A Sweeter Alternative for Whom?
Sugarcane Ethanol Production and Rural Livelihoods in Northeast Brazil

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CHAPTER ONE

INTRODUCTION: RESEARCHING SUGARCANE ETHANOL PRODUCTION WITH A SOCIAL JUSTICE LENS IN NORTHEAST BRAZIL

Driven in large part by increased understanding of the dual threats of anthropogenic climate change and peak oil, numerous political leaders have in recent years advocated for expanded production and consumption of alternative fuel sources that might sustainably meet the planet's growing energy demand. Both the United States and the European Union have for years required a blend of ethanol in all gasoline, and have set targets for increased consumption and production of ethanol and biodiesel. Brazil, the leader in biofuels production and consumption for decades, has required that all gasoline be blended with domestically-produced sugarcane ethanol since the 1970s. With encouragement and support from the US-Brazil biofuels alliance, in addition to government and private sector investments from places like China and the European Union, a number of developing country governments have begun to promote biofuels production due to the opportunities that the high value export industry (with artificial demand created by US and EU government policies) presents for rural development, economic growth, and even increased energy security in a time of global insecurity (Cotula et al. 2008). Unfortunately, it seems that while the large-scale production of biofuels creates an illusion of energy security and greenhouse gas reduction with economic and social benefits, analysis of this complex topic reveals that the production of biofuels in many cases actually challenges global and local-level progress toward sustainable development due to the industry's numerous social, environmental, and economic impacts (Biofuelwatch 2007; Cotula et al. 2008; FAO 2008; Koh 2007; Peskett et al. 2007; Santa Barbara 2007; Von Braun 2007).

The biofuels era has drastically altered global land-use patterns and agricultural markets and has, according to the United Nations Food and Agriculture Organization (FAO), the International Food Policy Research Institute and other organizations, played a key role in creating the global food security crisis that impacted all nations and disproportionately afflicted the world's poor in 2008. Government policies in Brazil, the US, and the EU have been largely responsible for the biofuels boom by creating artificial demand for biofuels through required targets for consumption, providing market-distorting financial incentives to the private sector,

and encouraging developing countries in some cases already facing insecurity in the environmental, food, and land distribution sectors to dedicate significant portions of their land to large-scale biofuels production (Cotula et al. 2008). While biofuels were until 2008 almost universally lauded as "green" and a critical part of the solution to the climate crisis, full life-cycle analysis of crops grown on monocrop plantations such as sugarcane, soybean, and corn have revealed high rates of land conversion (including the conversion of tropical forests to agriculture) and the intensive use of fossil fuels in various aspects of production (e.g. fertilizers, pesticides, transport, processing, etc.), making biofuels in many cases carbon intensive (Koh 2007; Manuel 2006; Peskett et al. 2007; Santa Barbara 2007). These types of criticisms aimed at the biofuels industry have intensified since 2008, yet in the race to differentiate between "good" and "bad" models of biofuels production, academics, the NGO community, and policy-makers alike have often placed Brazil's sugarcane ethanol production in the category of "good," and have cited it as an "exception." A number of authors that criticize large-scale biofuels production models draw attention to Brazil's ethanol industry as a "sustainable" method of biomass production with fewer social costs than biofuels production in the US, EU, Indonesia, and other countries (e.g. FAO 2008; Searchinger et al. 2008).

Though praised by many, Brazil has a number of critics who denigrate its sugarcane ethanol program. These criticisms have tended to focus on environmental impacts such as those mentioned earlier, yet others have framed their arguments in terms of social justice by pointing out the industry's impact on the concentration of land and on its poor labor practices (e.g. Biofuelswatch 2007; Peskett et al. 2007; Santa Barbara 2007). Brazil's massive sugarcane ethanol industry is said to employ approximately two million people, many of whom engage in unskilled wage labor in the sugarcane fields (Martinez-Filho 2006). In a country with a high rate of poverty and unemployment, an industry which can soak up so many unskilled workers may seem like a blessing. However, international watch-dog organizations including Amnesty International and Anti-Slavery International have spoken out against some of the industry's practices that include child labor, forced labor, and debt bondage. Yet others have cited the use of pesticides without protection, the burning of sugarcane fields which is detrimental to the health of laborers and neighboring communities, and wages below living standards. Such practices are obviously detrimental to the livelihoods of the rural poor in Brazil. In many cases, those who work on sugarcane plantations are rural people who have been displaced from their

land (in large part due to the expansion of sugarcane plantations and agribusiness in general) and have little choice but to work in the plantations where, in addition to laboring under harsh conditions, they are employed for only six months per year and are not paid a wage that allows them to maintain their families (Biofuelwatch 2007; Peskett et al. 2007; Santa Barbara 2007).

With such condemnation of the industry by some organizations and individuals working in the human rights and social justice fields, in addition to questions about the efficiency and sustainability of producing ethanol from sugarcane, one cannot help but wonder why Brazilian ethanol is more often praised than not. The answer is complex and varies by stakeholder. In some cases, it seems that many environmentalists and environmental policy organizations have not been keen to let go of the hope that biofuels offer a type of silver bullet solution to climate change and reliance on fossil fuels, and have therefore sought to identify existing or future models of production that seem more efficient and more able to effectively displace petroleum. Some point out the fact that Brazil's sugarcane ethanol production clearly requires far fewer inputs than corn ethanol production in the United States, and that ethanol has been used in combination with or in place of gasoline for nearly forty years in Brazil, resulting in fewer emissions from vehicles, a decreased reliance on fossil fuel imports, and a certain degree of energy independence. Yet others in the field of international development have clung to the biofuels mantra due to their conviction that the production of agricultural products for ethanol or biodiesel might promote rural development, and quite possibly even pro-poor rural development when done correctly.[1] As this paper will reveal, however, the notion that biofuels production might be able to promote pro-poor rural development assumes that large-scale farmers are not preventing much needed land reform or forcing traditional people off the land in their expansion. It also assumes that large-scale farmers are not the only ones involved in growing biofuels, but that instead small family farmers also participate in raising fuel crops in addition to food crops, or at least have some form of steady employment that might help to raise families out of poverty.

In 2006, the Worldwatch Institute predicted that biofuels "could transform agriculture more profoundly than any development since the green revolution."[2] However, in the same ways in which the original green revolution's transformation of agriculture (through advanced agricultural technologies, increased inputs for increased outputs, movement toward economies of

[1] Cotula et al. 2008; Worldwatch Institute 2006.
[2] Worldwatch Institute 2006.

scale, monocropping, etc.) and subsequent impacts on the poor have been critically analyzed, the new "green revolution" that is perhaps occurring with the expansion of biofuels production worldwide must be similarly analyzed in terms of how it affects the poor. Increased production of a certain good does not necessarily mean that an increased proportion of the population is benefiting. In nations as diverse as Mozambique, Colombia, India, and Papua New Guinea, large-scale commercial biofuels production has been documented as having negative impacts on access to land and resources for the rural poor that often outweigh the opportunities for employment in the industry, replicating some of the negative aspects of the original green revolution.[3] Due to the inequalities and uneven distribution of land and agricultural resources that exist in most developing countries, it is likely that only through government intervention aimed at encouraging the sourcing of raw materials from small-scale production, will the benefits of the biofuels industry accrue to small family farmers rather than continuing to exclude them.[4] This of course begs the question of whether biofuels production can effectively substitute or at least displace some part of fossil fuels consumption without reliance on economies of scale that exclude or even harm small-scale farmers. Clearly, biofuels production has already begun to alter the politics and processes of rural development in Brazil and beyond, making it imperative that researchers conduct case studies documenting best and worst practices in order to strengthen the currently weak body of knowledge on biofuels and rural livelihoods.

The Need for Study of Ethanol Production with a Social Justice Lens

This research proposes to fill the gap in current research on global biofuels production, and on the Brazilian model of biofuels production (the predominant model in the developing world) focusing specifically on the impacts on rural livelihoods. In so doing, it aims to make a significant contribution to the ongoing international dialogue on best practices for sustainable biofuels policy, as well as energy and development policy in general. The previous section described some of the main points upon which the industry has received both criticism and praise, and made it clear that due to the lack of consensus on its benefits to rural communities, empirical research is needed. To this end, I conducted qualitative research with various stakeholders in the ethanol and sugar-producing Forest Region of Pernambuco, in Northeast

[3] Cotula et al., 2008.
[4] Ambramovay & Maglhaes 2007; Worldwatch Institute 2006

Brazil. My primary goals were to discover how rural communities are impacted by expanding ethanol production and the domestic and global biofuels policies, agreements, and discourses that support this expansion. My principal research question is the following: Does the production of sugarcane ethanol in Northeast Brazil promote sustainable rural development or perpetuate poverty in this already highly impoverished and unequal region?

In light of the current global expansion of biofuels production, the results of this research should contribute to an understanding of the social impacts of monoculture biofuels plantations, particularly when looking at issues affecting the rural poor such as access to land and food and livelihood security. Through this examination of the social impacts of ethanol production, I aim to fill a gap in the current literature on biofuels, which thus far has included alarmingly little on the issues of social justice that come with biofuels production. Literature discussing the negative impacts of biofuels has tended to focus on environmental issues much more than the social. Arthur Mol (2007: 298) points out that as biofuels draw increasing concern and public critique, particularly by environmentalists, the issues related to environmental sustainability are far more easily accommodated than "vulnerabilities for marginal and peripheral groups and countries" within the global integrated biofuels network. In acknowledgement and protest of the fact that little research exists on the impacts of ethanol production on rural livelihoods, and the lack of international frameworks to deal with negative effects of this expanding industry on highly vulnerable populations, I aim to analyze Brazilian ethanol production through a social justice lens and thereby contribute to a what should be a growing dialogue on the issue. A comprehensive analysis of the potential role that ethanol can play in the world's energy future should not only look at the savings at the pump for end-users, energy security for nations, or reduced tailpipe emissions; it is critical to ask what sorts of benefits and/or harms alternative fuels have on the environments and communities where they are produced. By giving a voice to the rural poor that populate one of Northeast Brazil's principal sugarcane-growing regions, I aim to let them answer the question of for whom sugarcane ethanol is actually a sweeter alternative. I hope that further research along these lines is conducted in the future.

Research Design and Methods

The inspiration for this research project came in 2007, as criticism of biofuels production in the US and abroad began to intensify, and numerous biofuels defenders and critics alike increasingly pointed to Brazil's sugarcane ethanol production as a more sustainable and promising approach to renewable fuels. In the fall of 2007 I conducted a brief review of the literature on the social and environmental costs of Brazil's ethanol industry as a preliminary step toward analyzing just how "green" the industry is. At this point the Brazilian model had for the most part been lauded by scholars and policy-makers as one of the most promising solutions to the dual crises of climate change and energy insecurity, but had received a few damning critiques from NGOs and academics for its social and ecological impacts. Considering the importance and timeliness of the topic, I realized that on the ground research in Brazil could help to fill the gaps in the existing literature on sugarcane ethanol. From my initial research and using contacts in the field, I developed a preliminary research design and funding proposal to conduct fieldwork in Brazil. In May 2008, in the midst of the global food crisis for which many had blamed biofuels expansion, I was awarded the National Security Education Program's David L. Boren Fellowship. This fellowship would allow me to develop the language skills necessary to conduct fieldwork, and the funding to spend several months in Brazil studying the topic.

While forming my research design and proposal for funding, I became interested in focusing my research on Northeast Brazil for multiple reasons. First of all, I had realized that the main gap in existing literature on the topic was that of social justice. Most literature primarily addressed ecological impacts and on occasion briefly mentioned some of the labor rights issues associated with sugarcane agriculture. My knowledge of Brazilian social issues, and in particular the country's acute inequality in distribution of income and land, led me to believe that the expansion of large-scale monoculture sugarcane production might have social impacts extending beyond the immediate and more visible labor issues. Some literature on biofuels expansion throughout the developing world pointed to the need for more on the ground case study research on the impacts of biofuels on the poor, especially in terms of their access to land and food security.[5] As the country's poorest region and the site of numerous ongoing battles over access to land and resources, Northeast Brazil seemed an ideal place to study the impacts of

[5] Cotula, 2008.

ethanol production with a social justice focus. This region also has the country's longest history of sugarcane production, beginning with Portuguese colonization in the sixteenth century. While the Northeast is no longer the center of sugarcane production (the industry is now largely centered in São Paulo and other southern states), it remains a big producer. It cannot compare to São Paulo in terms of the quantity of production, but the sugarcane industry in the Northeast comprises one the region's largest sectors of the economy. Perhaps most importantly, as the Brazilian government under the Lula administration frames its biofuels policy in terms of sustainable rural development, it encourages investment in both biodiesel and ethanol production in Northeast Brazil as a form of poverty reduction and economic growth for the region. Coming from a poor family in Northeast Brazil himself, President Inacio "Lula" da Silva promised poverty alleviation in the region during his campaign and has proven himself loyal to the cause through numerous (although often controversial in terms of their ability to alleviate poverty and inequality) projects and policies focused on the region. Thus, the lack of literature discussing ethanol production in terms of social justice, the conditions of inequality in access to land and resources in the region, combined with the current administration's focus on promoting biofuels production as a form of "sustainable development" in this impoverished region, led me to believe that Northeast Brazil would serve as an appropriate area in which to conduct a case study analyzing the capacity of sugarcane ethanol production to either perpetuate or alleviate rural poverty.

Other motivations for focusing my research on Northeast Brazil included support from faculty advisers and in-country contacts, as well as the potential for this region in particular to reveal lessons on biofuels and poverty that might have international relevance. While still developing my background knowledge on the issue and on particular regions in Brazil, contacts working in social and environmental justice in Brazil prodded me in the direction of focusing on the Northeast, for many of the reasons stated in the previous paragraph. Once I further developed this idea and presented it to advisors on the faculty of American University, I found that it was well received. With my interest in analyzing sugarcane ethanol production through a social justice lens, it was agreed that Northeast Brazil seemed a pertinent region to study. The high incidence of poverty, inequality, and food and livelihood insecurity in Northeast Brazil makes this region an appropriate place to conduct a case study with relevance for other parts of the developing world. The expansion of biofuels throughout the world, and particularly in poor

nations that are rich in land and cheap labor, and therefore now viewed as having a comparative advantage in "biomass wealth" is predicted to have consequences for the rural poor.[6] As previously mentioned, some view the global biofuels boom as an opportunity to raise farm incomes, revitalize land use and strengthen rural economies, thereby promoting rural development.[7] Others forecast increasing concentration of land in the hands of the wealthy, to the detriment of vulnerable populations.[8] Yet others argue that the existence and proliferation of different models could lead to varied outcomes, with benefits accruing to the rural poor under certain modes of production, and harmful consequences under others.[9] Because it possesses certain social and economic qualities common to many of the "biomass rich" developing countries, Northeast Brazil seemed like the best place in this large and diverse nation to conduct a case study that might reveal some of the social impacts that could be expected in other parts of the world as biofuels expand.

In choosing a host organization in Brazil, I followed the advice of an American University faculty member, Miguel Carter, who has extensive experience studying social justice and land rights in Brazil. Miguel's advice led me to the Pastoral Land Commission (CPT), one of the country's oldest and most prominent social justice non-governmental organizations (NGOs). Founded by liberation theologists of the Catholic Church in the 1960s, CPT works to promote land rights for poor and traditional communities, and to defend the rights of rural workers. CPT's regional office based in Recife, Pernambuco offered to host me during the nearly six month period of my fieldwork in Brazil. Coordinating my fieldwork with CPT's ongoing work to evaluate conditions in and around Pernambuco's sugarcane plantations granted me the knowledge, connections, and legitimacy I needed to effectively conduct my research with sugarcane cutters and rural communities in the region. In addition, my collaboration with CPT provided me with invaluable access to information and data on conditions in rural Pernambuco, and the opportunity to observe and even participate in the work of an explicitly anti-biofuels, pro-poor stakeholder. I acknowledge that my decision to collaborate with CPT shaped and even biased my field experience in many ways. While the affiliation may have kept me from viewing the rural Pernambucan reality objectively and surely shaped my subjects' view of me as a

[6] Mol, 2007.
[7] Worldwatch Institute 2007
[8] Mol, 2007.
[9] Cotula et al. 2008.

researcher and activist, it also allowed me to access rural populations that might never have been interested in or willing to grant interviews otherwise. For this reason, I believe that my collaboration with CPT had an overall constructive impact on my research.

The research presented in this paper is based upon a combination of various qualitative data-gathering techniques. By triangulating between participant observation, various types of interviews, and content analysis, my research on the impacts of sugarcane ethanol production on rural livelihoods closely resembled ethnography. I based my decision to use the *triangulation*, or "multiple lines of sight," approach on Bruce L. Berg's suggestion that it allows the researcher to combine various data-collection techniques to investigate a single phenomenon, and recognizes the fact that "each method…reveals slightly different facets of the same symbolic reality."[10]

Looking back on my time in the field, I am convinced that the use of only one method of data-collection would not have resulted in an accurate understanding of the dynamic reality(ies) found in Pernambuco's sugarcane-producing region. The data acquired through the different research methods will be related to one another in the analysis section of this paper.

I carried out participant observation with CPT throughout my nearly six months in Pernambuco. CPT is an important actor in the pro-poor, pro-land rights social movement in the region. Therefore, my time spent conducting participant observation in the CPT office, at meetings and events, and on field visits with CPT agents, allowed me to 'soak up' the theory and discourse driving the NGO's actions and motivating their explicitly anti-ethanol stance. Much of my time there was spent shadowing two particular CPT agents as they carried out their work of documenting conditions in the sugarcane plantations and organizing land reform settlements and camps. I offered assistance to these agents when it seemed appropriate or was requested, although I more often observed and asked questions of them as I sought to understand their work and the reality of the rural workers and land reform settlers they accompanied. Throughout my time with CPT I also contributed to the organization's work by occasionally translating documents and videos, and assisting with basic secretarial duties.

I began my fieldwork by shadowing CPT agents and conducting participant observation within the organization itself, and I then used the knowledge and contacts I had attained to extend my network of research subjects to rural workers and community members themselves. While still shadowing the CPT agents, I began conducting brief, informal, semi-structured

[10] Berg, 2007: 5.

interviews with sugarcane cutters and with people living in landless settlements, many of whom had cut cane their entire lives prior to becoming small-scale farmers via Brazil's national land reform program. As my knowledge of the relevant issues, my ability to interact in the culture, and my base of contacts all grew, I was able to begin making trips into the countryside on my own. The ability to travel independently facilitated more extended visits to rural communities. By spending up to one week at a time in some of these communities I had the opportunity to carry out participant observation as I partook in community members' daily activities, and also to conduct lengthier semi-structured informal interviews with community members.

Throughout the course of my research I followed the standard ethical guidelines for the protection of human subjects as outlined by American University's Institutional Review Board for the Protection of Human Subjects. Prior to even the most informal interviews, I attained informed consent from all subjects. I did this by explaining the purpose and goals of my research, and the role of the subject in it. I then explained to subjects that they could choose to withhold answers to any questions, or refrain from participation at any point. Furthermore, I explained that their identities would be protected, as well as any personal information that they wanted protected. I abided by the standard protocol for protecting human subjects in all circumstances, despite the fact that my interviews and participant observation did not actually pose any risk to the subjects, and very rarely entailed asking questions of a personal or private nature. I found that in most cases the subjects were more than willing to participate in interviews, or to have me participate in their daily activities with them. In some of the communities that I spent the most time in, I had people approaching me to request an interview. It seemed that people actually enjoyed telling me about their lives and livelihoods, and having me learn about them through participation. My participant observation in the rural communities involved everything from helping to pick cilantro and peel cassava, to donning a beekeeper's suit and collecting honey with an artisanal honey producer on a land reform settlement. While conducting research with the sugarcane plantation laborers, my interactions were limited to either interviews or observation without participation while they were in the fields cutting cane or at rest. I did have some opportunities to observe (sometimes with participation) these laborers in their daily activities at home, off of the plantations.

The majority of my interviews with laborers and community members, which totaled over 60, were recorded using a digital voice recorder. I saved the interviews in password-

protected files on my personal computer. Of the 40 voice files recorded and saved, I transcribed and translated parts of the 30 most relevant. I found the process of simultaneous transcription and translation of interviews, followed by analysis of the text version, extremely useful in that it allowed me to review and reflect on the most pertinent parts of the interviews. Through this process I often found that I gained a deeper understanding of the subjects' statements and the symbolism in their interviews. My research methods also included photographing and videotaping the subjects at work and in their daily activities, as well as some videotaped interviews. Prior to recording interviews with the digital voice recorder or video camera, I always obtained oral consent from subjects. For each recorded interview, I have permission from the subject to use the statements and images in the presentation of my research. The combination of voice recordings, photographs, and film provides a multifaceted base of material to analyze for this research. I plan to use various parts of the collected material not only in this research paper, but also in future multimedia presentations at academic, professional, and activist conferences and meetings.

It is imperative to note that I carried out participant observation and interviews in three distinct types of rural communities, all located in the sugarcane-producing region of Pernambuco. One type of community was the landless settlement. Community members in these settlements usually consisted of people who, prior to joining the landless movement in pursuit of land on which to live and farm, had cut sugarcane (or depended on family members cutting cane) or lived in *favelas* and worked in informal economies in regional cities. Those who had not previously worked in cane were usually no more than one generation removed from life as plantation laborers and, in most cases, plantation dwellers. Another type of community was the typical rural community in the region, where community members owned no land besides the small property upon which their home sat, and depended almost entirely on sugarcane for their livelihoods. In these communities men between 18 and 55 years old usually cut cane, or sometimes worked in another sugarcane-related position during the six month harvest season. The women usually either worked full-time caring for their children and home, or as domestic employees for middle and upper-class families in the city when necessary to compensate for the meager and usually seasonal income that the men earned from working on plantations. In some cases women also worked on sugarcane plantations during part of the year. The third type of community that I conducted research in was a traditional community that had until 2006

depended largely on fishing and subsistence farming for their livelihood. Since this community's expulsion from their island homes in an estuary next to a large sugar-ethanol mill, most residents have moved to the city and struggled to maintain a largely fishing-based livelihood, while also battling against the sugar-ethanol mill for their right to live on and use the estuary for extractivist purposes. The livelihood strategies employed by members of these three types of communities, and the ways in which they relate to sugarcane production, are different in significant ways. I chose to spend time in all three types of communities in order to understand their distinct livelihoods and how they are shaped by sugarcane production and its expansion. In Chapter Four of this paper, which presents the findings of my empirical research, I only provide an in-depth discussion of the livelihoods of the landless settlement and the traditional fishing community, yet I refer to the sugarcane-dependent community throughout, often using it to draw comparisons.

During the latter part of my fieldwork, independent travel to the countryside also enabled me to visit sugarcane plantations and sugar-ethanol mills to conduct informal semi-structured interviews with cane cutters without having to worry that the presence of CPT agents might bias their responses or keep them from responding for fear of reprisal from their bosses. By presenting myself as an American graduate student studying the social impacts of sugarcane ethanol production, I was usually perceived as a more neutral actor (even when I explicitly stated that I was collaborating in my research with CPT) than if I had arrived at the site accompanied by a CPT agent. In this part of my field work I used the same protections for human subjects as I did in the communities.

In order to gain the perspective of yet another stakeholder in the region, I carried out formal, semi-structured interviews with the managers of two sugar-ethanol factories in Pernambuco. Despite explaining in advance that my research was on the social impacts of the sugarcane ethanol industry, or perhaps because of this, the industry stakeholders that I met with and interviewed were eager to amaze me with their corporate social responsibility policies and practices. As with the communities and laborers, these subjects provided consent for their participation in my research. As part of my visits to these industrial complexes I not only interviewed managers, but also toured the facilities where sugar and ethanol are produced, the plantations themselves, and the housing and schools for plantation workers who live on the

companies' property. Without doubt, these experiences added to my understanding of the complex realities that coexist within the sugarcane-producing region of Pernambuco.

Toward the beginning of my fieldwork I had the opportunity to travel to Brasilia, and there I conducted formal, semi-structured interviews with officials in the Ministry of Mines and Energy and Ministry of Agriculture, related to ethanol production on the federal level. While carrying out these interviews in the earlier part of my research in Brazil helped to expand my knowledge of the ethanol industry, and its past, present, and future according to the federal government, perhaps it would have been more useful to do this toward the end of my fieldwork when I was more familiar with the issues and had more useful questions to ask. The data gathered through interviews with Ministry officials, and from the materials related to ethanol production that they provided me, proved valuable for my research. In order to better understand the federal government's discourse on how ethanol production promotes sustainable development in Brazil, I used the materials they provided me to for a content analysis. I analyzed these materials, searching for references to poverty, development, livelihoods, and food security. I also analyzed the transcriptions of my interviews with these officials for references to the same concepts.

Guided by the symbolic interactionist perspective, I sought to understand the symbolic meaning in the actions and statements of all of my subjects. According to the symbolic interactionist perspective, humans create meaning through social interaction, and through the creation of these meanings they produce realities.[11] Throughout my research I strived to interpret the statements and actions of my subjects through the lens established by Thomas & Swaine's statement, "It is not important whether or not the interpretation is correct- if men define situations as real, they are real in their consequences" (1928: 572).[12]

Structure of the Paper

This paper aims to give a voice to the rural poor living in a Brazilian sugarcane-growing region, in order to represent the rising sugarcane ethanol industry from their perspective. At a time when numerous academics, policy-makers, journalists, governments, environmentalists, and others continue to proclaim the Brazilian model of sugarcane ethanol production a 'sweeter

[11] Berg, 2007: 10.
[12] Quoted in Berg, 2007: 10.

alternative' to fossil fuels and even ethanol from other feedstocks, this paper forces the reader to ask him or herself for whom sugarcane ethanol is truly a sweeter alternative. It will do so by presenting the views of rural people impacted by the industry in the Forest Region of Pernambuco, relying heavily on insights gained from participant observation, in addition to quotes and paraphrasing of statements and sentiments by rural people and their proponents.

In the following chapter I situate the role of livelihoods analysis in sustainable development politics. This chapter defines the term sustainable development, and describes the history of its evolving definition and discourses surrounding sustainable development in global development and environmental politics. The Sustainable Livelihoods Framework is also described in detail, and here there is a discussion on how this framework is useful to analyzing the impacts of sustainable development politics and processes on rural livelihoods. Finally, this chapter makes an argument for a renewed interest in and attention to social justice as one of the critical three pillars of sustainable development, particularly in relation to proposed climate change and energy crisis "solutions."

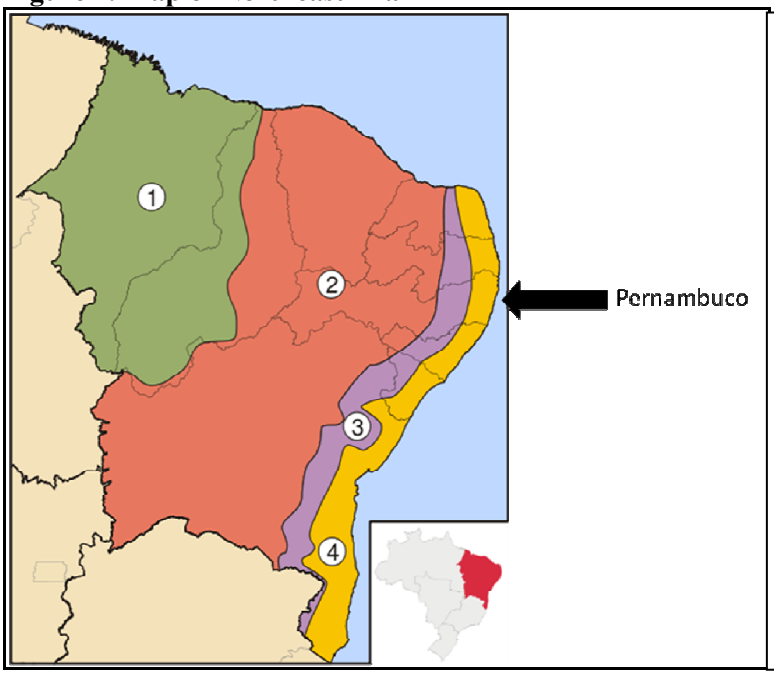
In Chapter Three I provide a brief overview of the history of sugarcane production in Brazil, focusing in particular on how this crop has shaped the Northeast and underdeveloped Pernambuco's Forest Region. Included in this discussion is a history of the ethanol industry in Brazil from its origins under the military dictatorship in the 1970s as a response to the OPEC crisis, to the nation's latest boom in production as a response to global demand for alternative fuels. Throughout this section I aim to highlight the relevance of the historical information to rural livelihoods and the circumstances in which rural people live in the region today. One way in which I emphasize rural livelihoods in this history is by actually including some of the historical accounts told to me in interviews with rural community members. I believe that such a historical review is necessary in order for the reader to view rural livelihoods not as static, but as dynamic, constantly in flux, and shaped by political, economic, and cultural history.

Chapter Four of this paper presents findings from the case study conducted in Pernambuco's Forest Region. The case study evidence, rich in ethnographic detail, first examines the conditions and livelihood strategies of rural communities in Pernambuco that "conquered" land upon which to live and maintain a family farm through Brazil's national land reform program and assistance from various NGOs working in the "social movement." This section demonstrates how the expansion of large-scale sugarcane production denies the right of

Pernambuco's landless poor to land reform, food security, and freedom from the cycle of poverty and dependency on low-wage seasonal work. The next section of this chapter tells the story of the islanders of Sirinhaém, a traditional community of fishermen that was relocated to the city in order for a sugar and ethanol producing company to take over the responsibility of caring for and "conserving" the state land which the fishermen had lived on for generations. This section is important because of how the saga of the fishermen and the sugar and ethanol company, Trapiche, reflects a shift in the industry to portray itself as "green" through the conservation of Pernambuco's dwindling forests, and how this control over conservation can have detrimental consequences to rural livelihoods.

Finally, the paper concludes with a chapter that summarizes the empirical findings, and discusses how this research can and should contribute to a better understanding of some of the ways in which rural people, who are so often invisible, misrepresented, or voiceless stakeholders, are impacted by industrial biofuels production. This conclusion demonstrates how the case study from Pernambuco's sugarcane-producing Forest Region is relevant to understanding the social impacts of biofuels production globally, and makes an argument for the need for further research and increased consideration of the impacts on the rural poor in the search for the "sweetest" alternative fuel and other climate change and energy crisis "solutions."

Figure 1. Map of Northeast Brazil



This map of Northeast Brazil shows the region's four distinct ecological zones. The yellow zone (4), is the *Zona da Mata*, or Forest Region. The Forest Region is humid Atlantic Forest, extending north from southern Brazil along the coast. The Forest Region has been cleared continually, principally to be used for sugarcane production, since the sixteenth century. There are few remaining forests. In Pernambuco, the Forest Region extends the entire north-south length of the state, but is only about 80 kilometers wide.

Source: Wikipedia

CHAPTER TWO

RURAL LIVELIHOODS AND SUSTAINABLE DEVELOPMENT

"Poverty is not only an evil in itself, but sustainable development requires meeting the basic needs of all and extending to all the opportunity to fulfill their aspirations for a better life. A world in which poverty is endemic will always be prone to ecological and other catastrophes." The Brundtland Commission, 1987.[13]

This chapter critically examines the term "sustainable development" and discusses the role of livelihoods analysis as a means for testing that social justice, one of three pillars central to sustainable development, is not sacrificed in the name of economic development and environmental protection. In line with the above quote by the Brundtland Commission, it is my belief that the alleviation of poverty and inequality is key to achieving any kind of sustainable economic development, and to halting ecological degradation.

Sustainable Development

The term sustainable development emerged from the Brundtland Commission's attempt to rethink the interaction of the environment with economic development in 1987. The Commission recognized that there exist many linkages and conflicts between the economy (including what we call economic development) and the environment. They also recognized that both the poor and the rich can have significant impacts on ecosystems and natural resources, and that while the traditional notion of economic development does not automatically provide a path away from environmental degradation, nor does a lack of development. The Brundtland Commission's 1987 publication "Our Common Future" has influenced policy and continues to challenge mainstream paradigms of both economic development and environmentalism. Their oft-cited definition of sustainable development has been used in many different contexts around the world, and has enabled policymakers, academics, and activists alike to view these issues

[13] World Commission on Environment and Development, 1987: 8.

from an entirely different perspective than was previously possible: "development that meets the needs of the present without compromising the needs of the future."[14]

Of course the Brundtland Commission was not the first group to begin thinking about and discussing the relationship between the environment and the economy. Extremely influential early thinkers that include Malthus and Marx stated the inherent opposition of population growth and political-economic structures, respectively, to the environment. Some say that humanity's first view of Earth from space in the 1960s sparked a popular view of the planet as fragile in the midst of an unprecedented era of fossil fuel-based economic growth. The decades preceding the publication of "Our Common Future" had indeed seen a growing dedication to the missions of industrialization in the wealthy global North as well as the industrialization and economic development of the global South, in addition to a growing environmental movement and awareness of the connections between economic development and natural resources. Thus, the Brundtland Commission served more than anything as a respected voice to articulate the contradictions and opportunities inherent in the relationship between the global economy and the shared global environment in such a way that a new era of global environmental politics and economic development was born; or at least a rhetoric upon which to construct or make the argument for a new political era.

The opinion which has most informed this research is that while the Brundtland Commission's famous definition of sustainable development is still useful and valid today, in practice there must be equal focus on meeting the needs of the present as there is on not compromising the needs of the future. That is, social justice and equality are two of the most important goals that humanity should be working toward, and should be viewed as ultimately intertwined with the goals of environmental protection and economic development. One cannot be achieved and sustained in the long run without the others. Responsible environmental management and recognition of the poor's reliance on natural resources are critical to addressing and alleviating poverty. Thus, in this paper I embrace the vision of sustainable development as a form of development that promotes social and economic justice for all while seeking to reduce environmental degradation.

Not all actors involved in defining and implementing so-called sustainable development prioritize the livelihoods of the poor, or even put them on equal ground with the environment or

[14] Ibid: 43.

economic growth. While in some cases the term sustainable development is employed as a cover-up, or even form of "greenwashing" for what is actually unsustainable economic growth, in other cases it is employed by actors that prioritize environmental conservation, and often view the poor as instigators of destruction, thereby failing to recognize that the rural poor can also play an important role as conservationists when given the right opportunities.[15] Schwartzman, et al. (2000) and Angelesen and Wunder (2003), for example, make a strong argument for the inclusion of rural people in conservation efforts in Brazil and elsewhere in the developing world in order to ensure the greater effectiveness of those efforts, and also to improve the quality of life of those people rather than further impoverish them. As these authors point out, on the race to point fingers, the poor all too often receive the blame for the bulk of environmental destruction, while political and economic structures, as well as the power structures which shape environmental conservation programs, are often overlooked.[16]

Eve Bratman's (2009) discussion of the unequal power relations in processes of sustainable development, particularly in relation to conservation in Brazilian Amazonia, makes an important contribution to the literature on sustainable development and has helped to shape the perspective on processes of sustainable development which informs this paper. Bratman makes the point that when the concept of sustainable development is carried out in practice, or when sustainable development plans are formed, "the triangulation between economic, environmental, and social considerations often privileges economic development and environmental interests over those of social equity."[17]

The bias toward economic development and the environment for some might stem from a perspective on development rooted in modernization theory, whose proponents assert that developing countries should follow a similar path to that which industrialized countries took in their economic development. This is a linear, "follow the leader" view of international economic development, whose proponents view economic take-off, the development of a middle class, increased literacy and other improvements in standard of living, and even the adoption of environmental conservation practices, all as following the adoption of industrialization and democratic reforms. However, Brazil provides perhaps the most effective example of a

[15] See Redford (2000) for an example of the argument that calls for the removal of people from nature in order to most effectively halt and/or prevent environmental degradation.
[16] Angelsen, 1999; Tockman, 2001.
[17] Bratman, 2009: 23.

developing country which has championed economic growth through industrialization and the establishment of large-scale agricultural and other export markets, and has become a strong democracy, yet despite pulling millions of Brazilians (in some regions more than others) out of poverty in that process, millions have either failed to benefit from development or were actually made worse off by it. Nancy Scheper-Hughes, who studied slum communities in Pernambuco in the 1980s, authored a famously shocking article on the culture surrounding infant mortality in these slums, and effectively making the argument that while Brazil's industrialization has created pockets of wealth, the modernization of agriculture that has constituted an even larger part of the economy in the Northeast especially, has forced subsistence farmers off their land and into overcrowded and perilous urban shantytowns or extreme rural poverty.[18]

In recent years, President Inacio "Lula" da Silva's administration has made sustainable rural development in Northeast Brazil a priority, and has even promoted biofuels production as a form of sustainable rural development. One of the questions which I hope to answer in this paper is whether or not environmental and economic growth concerns are privileged over social justice and equity, particularly in terms of ethanol production.

Livelihoods Analysis

This section aims to describe how livelihoods analysis, based in the context of the Sustainable Livelihoods Framework developed by the United Kingdom's Department for International Development (DFID), can serve as an important tool in evaluating the extent to which a certain sustainable development policy or process prioritizes social justice and equity. By recognizing that the livelihoods of the poor "are shaped by a multitude of different forces and factors that are themselves constantly shifting," this framework facilitates an analysis of the effects of the sustainable development policy in question (sugarcane ethanol production in Pernambuco) on the various assets that people draw upon to maintain themselves, their families and their communities, falling under five categories: human, social, physical, natural, and financial capital.[19] In this section I will describe and evaluate the usefulness of the Sustainable Livelihoods Framework, focusing on tools from the framework which I employed throughout my research in Brazil, and which will be used in my analysis of the case study in Chapter Four.

[18] Scheper-Hughes, 1989: 16.
[19] DFID, 2007: 2.

One of the fundamental concepts of the Sustainable Livelihoods Framework is the "vulnerability context," or the external environment in which people exist. According to the framework, before reaching the step in which livelihood assets of people, households, or communities are analyzed, it is critical to first examine the vulnerability context in which those livelihoods are located. The vulnerability context is defined by shocks, trends, and seasonality which exacerbate vulnerabilities. For example, shocks for rural livelihoods that depend on sugarcane for employment in Pernambuco's Forest Region can be things like an economic crisis that leads to the bankruptcy of a sugar-ethanol factory, which subsequently shuts down operations and causes widespread unemployment. Trends that impact rural livelihoods in the region are things like the cycles of boom and bust of sugar and ethanol prices, governance trends, and even technological trends such as the trend toward mechanization of the process of harvesting sugarcane. Whether a sugarcane cutter or a family farmer on a landless settlement, seasonality is an important component of the vulnerability context for any rural person in Pernambuco's Forest Region. For example, because the sugarcane harvest lasts only six months, those who depend on the industry for employment generally spend six months of the year relying on government assistance and/or jobs in the informal economy. Small farmers face seasonal trends such as droughts and floods, as well as the restrictions caused by lack of access to sufficient water for irrigation of their non-cane crops for more than half the year.

The livelihood assets are the key to understanding how livelihoods analysis works. According to the framework, these assets, or poverty-reducing factors, exist *within* the vulnerability context. The five types of livelihood assets at the core of this perspective are human capital, natural capital, financial capital, physical capital, and social capital. The various types of livelihoods assets are briefly described below in Table 1.

Table 1. Livelihood Assets

Human Capital	- Skills; knowledge, education, and training; health; ability to work or command work. - This asset is necessary in order to make use of any of the other four assets.
Social Capital	- The "social resources upon which people draw in pursuit of their livelihood objectives": networks; membership in groups and associations; relationships of trust, reciprocity, and exchange.
Natural Capital	- "Natural resource stocks from which resource flows and services useful for livelihoods are derived." - Land (including secure land tenure), air quality, trees/forests, water, biodiversity, erosion and storm protection, etc.
Physical Capital	-Infrastructure (public goods): transportation, water supply and sanitation, energy, shelter, communications. -Producer goods (privately owned services that usually require a fee for access).
Financial Capital	-Financial resources -Available stocks: savings, cash, liquid assets (i.e. livestock, jewelry), credit. -Regular inflows of money: earned income/salary, pensions, remittances, government transfers.

Based on DFID's Sustainable Livelihoods Guidance Sheets

Another critical part of the framework is that of the transforming structures and processes, which shape livelihoods due to their direct feedback to the vulnerability context, and direct impacts on livelihood outcomes. Essentially, this component of the framework has to do with governance at its various levels. According to DFID, the institutions, policies, organizations, and legislation that comprise the transforming structures and processes, and operate on everything from the state to household level have the following impact:

> *"[they] effectively determine: access (to various types of capital, to livelihood strategies and to decision-making bodies and sources of influence); the terms of exchange between different types of capital; and returns (economic and otherwise) to any given livelihood strategy."*[20]

[20] DFID, 2007: 17.

Finally, livelihood strategies are essentially the outcome of the composite of the various components of this framework. Some call these "coping" or "adaptive" strategies, in that they are considered as either coping or adapting to the assets available, the vulnerability context in which they operate, and the transforming structures and processes. Perhaps the best way to define livelihood strategies is as ways of combining and using assets.

DFID's Sustainable Livelihoods Framework most often serves as framework used to analyze livelihoods and plan interventions that aim to strengthen assets, reduce vulnerabilities, and thereby improve rural livelihood outcomes. For the purpose of this paper, I use the Sustainable Livelihoods Framework to analyze livelihoods not with interventions in mind, but instead to identify the ways in which sugarcane production influences rural livelihoods, and either inhibits or facilitates positive livelihood outcomes in Pernambuco's Forest Region. In this paper, I will often refer to the five types of livelihoods assets, noting which are weakest and which are strongest, and how the sugar-ethanol industry influences those assets. Based on my conviction that rural livelihoods of the poor must be prioritized, or at least given equal weight as environmental and economic outcomes, I believe that a livelihoods analysis is an important component of any sustainable development policy, program, or process, including biofuels production in the developing world. Because those countries with the most "biomass wealth" are often those most vulnerable to abusive labor practices, insufficient social and environmental regulations, and insecure land tenure,[21] livelihoods analysis has the potential to play an important role in minimizing harm and maximizing benefits to vulnerable populations in biofuels production.

[21] Mol, 2007.

CHAPTER THREE

SUGARCANE AND UNDERDEVELOPMENT: THE PERNAMBUCAN EXPERIENCE

In Pernambuco's Forest Region, sugarcane production has shaped rural livelihoods for nearly 500 years. A wealth of Brazilian literature exists on the topic of living conditions on the sugarcane plantations of Pernambuco during the slavery and post-slavery eras, and the ways in which highly concentrated land tenure and monoculture production have "underdeveloped" the region. Addressing and highlighting certain aspects of this history is pertinent to a study on livelihoods in the present day because the majority of rural people who remain in the region are the descendants of people who have lived and worked on Pernambuco's sugarcane plantations for generations. Their dynamic livelihoods exist within the historic framework of the region.

From Colonization to Abolition

Gilberto Freyre (1967) describes the Portuguese colonization of Brazil in the sixteenth century as distinct from that of other forms of colonization throughout the Americas during that period for a number of reasons. One of the principal reasons, and that which is most relevant to this paper, is that the Portuguese model of colonization was the "plantation settlement," based on large-scale landholdings by the colonizers and labor by African slaves. The Portuguese established such "plantation settlements" throughout Northeast Brazil, but most intensively at first in the state of Pernambuco.[22] Once the Portuguese realized that sugarcane, a commodity of extremely high value in Europe, thrived in their new colony, they focused their energy on clearing the native Atlantic Forest in Pernambuco (as well as Bahia and other regions, but Pernambuco was a principal focus for the Portuguese, particularly in the initial years of the colony) and importing slaves in order to constantly expand and intensify the production of sugar for export. Although England's expansion of sugar-producing colonies throughout the Caribbean eventually drove Portugal out of the north European trade, and made England the

[22] It is important to note here that the fairly small, long and narrow state of Pernambuco that exists today, consisting of a total land area of a little less than 100,000 square kilometers, was about two thirds larger prior to Brazil's independence from Portugal. Levine, 1978.

principal producer and importer of sugar to those countries with highest sugar consumption, Portugal remained an important player in colonial sugar production and the slave trade upon which it was built.[23]

Because nearly all of the productive land was used for sugarcane production by a few wealthy landowners, Freyre (1967) and de Castro (1967), both influential Brazilian authors who studied the impact of the sugar industry on rural society in Pernambuco, argue that the region consequently experienced poor and unbalanced nutrition (few other food crops were grown other than sugarcane, most others had to be brought in from other regions), mismanagement of natural resources, and poor human and social development. Josué de Castro's description of the Portuguese conversion of Pernambucan land to sugarcane plantations paints a bleak picture that is still relevant to the region today:

> *The process of transformation and devaluation that cane realized in the Northeast began with the destruction of the forest, opening clearings for cultivation with burnings, later extending those clearings for the extension of sugarcane fields without end. … And cane proved…able to give much profit, while requiring a great deal in compensation. It required a tremendously tough slavery, not only of man but also of the land in its service. Man and earth had to divest of many privileges to satisfy cane's…insatiable appetite.*[24]

The concentration of land in the hands of the *latifundia* during the colonial period, and the focus on large-scale production of sugarcane, would later enable Brazil's success in large-scale sugarcane ethanol production beginning in the 1970s. It can easily be argued that Brazil's success as one of the world's largest ethanol producers is built on past tragedies, as well as current tragedies deserving of documentation.[25]

Once Brazil gained independence from Portugal in 1822 and established a monarchy in place of the colonial government, the already centuries old patterns of use of land and labor did not change significantly. The *latifundia* maintained its power and control, and fought alongside the government to maintain slavery and then slave-like models of production for as long as possible. Brazil was in fact the last country in the Western Hemisphere to ban the trans-Atlantic slave trade (in 1831) and to abolish slavery (in 1888). Critical to an understanding of the current distribution of land and of rural livelihoods in previously slave labor-dependent states such as Pernambuco is the *Lei da Terra* (Law of the

[23] Mintz, 1985.
[24] De Castro, 1967: 97-101.
[25] FAO, 2008.

Land) which passed in 1855, thirty-three years before abolition. In order to maintain the control of the *latifundia* over the means of production, and to keep slaves in a position of dependency, with little choice but to sell their labor to sugarcane planters once freed, this law allowed men to claim legal titles to land not yet under production. In practice, only the wealthy large landholders were able to do so, and this led to the further concentration of land in the hands of these alarmingly few men. Consequently, the law ensured that virtually no land in the sugarcane-growing Forest Region, where land was highly valuable, would remain that could be claimed or even occupied by freed slaves following abolition. Until the present, the sugarcane-producing Forest Region of Pernambuco has very few small family farms, except those that have been claimed through Brazil's land reform program. Virtually all land in the region is still used for the production of sugarcane, and many of the landholders and sugar-ethanol mill owners are descendants of those who have owned land and controlled the means of production for centuries.

Post-Slavery Sugarcane Production

Abolition led to a new type of social organization. Sugarcane planters replaced the *senzalas*, or slave quarters, with row houses that workers and their families lived in on the plantations themselves. Thus, theoretically free people lived on the plantation on which they worked, entirely dependent on the plantation owners. Men, women, and children all worked on the plantation. In some cases people were paid, but in others they were simply given credit with which to purchase goods at the plantation store. Plantations with this type of situation are still found in Pernambuco and other parts of Northeast Brazil today, often with illegal practices such as debt bondage and child labor, relics of the old plantation system.

Between 1890 and 1950, beginning shortly after Brazil became a republic, the federal government financed the industrialization of the nation's sugar industry. This led not only to a more modern sugar industry, but also to a new hierarchy in Pernambuco's Forest Region, with the following order: first, sugar mill owners; second, sugar planters (those who owned plantations but not sugar mills); lastly, the laborers (living on the land of either a factory owner or a planter).[26] Cristina Davat (2008) refers to this period as the first

[26] Davat, 2008.

"advance of capitalism in the sugarcane region."[27] However, despite the modernization of the sector and its subsequent competiveness in the production of a commodity in high global demand, the organization of labor had maintained many elements of a feudal-like system.[28]

This period of confused capitalism meeting relics of feudalism came out in my interviews with rural people who grew up on sugarcane plantations during this time. For example, one informant described to me the total control that the plantation owner had over the life of his family and the others on the plantation. The situation was such that labor laws for rural workers, the concept of rights, and rule of law simply did not exist. Plantations, as well as the larger plantation plus sugar mill complexes, benefited from total impunity and maintained order on their property and amongst their laborers through violence, threats, and punishments by their own private militia. One of my informant's stories which most effectively paints a picture of this era is about a young boy who worked alongside his parents on the plantation, and was caught by a guard sucking on a stalk of sugarcane. The guard shot and killed the boy, apparently for stealing, and in order to have him serve as a lesson for the other laborers. My informant, who was born on a plantation in Pernambuco in the early 1920s, said that this sort of violent punishment of laborers was common. He tells of how from the age of 7 he worked in the sugarcane fields with the rest of his family, living in fear of the plantation owner and his guards. His family ate little food, what they did receive was of extremely poor quality, as they only had access to food from the plantation store where they paid with vouchers that they received for their work. They slept on dirt floors in the housing provided by the plantation owner, and often worked for 12 hours or more per day. His stories from that era, which according to him remained virtually the same until significant political changes occurred in 1963, show that while the sugar sector was industrializing and entering the capitalist era, this modernization was built on conditions analogous to slavery.

In the early 1960s, organizing amongst rural laborers and their proponents began to make waves in and around the sugarcane plantations of Pernambuco. Protests, lectures, and actions were carried out in backlash to the brutal conditions maintained on sugarcane plantations, and organizers demanded legislation granting rural workers the same rights that

[27] Ibid: 20.
[28] Ibid; de Castro, 1967.

their urban counterparts benefited from. The entire nation was experiencing a particularly progressive period, and Pernambuco happened to be at the forefront of some of the massive changes, resulting from the heated mobilization of rural workers in the region. Benefiting from a particularly progressive pro-labor rights governor at the time, the organizing resulted in the passing of rural labor rights legislation at the state level, and shortly thereafter the passing of the *Estatuto do Trabalhador Rural*, or Statute of the Rural Worker, in 1963. While working conditions by no means improved for all sugarcane laborers following the passing of this legislation, the changes that began in 1963 represented an enormous shift in work relations. The rights of rural workers were now comparable, though not actually equal, to their urban counterparts (i.e. rural workers were now guaranteed a salary and minimal benefits and protections), and the creation of the first rural workers' unions, as well as forums at the state and federal level designed specifically to carry out justice for workers enabled the exercise of rural workers' rights.[29]

One of the immediate results of this change was that plantation and sugar mill owners began to expel the *moradores,* or plantation residents, from the land. Thousands of families that had lived and worked on plantations for generations now migrated to cities, where they most often ended up as squatters in make-shift homes and slums, and commuted to the rural areas for work on plantations during the harvest season.[30] Cristina Davat, a Brazilian historian and expert on labor and living conditions on Pernambuco's sugarcane plantations, asserts that this change in work relations, where laborers began living in the city, independent of the plantation and mill owners, represented the beginning of the proletarianization of Pernambuco's sugarcane laborers.[31] While these laborers had previously lived in small homes, sometimes even on plots of land upon which to grow their own subsistence crops, provided by the plantation owner, completely dependent on the owners for all of their basic services and livelihood, they were now forced into an entirely different relationship with the plantation owners, to whom they now sold their labor and struggled against for the advancement of their rights.

It is critical to note that while these changes occurred across most of Pernambuco's sugarcane-producing region, many plantations (particularly the most isolated) experienced

[29] Davat, 2008: 23.
[30] Ibid.
[31] Ibid.: 23.

very few changes. Illegal practices such as debt bondage, forced labor, child labor, and the failure to pay minimum wage or grant workers their legal rights continued on many plantations, particularly on those where the owners allowed the *moradores* to continue living on their property. In those situations where the laborers live on the plantation, and are therefore isolated from other workers and even unions, illegal practices often thrive, as the workers are not informed of their rights or have no idea how to go about exercising them. Throughout the course of my fieldwork in Pernambuco, I spoke with numerous people who lived on plantations where debt bondage and child labor existed until very recently, and heard talk of other plantations where such conditions still exist. On one trip to an isolated plantation in the southern Forest Region with CPT agents, I met several families who had lived in debt bondage for all of their living memory up until the situation was discovered by CPT in 2003. After informing the authorities of the situation, CPT fought for the persecution of the plantation owner and rights of the workers until justice was finally realized in 2005. Situations such as these are alarmingly common throughout Brazil today. In Pernambuco alone, 309 people living in conditions analogous to slavery were freed from three different sugarcane plantations in the Forest Region in 2007.[32]

The Beginning of the Military Dictatorship

The coup d'état led by Brazil's Armed Forces against the left-wing president, João Goulart, in April 1964, led to a 21 year rule by a right-wing military dictatorship. This coup and subsequent dictatorship is widely recognized as having its roots in opposition to increasingly left-wing governments at the state and federal levels, whose liberal social and economic policies resulted in legislation including the Statute of the Rural Worker. While the new conservative government did nothing to revoke the newly won rights of rural workers, the status quo was largely maintained through intimidation tactics and occasional violence that instilled fear in activists and organizers. Thus, until the end of the dictatorship in 1985, sugarcane laborers benefitted from few advancements in terms of their rights and conditions in which they worked. Throughout Pernambuco, abusive labor practices that helped to maintain existing power structures and perpetuate rural and urban poverty continued to exist. Most children born to poor families in the Forest Region during this time

[32] CPT, 2009.

began helping their parents in the sugarcane fields as early as seven years old, as salaries were not sufficient for any member of the family, no matter what gender or how young, to stay home.

Sugarcane laborers in Pernambuco clearly did not benefit under the military regime, yet the dictatorship's investment in industry and development, particularly in southern Brazil, led to massive leaps forward in Brazil's economic development. Frieden (2007) indicates that during the authoritarian military regime, "the pace of economic, and especially industrial, development…was little short of astounding."[33] During this time, Brazil increased its steel production and domestic automobile industry, and modernized and expanded the non-industrial sectors of its economy such as agriculture with foreign finance from bilateral, multilateral, and private sources, combined with government policy that provided subsidies and incentives for certain sectors of the economy, facilitating an average annual growth rate of GDP of about 9%.[34] For the purpose of this paper it is critical to note that the authoritarian regime's massive investments in development, and subsequent economic growth was focused almost entirely in southern Brazil. Most pertinent to the discussion on sugarcane production and rural livelihoods in Pernambuco is the existence of two trends regarding the sugar industry that Joseph Demetrius (1990) points out as having begun under the authoritarian regime: 1) "the decline of an economically stagnant northeast and the political and economic ascent of an industrial south, with Sao Paulo emerging as the most dynamic and influential state."[35] 2) "the seemingly ineluctable momentum toward greater and greater concentration of land and production."[36]

Proálcool

The principal impetus behind these shifts in the production of sugarcane was the government's ethanol fuel program, *Proálcool* (Pro-Alcohol), which began in 1974. Brazil's history as a leader in developing and marketing ethanol (the first ethanol manufactured was in Brazil in 1927; Brazil began to require that sugarcane ethanol be

[33] Frieden, 1991: 106.
[34] Ibid.
[35] Demetrius, 1990: 23.
[36] Ibid.

blended with all gasoline in 1931),[37] and its already large and fairly industrialized sugarcane industry, in addition to the existence of an authoritarian regime capable of facilitating the creation of virtually any large-scale industry it chose, made Brazil the ideal country for the world's first industrial ethanol program. Brazil's own nascent petroleum industry at the time could by no means keep up with the country's rapidly increasing demand for oil, and with the OPEC crisis of 1973, the government began seriously investing in alternative energy sources.[38] Thus began a fundamental shift in Brazil's sugarcane industry, with significant impacts on rural livelihoods in Pernambuco and elsewhere.

Although Proálcool eventually concentrated its investments in São Paulo, the program also invested in the northeast's sugarcane industry. Because Pernambuco already possessed thousands of plantations and hundreds of industrial sugar mills, the government simply funded the conversion of these older mills to hybrid ethanol-sugar factories. Other than the industrialization of the factories themselves, in Pernambuco Proálcool did not lead to many significant changes in terms of labor conditions or work in the plantations themselves. Thus, Proálcool industrialized the region's production of final products, but maintained a system of sugarcane production incredibly similar to how it had been 500 years before. Prior to the beginning of Proálcool, the Brazilian sugar industry had received global criticism asserting that it would become obsolete due to competition from other sugar-producing countries, but with massive government investment in the industry and requirements for ethanol to be sold at all gasoline stations, and to be blended with all gasoline sold in the country, the industry experienced a revival just when it was expected to crash.[39]

One of the impacts that Proálcool is thought to have had on rural livelihoods in Pernambuco is the motivation for a new wave of expulsion of sugarcane laborers from the rural areas to the cities. Proálcool led to increased value of the land in sugarcane-producing areas, meaning that for plantation and mill owners, it made little sense to dedicate land to housing employees when it could be instead used to produce more sugarcane. This expulsion was legal when those expelled lived on the factory owner's or planter's land; it was illegal but rarely contested when they lived on state land. Proálcool's incentive for

[37] Levinson, 1987.
[38] Ibid.
[39] Davat, 2008.

expanded production led to many conflicts over land in Pernambuco, where the state was at best ineffective at investigating and punishing illegal expulsions or violent legal expulsions. With a new wave of rural people to the outskirts of the city, only to commute to the rural areas daily to sell their labor to planters and sugar-ethanol mill owners, Pernambuco experienced further proletarianization of its rural population.[40]

The end of the military dictatorship in 1985 also meant the end to the state support upon which Pernambuco's sugar-ethanol industry had managed to survive and even thrive. By the early 1990s, the crisis in the sugarcane industry in Pernambuco led to the closing of numerous plantations and sugar-ethanol mills, leaving thousands of hectares of unproductive land. It is said that around 40% of Pernambuco's sugar-ethanol factories shut down at this time; while this caused massive unemployment, it also opened up land for land reform in the Forest Region. The landless movement gained strength in Pernambuco for the first time, and many new settlements were claimed on now unproductive land where sugarcane had previously grown for centuries.[41] Land reform had taken off in other parts of the country, particularly where the MST had grown in popularity as a response to agricultural modernization and large-scale development projects in rural areas;[42] now, in a region where most people had never owned land and had lived their lives under the control of sugar planters and mill owners, they had an opportunity to occupy unproductive land and exercise their right to own land and earn a living as a small farming. The occupation of unproductive lands by thousands of Pernambuco's rural and urban poor represented a significant shift in the region's rural livelihoods, as for the first time small family farms had control over some of the land.

Pernambuco's land reform experienced setbacks from the late 1990s until the early 2000s, when an economic boom in Brazil led to a renewed expansion of the state's sugarcane plantations and sugar-ethanol factories. Violent conflicts over land erupted, and many would-be family farmers who had occupied unproductive lands and were waiting for INCRA to expropriate them, were kicked off the land and ended up largely in *favelas* in the region's cities. Large landowners who had held on to their land during the economic crisis were now extremely reluctant to cede any of their land to the cause of land reform. Another

[40] Davat, 2008.
[41] From interviews with CPT agents in November 2009.
[42] Carter, 2000.

consequence of the renewed production of sugar in Pernambuco at this time was that some of the people who had already been granted land by INCRA started replacing their food crops with sugarcane to sell to the sugar-ethanol mills.

A New Proálcool?

In 2007 the world's two largest ethanol producers, the United States and Brazil, signed the Brazil-US Biofuels Agreement. This alliance meant that the two giants agreed to share in technology and promotion of the ethanol industry worldwide. This also represented what some call the beginning of a new Proálcool in Brazil. Faced with a new energy crisis, and increasing awareness of the need to decrease dependence on fossil fuels due to their exhaustibility and the greenhouse gas effect, the Brazilian government and its sugar-ethanol industry saw an opportunity for increased production and consumption, and even new export markets. Social movement activists, such as the CPT agents in Pernambuco, claim that as with the original Proálcool, this new Proálcool has already led to increased expulsion of the region's remaining rural people from the land, and increased reluctance of landholders to cede land to land reform, even if this means fighting violently against the rural poor occupying their unproductive fields.[43]

[43] From interviews with CPT agents, October-December 2009.

CHAPTER FOUR
FINDINGS OF THE CASE STUDY IN PERNAMBUCO'S FOREST REGION

"I'm not against cane. I'm against the system." Paula, 32, former sugarcane cutter and landless peasant, now a family farmer, technician, leader of a land reform settlement, and opponent to the expansion of sugarcane production in Brazil.

This chapter describes the findings of my empirical research, focusing on two rural communities in Pernambuco's Forest Region which I feel serve as instructive examples of the ways in which sugarcane agriculture affects rural people who pursue non-sugarcane livelihood strategies. The two communities presented in this chapter are the following:
1) Taquinha, a land reform settlement in the municipality of Tracunhaém, occupied by a community of small family farmers explicitly against sugarcane and agribusiness;
2) the islanders of Sirinhaém, a traditional fishing community, dependent almost entirely on the river and mangroves for a livelihood, and increasingly dependent on sugarcane due to their loss of access to their rural homes and fishing resources.

I did not select these two communities for the case study because they are the most typical in the region. To the contrary, most of the poor population of Pernambuco's Forest Region either lives on the plantations on which they work, or in the *favelas* of regional towns and cities. However, despite the current expansion of the sugar-ethanol industry under the new Proálcool, there are more than twenty land reform settlements throughout the region today, and many more camps of people who are occupying land and waiting for it to be expropriated by INCRA. Far fewer communities which rely on small-scale fishing and subsistence farming exist in the region today. As I will describe in the section on the islanders of Sirinhaém, the sugar-ethanol industry's constant expansion of its control over land and resources has made it virtually impossible for such communities to continue living off the land. I chose to present these two communities in this paper because of how effectively their stories tell of the conflict between traditional people and the sugar-ethanol industry over access to land and resources, as well as conflict over the right of the rural poor to a thriving traditional livelihood free of dependency on

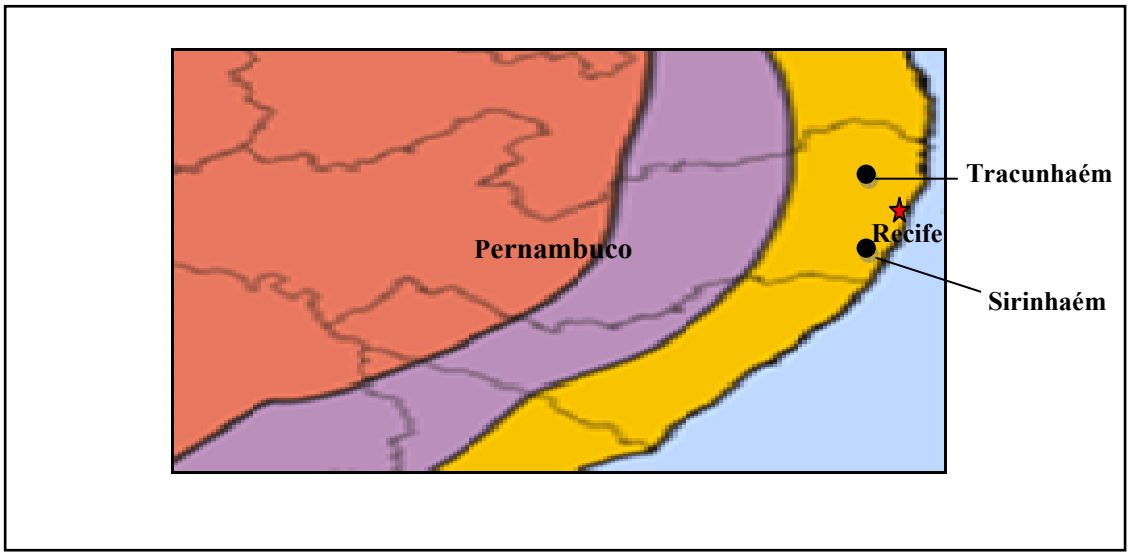
labor on sugarcane plantations. By no means do I wish to romanticize traditional livelihoods in this section. Rather, I aim to simply give a voice those traditional people whose voices often go unheard in the ongoing battle for their right to live a life that they choose. Also, because strategies pursued by these communities in order to maintain their livelihoods represent viable sustainable development models, both examples present potential strategies for solutions and comprises to ongoing tensions and conflicts.

It is important to note here that when I arrived in Brazil and began visiting communities with CPT agents, I had not yet established a theoretical framework nor did I expect to find a certain result. While my study of the region and the sugarcane industry prior to arriving in Brazil had instilled in me a certain understanding of the situation and even, perhaps, a certain stance on the issue- that of being most sympathetic towards the rural poor- due to what I had learned about labor rights and land rights issues. However, before arriving in Pernambuco I knew virtually nothing about land reform and its role in shaping rural livelihood strategies. The consequence of collaborating with CPT on my research was that I sympathized most with the people, the rural workers, land reform settlers, fishermen, and small farmers, and based my research much more on learning from the people themselves than those higher up in the sugar-ethanol industry or politics that support it. My research was conducted with a social justice lens, and I will present my findings here from the perspective of the people themselves, often relating stories and concepts using their own words.

While my findings caused me to develop a critical view of the sugar-ethanol industry due to what I perceived as extremely negative impacts on rural livelihoods, the purpose of this section (and this entire paper) is not to simply critique the industry. Instead, I aim to present my findings in such a manner that they might contribute to the development of a meaningful dialogue about how to address the underlying political and economic factors that perpetuate poverty and prohibit rural livelihood security in Northeast Brazil, and the role of the sugar-ethanol industry in that. Biofuels are unlikely to disappear in Brazil or elsewhere in the world anytime soon, and for this reason I hope that these findings contribute to a dialogue regarding the question of how rural poverty can be combated, and traditional rural livelihoods made more secure, as ethanol (and other types of biofuels) production is simultaneously expanded. To that end, I hope that this presentation of my findings can be used as a relevant case study on the

impacts of monoculture biofuels plantations on rural livelihoods not only within Brazil, but globally.

Figure 2. Map of Pernambuco and Case Study Areas



The Sugar-Ethanol Industry and Land Reform in Tracunhaém

The life trajectory of 32 year-old Paula, quoted at the beginning of this chapter, provides an illustrative example of the opportunities available to, and the livelihood strategies typically employed by, Northeast Brazil's rural poor. Paula is a resident of Taquinha, the landless settlement whose story is presented in this section. Her path to her current life as a small farmer is similar to that of many of her *companheiros* in the landless movement, and thus her story helps to paint a picture of a typical Taquinha resident.

Paula was born in the late 1970s on a sugarcane plantation, as with most of this region's rural poor (this is particularly the case with people born prior to the past 15 years, before living on the plantations became rarer). She began cutting sugarcane with her mother and siblings from a young age, but "cutting cane wasn't enough to eat." Hungry and desperate to break out of the cycle of vulnerability that comes with dependence on low-wage seasonal labor, the family moved to a *favela* in the northern Forest Region's largest city, Igarassu, in search of more stable

non-agricultural work. After more than ten years of hardship of a different sort in the city, where Paula and her family worked in the informal economy when they could find work, they attended a meeting put on by the CPT in their *favela* that informed them of yet another option. At this meeting, Paula and her family learned about Brazil's national land reform program, and their right to occupy unproductive land and fight for that land to be expropriated by INCRA so that they might live there and make a living as small farmers.

In the Forest Region of Pernambuco, there are very few livelihood strategies available to the poor who, like Paula and her family, constitute the majority of the population. There are two options which in recent decades have become the most common strategies. The first is to move to the *favela* to seek employment in the city. This presents numerous difficulties due, above all, to a lack of sufficient human capital (i.e. because many people have little or no formal education, nor work experience outside of sugarcane, it is difficult to get hired for anything beyond the lowest paid informal jobs). The second common option is to move to the *favela* and then commute to the rural areas to cut cane on a daily basis throughout the six-month harvest season. Those that choose the latter option are highly vulnerable to seasonality, and generally get by between harvests on a combination of government assistance in the form of food products and money transfers, and informal temporary employment wherever they can find it. Yet another option which is now less available due to the trend toward expelling workers from plantations and rural areas in general, is to cut cane and live on land owned by the sugarcane planter. Although this strategy enables people to live in rural areas free of charge, and sometimes to even have a plot of land upon which to grow subsistence crops, those who choose to live on their employer's land are often isolated and vulnerable to abuses by that employer. According to data collected by CPT agents throughout Brazil, sugarcane is the area of agriculture from which the highest proportion of slave laborers have been freed since 1995.[44]

For those most courageous and politically charged, or those who have perhaps exhausted the previous options, yet another alternative is to join the landless movement and fight for their right to own land upon which to make a living as a small farmer. After attending numerous meetings held by CPT in their *favela*, Paula and her family eventually chose to take the risks associated and dedicate their lives to the landless movement. When the day to occupy arrived,

[44] CPT, 2008. Note that the term "slave labor" refers to conditions analogous to slavery, such as child labor and debt bondage, two of the most common forms.

they packed up a few rudimentary belongings and a roll of black canvas from which to construct a tent. They boarded a truck full of their *companheiros* to the countryside, and then spent more than six years occupying a piece of land on an old sugarcane plantation which had sat unproductive for nearly a decade. During those years, Paula and the others braved intimidation, violence, and numerous evictions by the landowner and even the state.

Nearly five years ago, after more than six years of occupation, Paula's family and their *companheiros* won the legal right to their land. With secure land tenure for the first time in their lives, today they focus their energy on organizing their community of small family farmers, working to feed themselves from their land and market their crops, and contributing to the efforts of the landless movement. Through her connections in the landless movement, Paula managed to receive a scholarship to attend a special technical school, and now works as a technician in her community.

Today, Paula's strongest livelihood assets include human capital (good health; basic education; technical knowledge about agriculture), social capital (community leader; member of the landless movement; member of a community with strong social ties and networks of reciprocity), and natural capital (as a resident of a landless settlement she has secure tenure of 9 hectares of land). Possessing virtually no savings, earning no regular income outside of what she sells at weekly local markets, and having insufficient training in marketing and a lack of access to credit to invest in her farm, Paula has extremely weak financial capital. Poor transportation to the city and neighboring communities, lack of water and sanitation services, and relatively expensive energy bills all contribute to weak physical capital as well. Put in this light, the picture of Paula's life may seem slightly bleak. Yet as an educated, socially connected landowner, Paula actually possesses many more livelihood assets than the average rural person in Pernambuco's Forest Region today or at any other time in the past. Land reform in Pernambuco, a state famous for high rates of poverty and inequality caused by the concentration of land over centuries, presents an excellent model of sustainable rural development that has the potential to achieve social justice, environmental conservation, and even economic development if wisely supported by local and federal governments. Unfortunately, Paula and her *companheiros* who live and work in Taquinha, in the sugarcane-filled municipality of Tracunhaém, are amongst an alarmingly small number of rural people in Pernambuco who benefit from relative livelihood security.

Tracunhaém is a small rural municipality in Pernambuco's northern Forest Region, known for the town of Tracunhaém's ceramic artists, but mostly for its vast sugarcane plantations. Outside of the town there are very few population centers; the majority of people either live on plantations or in land reform camps and settlements, in addition to a small number of tiny rural towns whose residents work cutting sugarcane. The existence of three land reform settlements and one land reform camp within this sugarcane powerhouse signifies that the people have had some success in taking back land from the sugar-ethanol barons after centuries of extreme land concentration. However, as Paula's story suggests, the right to own land in Tracunhaém did not come easily. For Taquinha residents it took more than six years of occupation, and for the two other settlements in this municipality it took even longer. This is because of the long and vicious battles, inside and out of courts, that the landowners put up before allowing INCRA to expropriate their land.

One Taquinha resident, José, describes what happened the day that he and 164 of his *companheiros* arrived on the land that they intended to occupy, and what came next as they stayed on in pursuit of that land despite extremely adverse conditions:

> *"That day, it was the Sunday of Carnival. We set up our black canvas, and we went to sleep. Early in the morning, when some were still sleeping, some were eating breakfast, 350 military police arrived, all armed with rifles, pistols, everything, to get us out of there. Then we all grabbed the kids, and put them in front. A bunch of kids. Behind the kids they put the women. And behind the women, the men. And the men all with weapons from the countryside. Nothing like pistols… It started at 7 o'clock and it went until 12. We didn't leave. We stayed there resisting. Some were scared. We said leave us alone and go catch criminals! All we want is land and bread. And we stayed there resisting. And they left. Then the next day, the official brought a judge's order. It was an order saying that we had to leave. So we left the next day. We went to the side of the road. There we set up our tents on the side of the road, and it wasn't even the plantation. After 48 hours from when they gave the judge's orders…we left. We left and we went to the land again. We wanted to be on the land. And we started to work. We planted a lot of crops. Then he came [the landowner], and he destroyed everything. They came with the machines [tractors], they knocked down our tents, they knocked down everything. They left only the ground. Everyone had crops. But we lost everything. And that's where the struggle began for this land. But thank God that today we are here, because we were all slaves. We lived working, renting [houses]. Some people didn't have a place to live, they lived in the street, they paid rent for their house, or they lived in a little room. But today, through the effort of us all, everyone has their house, their land to live on."*

In this statement José discusses some of the hardship that he and his fellow members of the landless movement faced when they arrived at the land which they now own. His statement was chosen due to its similarity to that of many others. Throughout the more than six years of camping on the land prior to its expropriation, Taquinha residents faced numerous evictions such as the one José describes. Military police and private militia destroyed their tents and crops on several occasions, one of the camp's leaders was kidnapped and tortured, and various leaders received threats of death and violence. In order to prevent his land from being expropriated, the landowner planted sugarcane everywhere he could so that it would not be considered unproductive. Despite not having actually planted sugarcane or any other crop on the occupied area since the 1980s, and despite the fact that he owned thousands more hectares of both productive and unproductive land, this landowner was desperate to hold onto this piece of land which he would normally let sit fallow rather than let it sustain dozens of poor families. When INCRA expropriates land, it offers fair compensation to the landowner, yet this was not enough. The story of Taquinha is so similar to that of other landless occupations that I heard of throughout my time in Pernambuco. Large wealthy landowners fight tooth and nail, in nearly all legal and illegal ways imaginable, in order to maintain their land and the system of unequal power relations which has impoverished Brazil's Northeast for centuries.

Although Taquinha's residents now have secure tenure over their nine hectare family plots, their livelihoods are still affected by the sugar-ethanol industry. For example, during an extended stay in Taquinha in January 2010, I visited a community member's family farm and saw the damage done to nearly a third of the nine hectares when the fire set to the neighboring sugarcane plantation got out of control and went onto the farmer's land, burning a number of fruit trees and a large valuable pineapple crop. As a rural peasant who fought against the owner of that sugarcane plantation for more than six years for her family's right to own a small piece of land to farm, this Taquinha resident knows very well just how powerful that landowner is and that filing any sort of complaint about the damage will get her at best nowhere, and at worst hurt or in trouble. Intimidation tactics, including death threats, are still common here.

Even without the fear of violent repercussions for their actions, most land reform settlers and other rural poor or "small people," as they call themselves, know that the sugar barons benefit from virtual impunity. Brazil may have fairly strict environmental and social regulations for large-scale agriculture, yet in general these exist merely on paper (especially in the relatively

lawless Northeast region). It is well known that IBAMA (Brazil's Institute of Environment and Renewable Natural Resources) fines Pernambuco's sugar-ethanol mills nearly every year for various environmental crimes that just barely skim the iceberg of the totality of crimes committed, yet the companies rarely pay a cent. In cases where a sugar-ethanol mill or plantation owner is caught using clandestine or slave labor, he faces a large fine that often costs him his land and business, but never receives jail time. If using slave labor to cut cane is met only with a fine, how can one expect justice for land reform settlers in places like Taquinha when their farms are damaged by fires from the sugarcane plantations?

For good reason, Taquinha residents have come to not expect justice, and instead rely on their social capital in times of emergency, such as the destruction of crops. For instance, when a family's cassava crop fails, or their cashew trees are destroyed by fire, and they lose a large part of their income and even food, community members come together to ensure that that family does not suffer lack of food or any other basic good. In communities with such strong social capital, no one goes hungry. Beyond the strong social ties within the community, the land reform settlements also benefit from their connections to social movement organizations like CPT. The CPT agents that work with Taquinha strive to encourage the community's self-sufficiency in its organization, administration of the community association, farming, and the marketing of their goods. However, CPT does provide financial and technical support at times when it is direly needed, and would never permit that a family go hungry or otherwise suffer needlessly. Such social capital maintains a fairly healthy population in Taquinha, yet community members still operate in a context of extreme vulnerability. Weather, lack of technical knowledge and resources, and of course the pollution of waterways and soil, and even the occasional out of control fire on behalf of the sugar-ethanol mills often harm the livelihoods of Taquinha residents and contribute to the perpetuation of a fairly hand-to-mouth existence. In general, what money Taquinha residents earn from selling their goods in the market, they in turn spend on the goods which they do not grow themselves, such as coffee, sugar, salt, flour, oil, and most of their vegetables.

From my time spent in Taquinha, I learned that its residents value their freedom so much that relative poverty is acceptable. When I ask people there why they chose to join the landless movement and in what ways their lives are most different from before, the most frequent response is "freedom." Although conditions analogous to slavery are in fact still present on

sugarcane plantations in Pernambuco and throughout Brazil, Taquinha residents use the term "slavery" a bit more loosely when referring to their previous lives. Some people in this community did actually experience debt bondage by their employers, and most worked as child laborers (now considered analogous to slave labor in Brazil). Yet when they talk about their past lives as "slaves", they are generally referring to their dependence on low-wage employment in sugarcane and/or other seasonal jobs in order to pay rent and purchase food. Such a life is one with few opportunities, which virtually "enslaves" the poor in cycles of poverty, dependence, and desperation. Now, when Taquinha residents speak of their lives as small farmers, they often say something similar to this statement by 72 year-old Neto:

> *"I was born a slave and spent my whole life as a slave working for a boss…Now, I'm a small farmer, I have my land and I have my house. I may not have money. Yes, most people would say I'm poor…and I am poor. But I'm never hungry, I never need anything. Before my wife had to buy the cheapest potatoes in the market every day. Now we never buy potatoes, we go out to the garden right there and get our own that we grow. We don't buy much. We don't need much, most we have in our garden and over there on our farm. We are poor but we are free."*

João, 54, describes how this freedom was always his dream:

> *"It was always my dream to have my own land, you know? The day I heard that this plantation would be occupied, I sold my watch, the only thing I had, to buy black canvas for my family's tent…We struggled a lot, it was very difficult. But now we are free. It was always my dream to work for myself, to have my own land, to have no boss. Now I have that dream. I will never have to work for someone again."*

When I compare numerous statements such as these to the statements from interviews with sugarcane cutters and their families, the differences are shocking. Those who depend on poor seasonal wages from cutting cane speak of barely making ends meet, and relying on government assistance for basic food items between harvest seasons. The cane cutters themselves, usually men, also speak of a lack of dignity and a lack of power in their work relations. Their rural workers' unions are often ineffective, and the cane cutters feel their voices are never heard by the large companies that they work for. Sometimes those laborers who file a complaint are later made an example out of when they are given weeks of the hardest work on the plantation. Many of these laborers also feel that they have extremely limited options, because without education (they started working on the plantations so young that they never

went to school), and in a region whose economy depends almost entirely on sugarcane, they do not know where else to find employment.

After interviewing cane cutters and their families, I was pleasantly surprised by the optimism and happiness apparent in Taquinha residents' statements and responses to my questions. They have enough money to pay their basic expenses, and they have enough food. For them, more important than having simply enough food is having "food sovereignty," and the freedom that comes with being a small farmer. They want access to credit to invest in their farms, and improved infrastructure in terms of roads, communications, and security, yet they say that dealing with these obstacles is nothing compared to what they went through before they were "free."

In a region of extreme poverty and inequality, mostly due to the concentration of land and power in the hands of sugar and ethanol producers, granting land rights to the poor seems to be one of the most effective ways to create more equitable rural development. Brazil has a federal institution set up to expropriate unproductive lands and divide them amongst small farmers so that the nation's land might better perform its social function. Why is it then, that communities such as Taquinha usually wait five to eight years for INCRA to expropriate the unproductive lands that they occupy? This is undoubtedly due, in large part, to the power of the sugar-ethanol industry and its proponents, who want to maintain control of the land, and take extreme measures (as described at the beginning of this section) to do so. However, it also seems that the federal government's plans for the sugarcane ethanol industry do not exactly fit with land reform.

On my visit to the Ministries of Agriculture and Mines and Energy in Brasilia in December 2009, I was informed of a program that these two ministries are collaborating on called *Zoneamento Agroecologico*, or Agro-ecological Zoning. This federal government program designates land throughout Brazil that is available for future sugarcane production. Under this special zoning, millions of hectares in all Brazilian states have been designated as having low, medium, or high aptitude for sugarcane agriculture. In the process of mapping out areas for potential future sugarcane production, the government defined the following regulations: areas with native vegetation are excluded; areas in the Amazon, Pantanal, and Alta Paraguay are excluded; only areas that do not need to be fully irrigated are included; only areas with less than a 12% incline (meaning sugarcane harvest can be mechanized) are included;

respect for food security (it is not detailed how this is determined); prioritization of degraded areas and pastures.

The idea behind this program is that Brazil will expand its sugarcane production in order to produce more sugar and ethanol in a sustainable way, without transforming native ecosystems to agricultural land, without expanding the amount of land that will be burnt before harvest (sugarcane cannot be mechanically harvested on land with greater than a 12% incline, and without harming food security. Essentially, this program claims to have found solutions to the main criticisms of Brazil's sugarcane industry through its new "agro-ecological" zoning.

By far the majority of the land designated by the zoning is in the mid-west and southern regions of Brazil. These are areas in which in recent years small and medium-sized farmers have been rapidly leasing out their lands to sugarcane-producing companies, both foreign and Brazilian. As sugarcane production has increased exponentially, migrants from the poor northern and northeastern regions have also flowed in greater numbers to the region to fill the demand for minimum wage labor required to cut the cane.

In Pernambuco, a state with a total land area of nearly 10,000,000 hectares, 321, 400 hectares are already used for sugarcane cultivation, concentrated almost entirely in the tiny Forest Region in the eastern part of the state. The Agroecological Zoning program has designated 205, 157 hectares within the Forest Region as having a medium aptitude for future sugarcane cultivation. This would mean that the region's sugarcane production would nearly double if all of these areas were to be used. The areas designated are said to currently be used for agriculture and livestock. This presumably means that in order for sugarcane production to expand to these regions, it would have to displace other forms of agriculture. It can also be assumed that the designation of more land for sugarcane in the Forest Region will mean even less land will be available for greatly needed land reform in this highly impoverished and unequal region. Thus the sugar-ethanol industry, and the government policies that support it, are clearly not in favor of land reform, which is perhaps the most effective and equitable form of poverty alleviation. Sadly, agro-ecological zoning is yet another case in which a program whose goals are purported to include sustainable development, equity and justice are virtually left out of the equation. Having spent time in numerous landless settlements such as Taquinha, as well as various communities where residents are entirely dependent on cutting sugarcane and have no access to land, it is incredibly disappointing that governments at the local and federal levels do

not choose to invest in rural livelihood security via land reform, instead of continuing to unconditionally support an industry with an atrocious social justice, human rights, and environmental record.

The Exercise of Power over the Means of Conservation: The Case of the Trapiche Sugar Mill and the Islanders of Sirinhaém

The case of the islanders of Sirinhaém and their battle to maintain the mangrove and their livelihood as fishermen serves as another powerful example of the ways in which the interests of agribusiness and rural people sometimes violently collide in Northeast Brazil. In many ways, this story resembles countless others throughout Brazil, a country with a long ongoing history of clashes between rural communities and industry and industrial agriculture. The case of Sirinhaém is particularly compelling and relevant to this paper for two reasons: first of all, because Pernambuco's Forest Region has undergone so many centuries of clearing of the land, pollution of the waterways, and proletarianization of its rural population (particularly since the 1960s) that traditional people who maintain themselves primarily through fishing and subsistence agriculture are extremely uncommon in the region, and arguably should be encouraged (or at least allowed) to maintain their traditional ways for human rights reasons if not for reasons of cultural patrimony; secondly, because Brazil's expanding sugar-ethanol industry claims that it does not harm rural livelihoods or the environment, yet the industry's attempts to "conserve" the environment while producing "green" fuels proves in this case to be at the very least harmful to local people and at worst both socially and environmentally destructive.[45]

The story of the islanders of Sirinhaém reveals the fragility of the livelihoods of those few subsistence fishermen and farmers who remain in the region, and gives reason to believe that the sugar-ethanol industry's lack of respect for human rights and harmful version of environmental "conservation" present a serious threat to traditional people and ecosystems. Perhaps most importantly, this story exposes the sugar-ethanol industry as a highly paternalistic and self-interested actor in Pernambuco's rural development. By portraying itself as the stakeholder most capable of ensuring the conservation of remaining forests and ecosystems, as

[45] This statement regarding the industry's claim to not harm rural livelihoods or the environment, refers to sugar-ethanol companies, their unions and industry associations, and the state and federal entities that support them. This statement is based on interviews with the Ministries of Agriculture and Mines and Energy, and with two sugar-ethanol companies, in addition to content analysis of various government and industry documents regarding the industry's "social responsibility."

well as the promotion of social development, the industry has succeeded, in this case, in moving people off of the land and to the city, and thereby spreading its control over resources as well as the local population and their labor. This case proves just how far the industry can go to expand its control, and ironically, just how beneficial this can be for the industry's image via greenwashing.

I came to know the history of the islanders of Sirinhaém and their ongoing battle through my time spent among the people and the sugar-ethanol company that kicked them off of the islands, as well as the copious amount of time I spent with CPT agents who have worked to protect and restore the islanders' rights for over a decade. My close collaboration with CPT on this research naturally made me sympathetic to the cause of the islanders. However, because the purpose of this project was to understand the politics of sugarcane ethanol production through the eyes of the people impacted by it, I do not view this as harmful to my research. By also interviewing the Trapiche sugar-ethanol mill, I was able to balance out my perspective and begin to understand some of the motivations behind the industry's actions in such cases, if not at least the discourse which reaches the public in defense of their actions.

The Sirinhaém River is located in Pernambuco's southern Forest Region (see Figure 2, page 40). The area in question for this case study is an estuary of the Sirinhaém River, very near to the coast, which supports a mangrove ecosystem rich in biodiversity. For generations (since approximately 1914), traditional families lived a largely subsistence lifestyle on 17 islands spread throughout the estuary. These people, of mixed indigenous and African heritage, extracted fish and shellfish from the mangrove for their own consumption and to sell in the weekly market in the town of Sirinhaém, and also maintained small farms for subsistence crops. The estuary that the families occupied is actually state-owned land, and while the families had not earned any kind of legal title to the land upon which they had built their homes and farms, for generations their presence on the islands was allowed.

According to the federal *Lei de Terreno Marinho* (Law of Marine Land), land within thirty meters of where high tide reaches belongs to the state. In practice, it appears that such public lands belong to the state and also to *latifundios*, which are virtually always able to make a contract with the state for the use of those lands. This type of contract with the state for control or use of public land in Brazil is called *aforamento*. Throughout Brazilian history it has been common for large companies, and particularly *latifundios* such as those in the sugar-ethanol

industry to enter into an *aforemento* in order to use those public lands. The way in which such state lands generally come to be used by traditional people such as the islanders of Sirinhaém is simply through occupation, or *regime de ocupaçao*. In general, the state recognizes whoever occupies the land as having the right to live there. According to social movement supporters, in this case the state recognized the right of the islanders to live in the estuary of the Sirinhaém River since they began to occupy the area around 1914 because their subsistence lifestyle did little harm to the ecosystem, and by providing sustenance for so many people this public land was viewed as serving an important social function.[46]

Trapiche is one of the region's largest sugar-ethanol complexes, with a total of 28,500 hectares of land used for its sugarcane plantations (65% of total area), forested areas left as nature reserves (28% of total area), small cattle pasture (1.5% of total area), homes for more than 1,000 of its employees, and the industrial park where sugar and ethanol are produced (the latter two comprise about 6% of the total area).[47] Part of the Sirinhaém River falls within Trapiche's property, and in several places sugarcane is even planted up to the edge of the river, in place of native riparian forest.[48] Trapiche is said to have originally asked the state for control over the publically owned estuary and islands by entering into an *aforamento* as early as 1898, 16 years before the occupation of that land by traditional fishermen. In the early 1980s, when *Proálcool* still provided huge incentives to sugar-ethanol companies like Trapiche for the production of sugarcane ethanol, thus encouraging expansion and increased production, Trapiche attempted to expel the islanders for the first time. The islanders and their social movement supporters believe that this attempt was spurred by high land values caused by the market distortions inherent in the *Proálcool* program; at a time when the sugar-ethanol industry could receive artificially high prices for ethanol, and few environmental regulations existed, it made sense to expand territories upon which sugarcane could be planted. By the mid-1980s, when *Proálcool* ended along with the military dictatorship, the state had decided the islanders could remain in the estuary and Trapiche's motivation for expelling them had largely dwindled. As explained in Chapter Three, this period was a time of great decline for the sugar-ethanol industry, particularly in the

[46] From interviews with CPT agents in October and November 2009.
[47] Usina Trapiche, 2009: 2.
[48] The planting of sugarcane within thirty meters of a river is actually illegal according to federal law, and at the time I visited the Trapiche sugar mill in March 2010, its managers informed me that they are in the process of clearing the sugarcane close to the river and reforesting those areas with tree species native to the Atlantic Forest.

impoverished northeast, where the industry had been particularly dependent on state support and was in no way self-sustainable.

In 1998, when Trapiche was sold to a sugar mill owner named Luis Andrade Bezerra from the neighboring state of Alagoas, 57 families were living on 17 islands in the estuary. Narratives on the sequence of events and the motives for those events differ from this point on. According to the islanders and their supporters in the social movement, without any provocation on the part of the islanders, members of Trapiche's private militia began destroying the homes and small farms of the islanders as early as 1998, soon after Trapiche changed hands and the new owner became interested in controlling and "conserving" the estuary and its islands himself. The islanders say that they received threats of further destruction and even violence if they didn't leave their homes on the islands. At this time the sugar-ethanol industry was in the midst of a renewed expansion due to rising prices for both sugar and ethanol, and a new wave of state support (although far less than anything seen during *Proálcool*). The islanders and their supporters believe that Trapiche sought *aforamento* for the public lands in order to expand the area in which they could plant sugarcane, or at very least the area under their control.

According to current Trapiche managers, Bezerra noticed destruction of the mangrove during a routine fly-over of his property. They say that when Trapiche employees were sent in to the area to investigate the situation they found that the islanders were living "like crabs… in sub-human conditions," and that there was "devastation occurring in the mangrove forest."[49] Apparently Bezerra was so alarmed by the so-called devastation that he reported it to the authorities, and thus began the process of removing the islanders from the area, and placing control of the area in the hands of the Trapiche sugar-ethanol mill.

Once the islanders' homes had been destroyed and they had begun receiving threats from Trapiche's militia (note that the sugar-ethanol industry in Brazil, as with most of this nation's agribusiness, has a long history of hiring private "militias" to protect their interests and intimidate adversaries such as fishermen, small farmers, and activists), they made contact with social movement organizations including CPT and the Fishermen's Pastorate, both of which seek to protect and defend the rights of traditional people. These organizations and others fought alongside the islanders over the next several years, in and outside of court, with the goal of maintaining the islanders in the estuary. Though previously isolated and virtually powerless,

[49] From interview at the Trapiche sugar mill in March 2010.

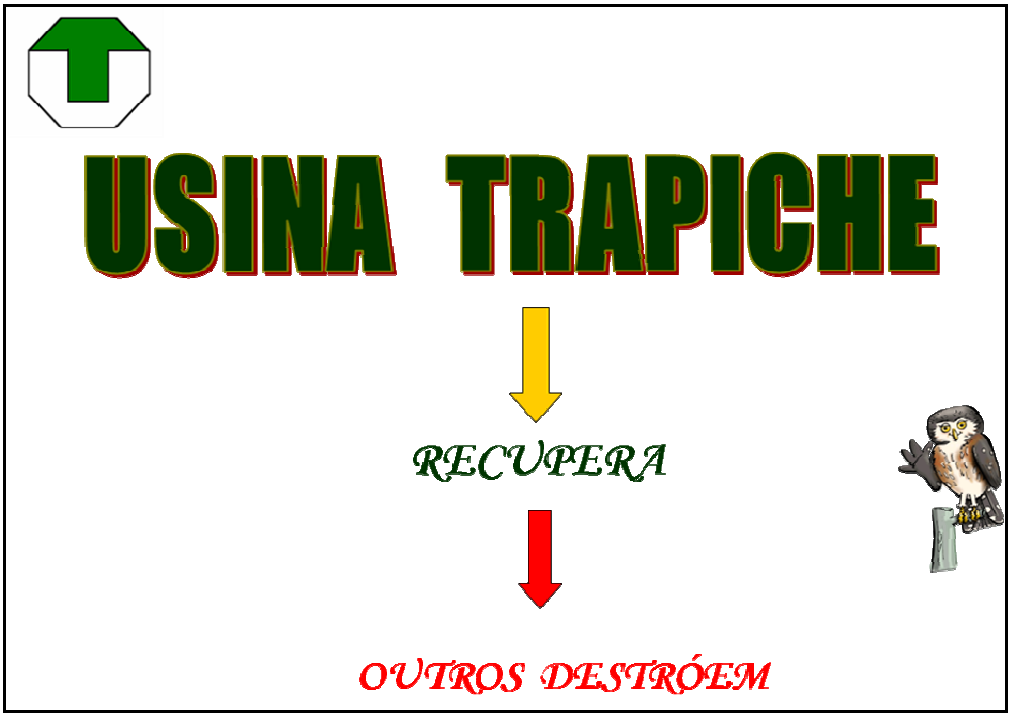
their collaboration with the social movements provided the islanders with increased social capital that they still benefit from today. Trapiche, of course the more powerful party due to its financial resources and political influence, had the upper hand and eventually won the court battle which led to the legal expulsion of the islanders in 2002. The courts approved this expulsion on the grounds that the islanders were not only destroying the mangrove with their extractivist subsistence lifestyle (Trapiche accused them of deforesting the mangrove for firewood and even to make and sell charcoal), but also that they were living in sub-human conditions. Trapiche's success came in large part from its employment of a human rights and social development discourse. Trapiche argued that due to their isolation in the estuary, children of the islanders were unable to attend school, and that the families lived in unsanitary, unhealthy conditions; by relocating to homes in the city, these families would have the opportunity to live healthier and more prosperous lives.

During my interview with the impassioned manager of natural resources at Trapiche, he repeatedly stated that the islanders were "living like crabs" and implied that Trapiche had done them a generous favor by relocating them to the city. This manager, Mário Jorge, also accused the Fishermen's Pastorate of embezzlement during the time in which the organization was defending the islanders, and discredited all of the social movement organizations defending the islanders as "gangs…actually big businesses…hiding behind the Church." Over the course of the two days that I spent touring the facilities of Trapiche and interviewing mangers of natural resources, cultural patrimony, and human resources, I found that everyone there spoke ardently about their role in expelling the islanders from the estuary, with no sign of guilt over any sort of human rights offense. It seemed that these people, and the company of Trapiche in general, truly believed that they had not only done the islanders a favor by relocating them to homes in the city, where they have access to education and modern services, but that they had also played an important role in preserving the mangrove forest.

Figure 3, below, shows a slide from a PowerPoint presentation that Trapiche uses to market its "social responsibility" and environmental conservation efforts to clients as well as foreign governments interested in purchasing the company's sugar and/or ethanol. This slide is number 109 of an extremely long presentation which includes numerous photographs of the "destruction" of the mangrove at the hands of the islanders and the "recuperation" at the hands of Trapiche. In this slide we also see the endangered endemic owl species which has been found to

live in some of the areas of Atlantic Forest on Trapiche's land, and which the company now uses as its "mascot." The message of this slide couldn't be any clearer: Trapiche is a friend of the environment, and must defend it from the destruction that other people wish to inflict upon it.

Figure 3. Slide from Trapiche's 2009 presentation on the company's social responsibility and environmental preservation efforts.



Translation of text: "Trapiche Sugar Mill => Recuperates => Others Destroy."

In order to fully understand Trapiche's perspective, it is important to know what happened to the islanders following their expulsion, and how the estuary is now used. Trapiche convinced public authorities of their good will and desire to improve the living conditions of the islanders by offering to provide each family with a home in the town of Sirinhaém and a small relocation allowance to every islander that moved, in addition to access to the estuary and its mangrove forest for fishing activities. I had the opportunity to visit the islanders now living in the city (all but two families had relocated as of 2010), and to speak with them about their current living situation and livelihood. Trapiche argues that now the islanders live in the city,

where they have electricity and running water, and the children can go to school; they also supposedly still have full access to the Sirinhaém River and the estuary and its islands.

When I visited the families living in the city, I saw that where they are living now is a steep hillside on the outskirts of town which Brazilians refer to as a *favela*, or slum. The families were given small, basic two-bedroom cement homes with bars on their windows. Because the homes are positioned on a steep hillside, the residents must walk down a sharply inclined dirt path to reach the city center, and from there make their way to the wharf and then paddle nearly two hours to the estuary to fish. The islanders now have electricity, television, and running water, and many of their children attend public school, but they have no land upon which to plant fruit trees or cassava and other basic subsistence crops; while they have access to the river and estuaries, it is a very long trip. Ironically, some teenagers do not attend school in order to go on the long fishing trips with older relatives and thereby earn a living in the city. On Saturdays many of the islanders make their way down the steep dirt path into the city with wheelbarrows of crabs and fish to sell at Sirinhaém's farmer's market. While they are now much closer to the market, they complain of the distance to the mangrove where they are accustomed to earning their living and feeding themselves. It is much more difficult to make the trip to the mangrove to collect enough fish and shellfish to sell in the market, and what is felt even more severely is the distance that they much travel in order to extract their traditional foods such as fish, crabs, shellfish, and fruits. The islanders now depend much more on the meager income earned in the market each Saturday, which they need in order to buy food stuffs such as cassava, fruit, and fish, the basics of their sustenance which they previously provided for themselves with no need for money with which to buy it.

To Trapiche's credit, the islanders have perhaps made some gains in specific livelihood assets, yet they have lost others which were equally important and had significant cultural value. The loss of land upon which to farm, and the loss of easy access to areas in which to fish, signifies a significant weakening of the islanders' natural capital. Today the islanders speak most heatedly about these losses, as they have had trouble adapting to an urban life. In addition, though it may seem counter-intuitive, the islanders' financial capital has also weakened. While living in the city may provide more opportunities for employment, fewer subsistence activities means that the islanders are now more dependent on spending what money they earn from selling fish and shellfish on food products in the market. While they now have greater physical

capital, particularly in terms of electric, water, and sanitation services, these services require payments which are hard to meet. These kinds of new expenses resulting from an urban lifestyle mean that many of the islanders are now seeking wage labor, often at Trapiche itself. Thus, Trapiche has managed to not only move the islanders off of land it wished to control, but it has also managed to gain new employees.

Another of the islanders' gains in assets has been in terms of social capital. Their predicament led to the establishment of new networks and connections, particularly within the social movement. However, with the division of some families and community members caused by the ongoing conflict and relocation to different areas, they have also experienced significant losses in social capital. In terms of human capital, there have been gains, although undoubtedly gains that are more valued by Trapiche and other stakeholders than by the islanders themselves. Access to schools has, as Trapiche predicted, increased enrollment amongst the islanders' children. Employment at Trapiche as sugarcane cutters and boat drivers has perhaps taught some of the islanders new skills. In spite of the various gains in livelihood assets listed here, every islander that I talked with spoke fondly of their time living on the "paradisiacal" islands, when they did not need to depend on seasonal work with Trapiche in order to feed their families, and they benefited from relative food and livelihood sovereignty.

The different perspectives on the conditions in which the islanders lived prior to their expulsion is one of the most interesting aspects of this story. Mário Jorge of Trapiche explained to me that when Trapiche first found the islanders, where they were living was like a "*favelão*, the worst kind of slum… because the children were naked and they had no electricity." The way he spoke of Trapiche's role in "helping" these families, it seemed as though he actually believed that the sugar mill had done the islanders a service. This perspective of course fails to recognize the benefits to natural capital that come from living off the land, particularly productive land such as the islands where crops and fruit trees could be grown and fish, crabs, and shellfish were not hard to find. Some argue that the term "community food security" should be defined by a community's ability to either produce and collect its own food, or have such a relationship with local producers that they still possess a certain level of control over where their food is coming from. For some traditional peoples and their proponents, the term "food sovereignty" is considered more relevant than "food security," as it implies independence from international food systems and agribusiness. For Trapiche, a company which embodies the values and

perspective of international agribusiness, and thereby sees itself (and, needless to say, promotes itself) as an important player in providing basic goods to people in Brazil and the countries that it exports to. During the time I spent at Trapiche, I was informed by various managers that the company provides a product that all Brazilians, rich and poor, need and use for their sustenance- sugar. Naturally, I was also informed that Trapiche produces a "carbon-free" fuel- ethanol- which is also a necessary good in Brazilian and global markets.

The expulsion of the islanders met resistance from the families themselves, along with many of their supporters within the social movement, ranging from environmental organizations to pro-poor land rights organizations such as CPT and others. Although the more than 2,000 hectares of estuary and mangrove forest are still publically owned, Trapiche manages the land, counts the entire area as part of its "nature reserve," and has employees whose jobs it is to patrol the area and punish and/or report anyone who is doing anything illegal, such as hunting or harvesting wood. These employees also closely monitor fishermen's activities, and I personally witnessed some of Trapiche's environmental "investigators" speaking bitterly of the "unsustainable" practices of many of the fishermen while admitting that Trapiche makes no efforts toward education about sustainable crab fishing practices and such. Trapiche proudly advertises the estuary as an area of environmental conservation, and has even begun a fledgling eco-tourism initiative there. When I visited Trapiche, I was given an environmental tourism brochure, in which the estuary appeared as the main feature. Trapiche employees spoke of their newfound fame as an environmentally and socially responsible sugar mill, and gave me the grand tour of the estuary, during which they described their valiant battle against the "destructive" islanders to "save" the mangrove forest.

As mentioned above, some of the islanders currently work for Trapiche, mostly cutting cane (a job which generally employs for six months and pays minimum wage), and some contributing to the monitoring of the estuary by driving boats for the environmental "investigators" on their trips to ensure that fishermen are not using unsustainable methods, and that no one is hunting, etc. Trapiche staff speak proudly of their employment of the islanders, who previously did not have formal jobs. Of course, prior to working for Trapiche they had a largely subsistence lifestyle, and now their urban life necessitates salaried employment in order to purchase the food and other basic goods that they previously harvested from nature. On my boat trip through the Sirinhaém River and the estuary formerly occupied by the islanders, our

boat driver was in fact one of the islanders. The manager of cultural patrimony who gave me the tour of the area proudly introduced the boat driver to me by saying that he was formerly an islander who lived from the destruction of the mangrove, and now he lives from its protection. The paternalism and condescendence in this statement were both painfully apparent, having spoken with many of the islanders who now live in town and are infuriated not only with their expulsion from the islands, but also with Trapiche's own abuse of this area now that it is under the company's control.

Local fishermen, including some of the islanders who still fish there, say that Trapiche's sugar-ethanol factory regularly pollutes the river and estuary with stillage (a highly toxic by-product from sugar and sugarcane ethanol production). Trapiche's pollution of the waterways reached such an outrageous level in October 2009 that local fishermen decided to video tape images of the polluted water and dead fish, with the help of CPT, in order to report the company's abuses to IBAMA. I happened to be with the CPT agents when the fishermen suggested they document Trapiche's crimes on video, and through our discussion of how to go about videoing the polluted river I became frighteningly aware of the level of danger involved in opposing a powerful company like Trapiche. When the CPT agents and I suggested that we go along in the boat to help video, the fishermen begged us not to, knowing that if we were seen by Trapiche guards or environmental investigators our lives could be in danger. Because they are fishermen who regularly fish in the area, they would look less suspicious; for us, white people who are obviously not fishermen, we would attract dangerous attention, possibly endangering our lives and those of our fishermen friends. They refused to allow us to go with them during the videotaping for this reason, and in the end the CPT agents taught the fishermen how to use the video camera themselves. The fishermen carried out the duty excellently, capturing ten minutes worth of images of dozens of dead fish floating on the surface of the water, and unnaturally dark parts of the river that were obviously polluted. This resulted in a surprise visit by IBAMA to the Trapiche's sugar-ethanol factory, yet after an inspection of the area IBAMA was unable to find anything upon which to convict Trapiche of an environmental crime. CPT agents and IBAMA suspected a leak informing Trapiche of what should have been a surprise visit, providing them the opportunity to close up or remove any pipes pumping stillage or other byproducts into the river and estuary. This suspicion was confirmed when Mário Jorge of Trapiche told me that an acquaintance from Globo, the national media conglomerate asked to accompany IBAMA and

film the investigation of Trapiche and its potential pollution, informed Trapiche of the visit the day before. Mário Jorge of course also claimed that Trapiche never pollutes the river or estuary; according to Trapiche, talk of pollution is simply rabble-rousing by the islanders and their proponents.

In 2006 CPT, with the support of hundreds of local fishermen and some local politicians, began planning with IBAMA to return the people to the estuary by turning the publically-owned land into an extractive reserve, or *RESEX*. The idea behind the creation of a *RESEX* in Brazil came from the famed environmental and social movement activist, Chico Mendes, who dedicated his life to organizing poor rural workers and preserving the Amazon rainforest upon which they depended for their livelihoods. Prior to his assassination in 1988, Mendes had become famous and extremely influential for his ability to connect environmental and social problems, and to argue for land rights for traditional people not only as a way of maintaining sustainable rural livelihoods, but also as a way of preserving natural resources. Bratman (2009) describes how Chico Mendes' death highlighted the role of social conflict in land use and environmental planning, and that although the first *RESEX* was not created until after his death, Mendes' life's work and innovative thinking about social and environmental issues, as well as the aftershock of his death, are pointed to as the source of the idea behind the *RESEX*. According to Bratman, the *RESEX* was a groundbreaking form of land use at the time: "this notion of sustainable development embodied in the *RESEX* represented a novel approach towards environmental management because of its acceptance of local human populations as allies rather than obstacles in conservation efforts."[50] Today, the federal government's Chico Mendes Institute for Conservation and Biodiversity (ICMBIO) administers Brazil's more than 50 *RESEX*s. While the majority of the *RESEX*s are located in Amazonia, the place of Mendes' birth and life's work, an increasing number have been developed in other parts of the country, and particularly in the poor Northeast.

The creation of a *RESEX* in the state-owned estuary and mangrove forest of Pernambuco's Sirinhaém River seems to present solutions to a number of ongoing problems in this area. First of all, by allowing the islanders to live on the land again, it relieves the ongoing social conflict over their expulsion. Secondly, it allows those more than 50 families a secure and culturally appropriate livelihood based on extractivism and subsistence farming. For most of

[50] Bratman, 2009: 86.

these families, fishermen for generations, life in the slum of Sirinhaém, more than two hours from the estuary where they fish, is not the ideal or most dignified way of living. While this urban life has strengthened some of their livelihood assets, it has also weakened many others, particularly those most valued by the islanders' culture. Trapiche may think that those families are better off due to their access to resources and infrastructure in town, but they have this perspective due to their world view, which many of the traditional fishermen simply do not share. Because the creation of the *RESEX* would include the construction of small family homes in close proximity to the estuary, with basic infrastructure included, the problem of lack of infrastructure and "sub-human living conditions" would be solved, allowing the fishermen culturally and environmentally appropriate living conditions in the rural area in which they wish to live and earn their livelihood. Thirdly, the *RESEX* would ensure conservation of the mangrove forest and estuary through sustainable extractivism and caretaking by the fishermen themselves. Administration by ICMBIO would guarantee that the fishermen's activities are sustainable and truly protecting the area. Considering IBAMA's suspicion of Trapiche for environmental crimes, including for the pollution of the Sirinhaém River in October 2009, and the fact that the fishermen's supposedly unsustainable use of the mangrove was cited as a principle reason for Trapiche's right to expel the families, it seems that putting the administration of the land into the hands of ICMBIO, and allowing the fishermen to live there if they use the land in ways which are sustainable according to ICMBIO, presents a remarkably effective and equitable solution to the problem of conservation of the area.

From the perspective of effective conservation and equitable land rights, the creation of the *RESEX* seems an obvious solution. Many of the supporters of the creation of the *RESEX*, including CPT and IBAMA, are astounded that over four years of planning and petitioning for it, the *RESEX* still does not exist. The CPT agents argue that Trapiche's political influence, and the lobbying power of the sugar-ethanol industry in general, has impeded the creation of the *RESEX*. According to a CPT agent who has accompanied the islanders throughout their battle with Trapiche, some of them have actually received threats from Trapiche for fighting against the *RESEX*. When I interviewed Trapiche's natural resources manager, he argued fervently that the *RESEX* would not be as effective a way of conserving the area; because Trapiche protects the area and monitors its use by extractivists now, he does not see how the creation of the *RESEX*

would improve anything. Unsurprisingly, he also denies any use of threats or intimidation in Trapiche's resistance to the creation of the *RESEX*.

Trapiche's ongoing resistance to the creation of the *RESEX*, which in other parts of Brazil has proven a highly effective method of conserving ecosystems while sustaining rural livelihoods, reveals the industry's desire to maintain control over land in the Forest Region. While in many cases the industry's battles over land in Pernambuco have been against land reform settlers, in this case the battle is over the right to exercise the means of conservation. Trapiche's legal permission to control and "conserve" the more than 2,000 hectares in question demonstrates the influence that the industry has at various levels of government. Trapiche's desire to use this land for conservation purposes, however, reflects a shift in the industry's presentation of its image to the public. As with various types of industry throughout the world, global concern over environmental destruction has led many businesses and even entire industries to realize that they must either get on board or sink. In the case of the sugar-ethanol industry, which has received copious criticism for its destruction of forests and pollution of air and water for decades at least, greenwashing has proven an effective means of shifting the industry's image in Brazil and abroad. Because their products- sugar and ethanol- are exported to environmentally conscious places such as the European Union and even the state of California (and in many cases these companies are seeking to expand their export markets, particularly in the case of ethanol, to the US and elsewhere), shifting their image from the destroyer of rainforests to one in which they are saving rainforests and expanding the areas of forest, mangrove, and waterways in their legally required nature reserves.

Brazilian federal law requires that all landholders, from small farmers to agribusiness, leave 20% of their land as a nature reserve. Because this law is rarely effectively enforced, it is considered a joke by some. In the case of Trapiche, it is taken quite seriously, and used for the company's campaign of greening its business and the sugar-ethanol industry as a whole. Prior to its acquisition of the state-owned estuary and mangrove, Trapiche's nature reserve was barely 20% of its total land. Now that Trapiche includes the more than 2,000 hectares of state land in its count of total area used as a nature reserve, the company can advertise its exceptionally large and "pristine" reserve. Its ability to do so has indeed caused Trapiche to stand out from other companies in the industry, particularly within Northeast Brazil, as "green" and socially responsible. For most who accept this self-created identity, there is simply a lack of

understanding over the sacrifices that were made for Trapiche to expand its nature reserve. Those sacrifices, particularly in terms of the loss of livelihood and dignity for dozens of families, must be made more apparent so that justice may be restored through the creation of the *RESEX*, and Trapiche revealed as more a villain than a hero in this saga.

CHAPTER SIX

CONCLUSION: FROM SUGARCOATING THE ETHANOL INDUSTRY TO FRAMING A NEW PARADIGM FOR "GREEN" FUELS IN BRAZIL AND BEYOND

As this paper has hopefully made clear, sugarcane production in Pernambuco detracts from efforts toward sustainable rural development, increased standards of living, and decreased inequality, particularly in its propensity to make difficult or even deny land reform, the creation of extractivist reserves, and the general rights of the rural poor to land and food security. It is apparent that sugarcane ethanol production throughout Brazil follows the country's historic pattern of agricultural development, in that it favors economies of scale, thereby increasing concentration of land, while perpetuating rural poverty and leading to an increase in rural-to-urban migration. Clearly, Brazil needs improved governance and more equitable sustainable development policies if the expansion of ethanol production it currently promotes is not to exacerbate inequality in an infamously unequal nation. It is my hope that this paper contributes to a global dialogue on the social impacts of biofuels, reveals a less sugarcoated version of Brazil's ethanol industry, and helps to frame a new paradigm for biofuels production.

Although much of this paper has described the numerous injustices committed by the sugar-ethanol industry and the state against the rural poor in Pernambuco, it has also told of the ways in which some people have been able to experience positive livelihood outcomes despite adversity and huge imbalances of power. Rural communities and their proponents, particularly (in these cases at least) in the form of NGOs and "social movements," have taken on industry and government and in some cases succeeded. In the case of the landless settlement of

Taquinha, the organizing efforts of CPT and the perseverance and courage of Taquinha's residents, led to the conquering of enough previously unproductive land to sustain 35 families. In the tragic case of the islanders of Sirinhaém, recent events including mobilizations of hundreds of activists and community members in the town of Sirinhaém, and IBAMA's increasing support, suggest that the creation of the *RESEX* may be on the horizon. Both land reform and the creation of extractive reserves are effective ways of achieving the goals of sustainable development and restoring some level of equity to a highly impoverished and unequal region in which the wealthy have maintained almost absolute control for centuries. Rural people are still continually evicted from land in Pernambuco and throughout Brazil due to the interests of powerful industries in controlling the land, as well as the means of labor and even the means of conservation, yet this paper has shown that there are clearly alternative scenarios.

Throughout my experience in Brazil I often felt disillusioned by the environmental and sustainable development movements, particularly due to the lack of prioritization of critical social justice and human rights issues. However, the selfless work of CPT and similar organizations, and the tenacity and will of the people they work with, inspired and touched me deeply. Through it all, I have managed to remain firm in my belief that sustainable development is the path that humanity must pursue if we are to maintain the integrity of Earth's natural systems which all of life depends upon while simultaneously creating a more just and equitable global system in which all people have access to the resources and opportunities to live prosperous, healthy, and happy lives. In places like Pernambuco, industry and government clearly do not support this view of sustainable development, yet social networks that begin locally and extend to global networks in support of vulnerable populations, increasingly have sufficient power as contenders, even on such unlevel playing grounds.

Thus, one important lesson learned from this research is that NGOs and international social movements and networks can actually have significant influence in the realms of the global politics of environment and development. They play a critical role in influencing policy, empowering grassroots actors, and carrying out advocacy and projects that governments and multilateral organizations are simply less effective and efficient at, or in some cases won't do (such as the organizing necessary to realize land reform and the creation of extractive reserves in Pernambuco). These types of movements, networks, and NGOs are a necessary component of a thriving global civil society, not meant to replace the state system or multilateral organizations,

but to pressure them, question them, push them, and even aid them in accomplishing their work. While good governance is critical to ensuring that sustainable development schemes such as biofuels production do not harm the rural poor (or better yet, ensure that the rural poor actually benefit), NGOs must continue to play the role of watch-dog, whistle-blower, radical fringe, and voice for the poor, vulnerable, and oppressed, as well as for the environment itself.

NGOs, social movements, and scholars alike must continue to study and question sustainable development models such as biofuels production, to stimulate dialogue, and to encourage condemnation of human rights and environmental crimes, while also supporting and highlighting best practices. Though often overlooked, the lives and livelihoods of the world's most vulnerable populations are at stake in the so-called energy and climate crisis "solutions;" they stand to benefit and/or suffer at the hands of global environmental and energy policy, and therefore need advocates who will relentlessly make the case for the importance of equity and justice as a necessary component of any sustainable development model.

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