent on the market for their survival, while in non-capitalist societies people may take advantage of market opportunities, but maintain direct access to the means of production (in Hall 2004). Others (Gibson-Graham 2005; Mansfield 2007), would argue that capitalist relations can never be complete and are always buoyed by non-market activities. Nonetheless, Caluya is involved in what Hall calls “analytical stand-ins for capitalism” such as market relations, commercialization, and global economics (Hall 2004, 402) and as such is vulnerable in some ways. The economy here might be more aptly labeled a hybrid economy with one foot firmly planted in global markets and the other in subsistence. Similar to what Dodds (1998) describes in another context, in Caluya the fluctuation cycle in various markets and livelihood strategies has created opportunities to enjoy market benefits, but, thus far, they have not come under long term corporate control and have maintained economic autonomy.

In stark contrast, the integration of Caluya into global markets through tourism is taking place through very different processes. The development plans are more closely

following capitalist market processes. First, possible enclosure of open access resources through de facto privatization of beachfronts and marine spaces; second, the loss of resource control leads to the loss of ownership over the means of production for seaweed farming, turning owners into wage labourers, more dependent on a third party for survival; third, the process is being led by top down, outside force with the collusion of local elites. This, like seaweed cultivation, is also situated in larger networks of power including state policies through the DENR and the Department of Tourism. As Sneddon (2007) argues, capitalist development alone is not sufficient to explain the process at work here. Consolidation of resources can often be a case of giving political favours to ensure stability and the result of power struggles at extra-local level.

#### 7.4 Implications for Residents

The question is, *whose* rights and freedoms are enhanced by these processes in Clauya, and how may inequities be exacerbated by such enclosure and dispossession? A seaweed buyer states his answer to this:

“When I was Barangay Captain, the municipal government wanted to give Sibato a budget to be a tourism area but the people of Sibato are not in favour of tourism because their seaweeds will be wiped out... [Tourism for the people of Sibato] means losing seaweed. We people of Sibato don’t agree because young and old people plant seaweed, but in tourism only the people with money will be benefited.”

Tourism may offer benefits to the community including a more diverse job base, entrepreneurial opportunities, opportunities for the emerging university and college educated younger generation, and increased services such as regular transportation to the mainland, electricity, improved health clinic, and new water sources. If the processes is undertaken with a more inclusive approach residents may be able to steer the development and guarantee more benefits. While being careful not to be overly predictive before this plan comes to fruition, with the help of research conducted on tourism development elsewhere I feel that some cautionary analysis of the future is warranted.

Stefan Gossling’s (2003, 2005) work in Zanibar showcases a similar conflict between seaweed cultivation and tourism development. Seaweed planting has now been displaced and pushed to marginal areas. This has resulted in a loss of income for seaweed planters as well as degradation to environments with a lot of coral, which are not suitable for seaweed cultivation (Gossling 2003). Tourism has impacted other environments on the island through increased deforestation, use of local building materials, sand quarrying and conversion of land (Gossling 2003). Many are leaving the community to look for work because they lack capital and knowledge to invest in the tourism sector, while conversely, there has been a large influx of migrants looking for work in tourism (Gossling 2005). This has led to additional stresses on local land and food resources. Closer to the context of Clauya, on nearby Boracay Island, Carter (2004) documents that initial economic promises have often ended up as net losses for the original residents. There has been a net loss of jobs as companies are consolidated under outside investment and labour with the appropriate skills is imported. Trousdale (1999) shows that Boracay

residents are exposed to market fluctuations and living costs have skyrocketed without accompanying income increases for many. Erosion of property rights has become a big issue on Boracay and Fil Estates, the same development company involved in Caluya, has been accused of clearing land and establishing infrastructure on property they do not own (Trousdale 1999). La Vina (2001) shows that competition between users for coastal resources is widespread in the Philippines and has often proved disastrous for small-scale marine users with most of the financial benefits accruing to users from outside the community and elites. This is further exacerbated by collusion of the local government which is in charge of zoning and the prohibitive expense of taking the companies like Fil Estate to court (Trousdale 1999). As Cooke (2004) argues, low-barrier access is crucial for the survival of marine-based livelihoods. It is difficult to imagine that the stated benefits of a tourism that is not community controlled will reach to the lower social levels in Caluya. As mentioned earlier, Caluya is not lacking for municipal money and yet basic services like clean water and electricity, which are again being promised in the guise of tourist development, have yet to materialize.

Using the above case studies and earlier analysis of why seaweed cultivation has improved lives here, I argue that following may be some implications of future tourist development in Caluya. The loss of access and control over resources that are currently the basis of production, means that many residents will be forced into wage labour work either on the island or away. This also means a return to previous problems with labour division and lack of control over labour time. Earlier the importance of labour flexibility and control over time allocation was discussed as being essential to food security and preservation of diverse livelihood strategies that include land farming, fishing, gleaning, and other small businesses. Flexible time is essential in maintenance of the diverse economy, which is so important for the well being and redistributive aspects of the community. As well, a simultaneous loss of access to the emergency cash seaweed offers and the social credits redistributive system may lead people into unmanageable debt. The income for wage labour being offered by the company, about 1500 pesos a month, does not come close to the cash income being earned by most seaweed planters and to earn this people would be working long hours, controlled by the company. It is clear that access to cash is not the only factor creating stable livelihoods here. The result of these changes to the socionatural relations may be a return to economic marginalization. This is further compounded by the dispossession of people's agricultural lands to development and the loss of their 'exit' strategy.

Political ecology's marginalization and degradation theory argues that under conditions of marginalization and social disruption ecosystem degradation tends to follow as people are forced to exploit more marginal resources (Robbins 2004). This is not to say that environmental degradation did not exist before. Illegal fishing, still practiced by a few fishers in deep water, was once rampant here, but with the introduction of a safer, viable livelihood it has now stopped. Environmental conservation is certainly not part of most people's deliberate actions here. There is no communal landfill and garbage is usually burned, but is often seen being tossed into the ocean. Plastics and disposable items are very new commodities here and people seem to treat them as they do biodegradable garbage, tossing it back to nature when finished with it. Some people are becoming aware of waste practices as garbage increases with commodity import. Thus far, though, it is not overwhelming since there is relatively little non-organic waste. It



may be more difficult for the ecosystem to handle the waste and garbage of a sudden influx of tourists and workers. The reduction here of ecosystem exploitation that has accompanied seaweed cultivation is because this economic improvement has come without people being dispossessed or pushed onto marginal lands.

In short, tourism development pushes market relations into the centre of life here, potentially undermining stable socionatural structures and disrupting the constellation of conditions that keep this system viable.

## 8. Conclusions

Actors involved in the struggle between seaweed cultivation and tourist development clearly hold uneven power to affect the outcome. Nevertheless, there are people who are ready to oppose the development. How can weaker actors resist development intrusion in their space? Bryant (1997) suggests two factors that are already beginning to emerge in Caluya: first, the powerful may not have a socially persuasive enough argument to win support without forceful coercion, and second, the power of collaboration. Clearly, as more is revealed about Fil Estate's plans to residents in Caluya, they are questioning the supposed benefits and critically thinking through the implications of tourism coming to their area. In the barangays directly affected, though there are some who support the development, the vast majority of residents I spoke with are adamantly opposed to it, even amongst those who would stand to benefit from it. However, there is talk, but very little action as of yet. This may be for a number of reasons, the first of which, feelings of inferiority and intimidation, I touch upon last section. This is not just true at the planters' level. Municipal officials are in desperate need of more funding and support to do their work properly. For example, the Municipal Development Officer wants to halt any further development on the plans until a new municipal development plan can be completed. The last was done in 1999 and includes almost no mention of seaweed cultivation and does not zone for it or for tourism. These plans are expensive and time consuming to complete and the officer is under threat of removal since the new mayor took office. After speaking with me on numerous occasions, and knowing that I would be returning to the University of the Philippines, he asked me to present the issue to professors at UPV in the hope that someone would be interested in helping. It is common for professors at UPV to use such opportunities to train students in field techniques and, in fact a professor has expressed interest for this year.

Residents of Sibolo, Sibato, and Imba barangays echoed this request for help as they learnt about the proposal through my research. Thus, my involvement in the issue became one of more than just a research observer. My relationship to many people became one of linking social capital, what Turner (2007) describes as a tie that enables connections between differing social and economic groups. The assumption of expertise people placed on me made it difficult to explain that my own power outside Caluya was just as a student with networks I could try to tap into. Nevertheless, as I explored more about the proposal and residents' opinions, I became increasingly concerned that the company was taking advantage of the community, lying to them about their rights, undertaking potentially environmentally damaging work without the proper permits, and undermining a relatively stable, prosperous economic system that is increasingly rare to find in coastal Philippines. People clearly were not aware of laws around use of municipal waters and their rights as residents near a proposed large-scale development to ask for social assessment and consultation.

The isolation of the municipality is problematic for residents when faced with this type of issue. Most people have no access to information or groups that can help because there are very few communication links. There are no landline telephones, no email, the cellphone signal is weak, and it is difficult to find places to load your cellphone with minutes. The 'linking capital' I could offer consisted of connecting residents to an NGO

in the city that works with communities fighting unwanted development and a journalist who reports on social issues. I brought information back and forth between the two, ensuring each party had contact numbers and names before I had to leave. I also brought the development to the attention of the Seaweed Industry Association during my interviews and they are very concerned, given the shortage already of seaweed producers in the Philippines. This could be an important tie for the planters to some very powerful actors with access to government. With all the research I was collecting, I was also able to begin to draw a larger picture of interconnections for both the residents and the NGO to work with. The NGO stressed that it is imperative for those in the community in opposition, to draft a position statement and submit it to the DENR *before* the permits are approved to signal community dissatisfaction with the plans. They, understandable, wanted to be contacted by someone from the community before traveling there to help.

Although, there is a strong, core group that is ready to oppose the development, and they are armed with all the contact information needed, they have yet to contact the NGO. This could be for numerous reasons. One possibility is that the people on Sibolo are not aware of how urgent it is to act. Time seems to move differently there and weeks go by in a rhythm of daily activity. There is no television news and very little radio news of the outside world and such a large change to island life seems unimaginable. Meanwhile, Fil Estate is working on 'Manila time' and continuing with permit applications. People vowed to take action if any machines started, but by then it might be too late. Also, barangay elections happened on the islands shortly after I left and everything was at a standstill for weeks before, during, and after. Both of the new barangay captains of Sibato and Sibolo are in the core opposition group and I am in touch with one of them still. To date, there has been no further work on the site, so hopefully, the collaborative links that have been established will flourish in the future.

### 8.1 Broader Lessons from Caluya's Experiences

Is this just a unique and exceptional case or can there be larger lessons drawn from Caluya's struggles and experiences with market integration? Previous studies on seaweed cultivation and aquaculture as development in general are too often focused solely on technical 'how tos' or enumerating success through aggregate poverty statistics. In this type of analysis, seaweed cultivation and tourism development may seem equally beneficial to rural communities in the creation of jobs and increase in income level. As this study has argued, though, not all market experiences are equal if investigated at the level of people's experiences and perceptions (Paulson & Gezon 2005; Irz et al. 2006). In this sense, tourism development in Caluya, may benefit quality of life if measured by income, but if the definition includes a degree of sovereignty over one's labour and resources as well as the ecological well-being of community, the answers lies beyond detached measures. My study suggests that there may be a 'tipping point' of market integration where a certain amount of control is relinquished to those outside the community and the social structure begins to break down.

Several key points emerge from the comparison between seaweed cultivation and tourist development in Caluya that I will conclude with. My research raises the possibility of identifying certain conditions that link market integration to positive benefits, rather than to marginalization, and explores the configurations under which those linkages are

most likely to occur (Robbins 2004). These conditions include: a degree of sovereignty over choices for individuals, families and communities; the ability of actors to maintain flexibility and diversity in myriad forms; and the degree to which market relations govern social reproduction. These conditions must be understood in their relation to the materiality within which they are embedded. Not only does the political economic sphere construct nature, but, as this research demonstrates, the enabling and constraining role of nature co-constitutes social possibilities. Without an awareness of this it is difficult to understand why complex processes proceed as they do.

Configurations of power are also important to focus on in order to understand how actors can creatively and beneficially integrate global markets into their livelihood strategies as well as seeing how specific historical and extra-local factors influence the shape of local socionatural systems. By demonstrating the interrelations between humans, non-humans, places and events in Caluya and clarifying how these relations are produced, I hope that lessons from this particular case can be useful in generating broader claims and understandings.

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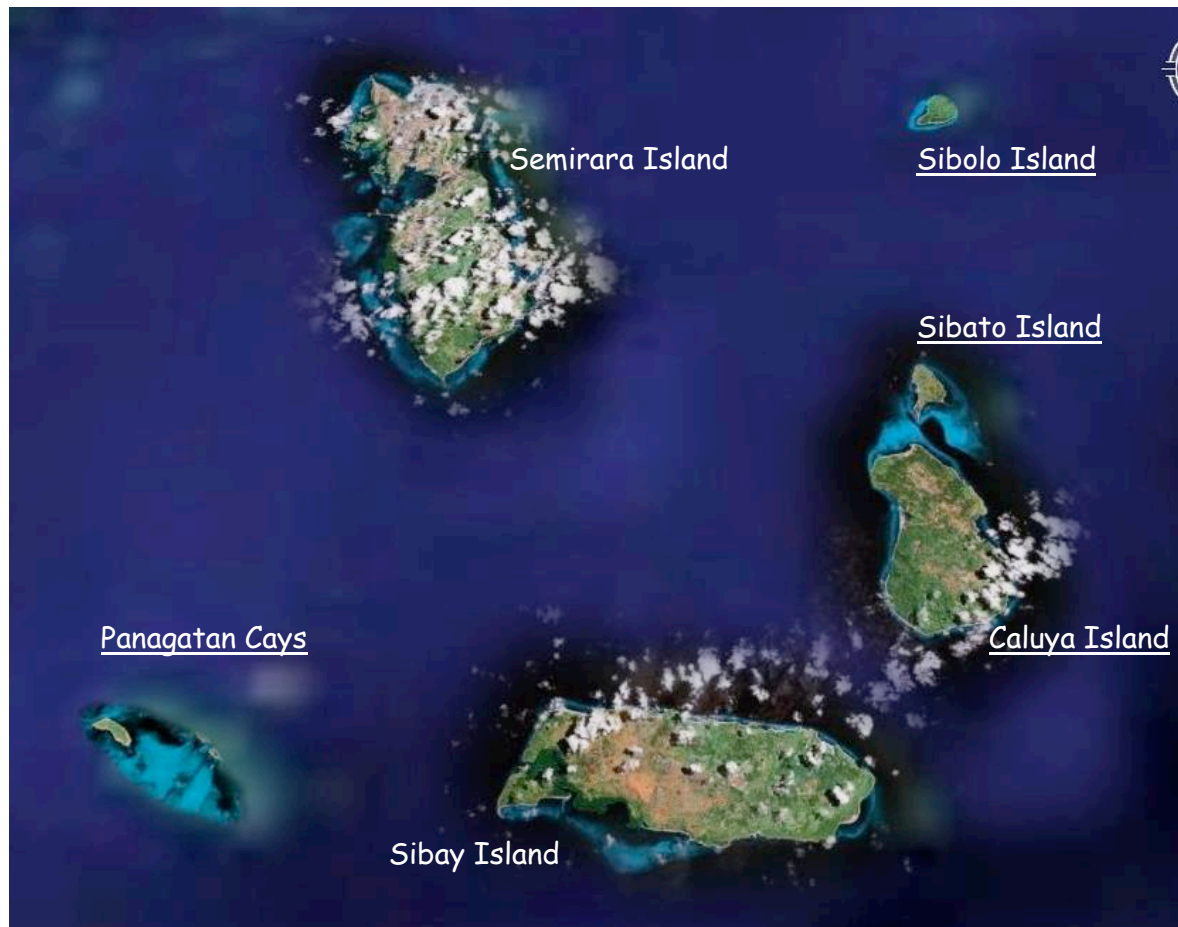
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Map 1. Location of the Municipality of Caluya, Antique Province, Philippines

Research sites are underlined. The light blue water indicates shallows and roughly corresponds to the seaweed planting areas.
















Map 2. Land use and Seaweed Areas, Sibato Island





Map 3. Land use and Seaweed Areas, Sibolo Island

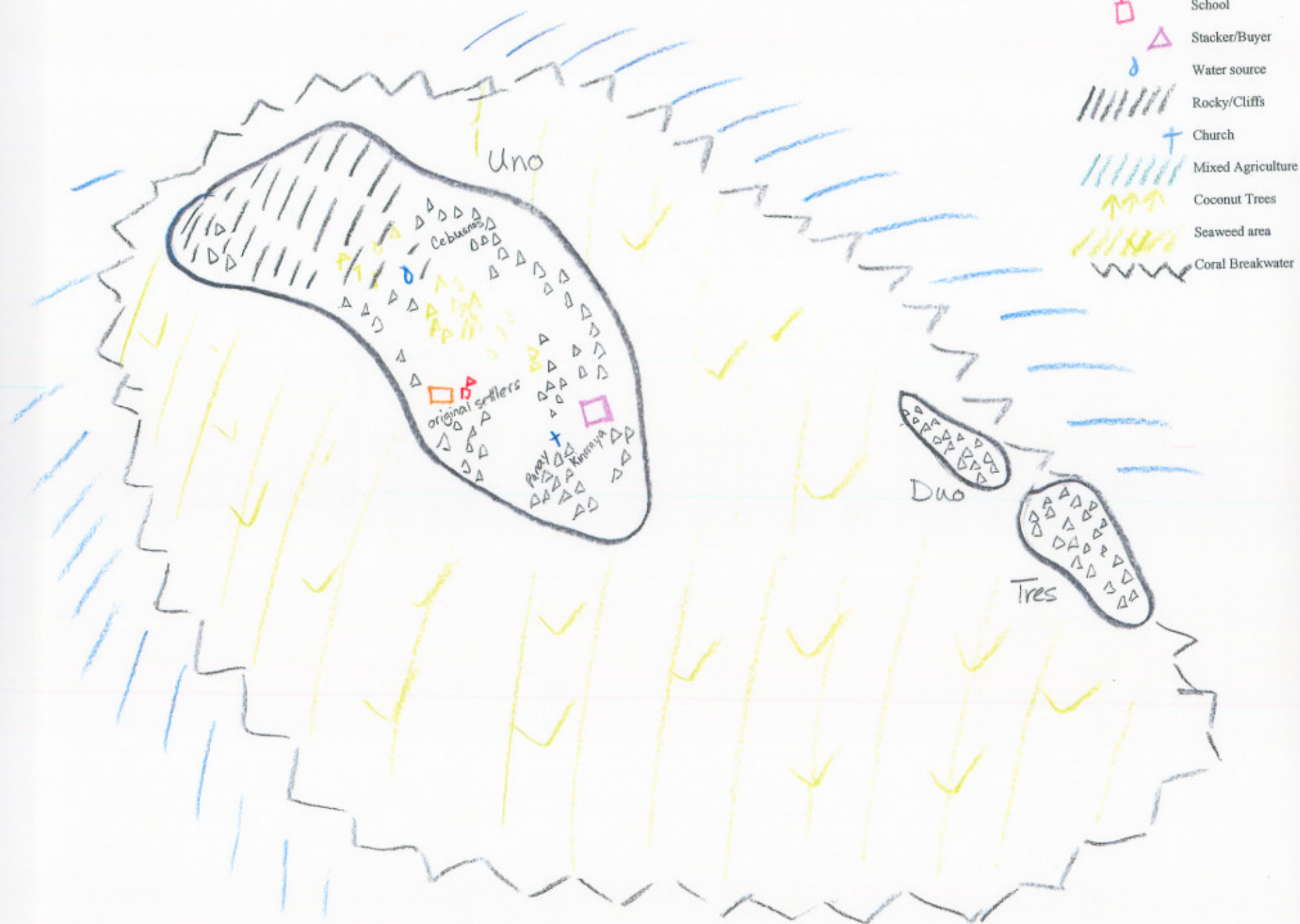
Legend

-  Houses
-  Plaza
-  School
-  Stacker/Buyer
-  Water source
-  Rocky/Cliffs
-  Church
-  Mixed Agriculture
-  Coconut Trees
-  Seaweed area
-  Coral Breakwater





Map 4. Land use and Seaweed Areas, Panagatan Cays



Map 5. Overlay of Fil Estate's Five-year Tourist Development Plan for Caluya Islands

Owned or rented by Fil Estate



Future development plans



- Legend
- Houses
  - Plaza
  - School
  - Stacker/Butler
  - Water source
  - Rocky/Cliffs
  - Church
  - Mixed Agriculture
  - Coconut Trees
  - Seaweed area
  - Coral Breakwater

