

# **The Fight for the Land: Conservation and Production in the Brazilian Amazon**

by

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### **Abstract**

In the state of Pará, in the Brazilian Amazon, a tension exists between forest conservation and production, as cattle ranchers, small rural producers, governments and NGOs co-exist in contradiction. This research inquires into how cattle ranchers respond to the constraints imposed by more rigorous environmental concerns as they struggle to navigate the inconsistencies of government. It searches in institutional failure and identity the reasons why environmental legislation cannot be effectively implemented in the Amazon, and finds that, in reality, a central factor in Amazonian deforestation is government failure in adapting to sustainable development in a manner that grants due importance to local identities attached to landholding. Lack of understanding of rural perceptions, priorities, social-cultural frameworks and economic needs is a pathway to failure and my research attempts to show that this is where the Brazilian government finds itself. The paper concludes by suggesting that investments in intensification and conservation are only likely to occur once effective institutions are in place.

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## I. Introduction

In a Tragedy of the Commons situation, government institutions are created to manage and restrain access to natural resources. But what happens when the institution faultily manages the commons? This is happening in the state of Pará, in the Brazilian Amazon, where a tension exists between forest conservation and production, as cattle ranchers, small rural producers, governments and NGOs co-exist in contradiction.

This research inquires into *how cattle ranchers respond to the constraints imposed by more rigorous environmental concerns* as they struggle to navigate the inconsistencies of government. It searches in institutional failure and identity the reasons why environmental legislation cannot be effectively implemented in the Amazon, resulting in a free-for-all and survival-of-the-fittest situation in such a critical region of the world.

The Amazon rainforest lays in an extreme impoverished and infertile soil where it is home to a large concentration of biodiversity, one of the greatest in the world. However, for much of history, this unique place was viewed as a prototype for production and economic development, instating an unsustainable model from the onset. Today, with 18 per cent of the Amazon cleared, mostly for pasture conversion, much international attention has been given to the villains of the story: cattle ranchers.

However, this paper argues that a central factor in Amazonian deforestation is, in reality, an institutional failure in adapting to sustainable development in a manner that grants due importance to local identities attached to landholding. In other words, government's inability to balance conservation with production, establish and enforce land tenure,<sup>1</sup> and provide

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<sup>1</sup> Anderson, in his article *Deforestation in Amazonia: Dynamics, Causes and Alternatives*, argued that there is a common perception that deforestation is usually caused by overpopulation, but in the Amazon, "the ultimate cause often boils down to unequal land distribution" (p.9)

appropriate economic incentives, is contributing to the uncontrolled expansion of unsustainable practices and conflict.

Dove has found that “understanding and common purpose between government and people are less common than misunderstandings and conflicts of interest,”<sup>2</sup> which, ultimately, allows for the emergence of failed policies. Government’s assumption of what is best for the country is not in accordance with the wants and needs of rural populations. Lack of understanding of rural perceptions, priorities, social-cultural frameworks and economic needs is a pathway to failure and my research attempts to show that this is where the Brazilian government finds itself.

## II. Design and Methods

The focus of this research was the state of Pará because of its strong duality between conservation and production. Pará is the second largest Brazilian state, constituting 15 per cent of the national territory but only 3.8 per cent of Brazil’s populations. While the Amazonian forest occupies 73 per cent of the state, 16 per cent of its territory is dedicated to pasture and to the fifth largest cattle herd of Brazil, with 18 million cattle. Cattle ranching in Pará is the main economic activity of 51 per cent of its municipalities. In 2008 the state slaughtered more than 2 million cattle, while generating around R\$ 2.7 billion<sup>3</sup> a year in revenues, and employing more than 400,000 people directly.<sup>4</sup> On the other hand, Pará is the third greater deforester of Brazil, clearing 17 square kilometers between January and February alone.<sup>5</sup>

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<sup>2</sup> Dove, M. R. "Foresters' beliefs about farmers: a priority for social science research in social forestry." *Agroforestry Systems* 17 (1992): 13-41, 14.

<sup>3</sup> US\$ 1.5 billion, on April 10, 2010

<sup>4</sup> FAEPA. *Pará - Um Estado Gigante*. April 22, 2008.

[http://www.faeapanet.com.br/index.php?option=com\\_content&view=article&id=112&Itemid=72](http://www.faeapanet.com.br/index.php?option=com_content&view=article&id=112&Itemid=72) (accessed April 9, 2010). IBGE. *Estados@ Pará*. 2009. <http://www.ibge.gov.br/estadosat/perfil.php?sigla=pa> (accessed April 10, 2010).

<sup>5</sup> INPE. *Monitoramento da Cobertura Florestal da Amazônia por Satélites: Avaliação Bimestral do Deter*. April 06, 2010. [http://www.obt.inpe.br/deter/avaliacao/Avaliacao\\_DETER\\_janeiro\\_fevereiro2010.pdf](http://www.obt.inpe.br/deter/avaliacao/Avaliacao_DETER_janeiro_fevereiro2010.pdf) (accessed April 06, 2010).

Within this focus, the research included a field trip to the city of Santarém<sup>6</sup> because of many factors. Santarém is the second largest city in the state of Pará (see Figure 1), and third largest city in the Amazon region, with a population of over 200,000 inhabitants.

**Figure 1**



The city is connected by land with the more developed state of Mato Grosso through the BR-163, or the Cuiabá-Santarém. Santarém is also strategically located thanks to the confluence of two major rivers, the Amazon and the Tapajós, which flows eastward toward the Atlantic Ocean. In 2003, Cargill finished the construction of a port in the city to take advantage of both the rivers and BR-163, which is of crucial importance to the transportation of soybeans and other goods from the soybean-intensive state of Mato Grosso (see Picture 1).

Three main activities—grain (mainly soybean), fishing and cattle—characterize production in Santarém. Thirty per cent of the population lives in rural areas, which also include

<sup>6</sup> Unless otherwise noted, the information in this section about Santarém was gathered through my interviews. Actual numbers were provided by ADEPARÁ officials in Santarém and are for November 2009.

várzeas<sup>7</sup> and 600,000 hectares of protected land under extractive reserves. Cattle ranching occupies 2,217 properties and is mostly extensive and traditional, which implies that the majority of families have been in the region for more than one generation and that they ranch in both várzeas and firm lands. Santarém's 118,000 cattle, however, live in a region of high-risk FMD,<sup>8</sup> and, therefore, cannot be sold to other states or other countries—only surrounding municipalities and the Amazonas states buy Santarém's meat.

Santarém is, therefore, a politically and economically hub in the heart of the Amazon. It hosts numerous environmental and social NGOs,<sup>9</sup> small-scale producers, large-scale cattle ranchers and important government agencies. The city does not make the list of municipalities with the highest deforestation rates of the state, nor it is ground of violent conflicts over land. Because of this, Santarém merges different political actors living in contradiction, but not in conflict with one another; it is, therefore, an excellent case study to analyze the possibilities of co-existence.

**Picture 1**



BR-163 in Santarém

<sup>7</sup> Várzeas, or floodplains, are areas that flood year after year during the “winter” (rainy season) and are among the richest and most fertile soil in the Amazon—it is especially useful for ranching as high quality grass grows naturally, even though cows need to be moved during the flood; in Hecht, Susanna, and Alexander Cockburn. *The Fate of the Forest: Developers, Destroyers and Defenders of the Amazon*. New York: HarperCollins Publishers, 1990.

<sup>8</sup> Foot and Mouth Disease does not contaminate humans, but it spreads quickly to other animals. FMD slows the development and efficiency of meat production.

<sup>9</sup> More than 200 according to an interviewed cattle rancher, but I could not find any official numbers to confirm this.

During the field trip, I interviewed a total of ten individuals and they included: a Brazilian scholar from the National Institute of Amazonian Research (INPA), who gave me an interesting Brazilian perspective of sustainable development; the coordinator of the Institute for Environmental Amazonian Research (IPAM) in Santarém, an organization working in the city for more than 20 years; the vice-president of the Union of Rural Workers (STTR), and the president of the Association of Rural Producers of Santarém (APRUSAM), two organizations representing small-scale producers; a veterinarian at the Pará Agency for Agriculture and Ranching Defense (ADEPARÁ), a state agency focusing on sanitation standards and vaccination programs; a representative of the environmental agency, IBAMA; the president of the Federation of Agriculture and Ranching of Pará (FAEPA), a non-governmental organization and interest group; and finally, three cattle ranchers members of the Rural Union of Santarém (SIRSAM), which represents large landowners. The cattle ranchers also invited me for a barbeque at the SIRSAM headquarters, where I was able to interact informally with many ranchers and hear their common discontent on different issues.

The interviews were later analyzed according to their content. Important insights, controversial quotes, and common themes were identified and will be shown throughout this paper. The overall conclusions of this research would certainly have been much had this field trip to the Amazon region not happened. I was able to gain valuable knowledge and first-hand opinions that are not commonly found on books. A frequent issue pointed out by interviewees was that reality on the ground is very different from what it is said at a national and international level. Lack of understanding of local realities, in their view, is the missing link; it is why policies fail, and I have taken a similar stand after this trip.

The trip was also valuable on a personal level. Being a Brazilian from the southern region of the country, I felt that when I initially became interested in Amazonian issues, I was very disconnected and unaware of their reality, which is so different from mine. In Santarém, however, I was able to experience their stories, successes and frustrations. Listening to so many different perspectives (government, NGOs, and small and large producers), I was often torn between opposing sides and changed my mind constantly. I still feel as if I have not chosen a side to stand by, but this is so because I believe that, first, all sides have a valid argument, and second, that a common goal is possible. The trip also helped me to question my own identity. Growing up in the largest Brazilian city where most of the meat sold comes from the Amazon, this research also enlightened me on how my fellow *paulistas*<sup>10</sup> consumption patterns and mine affect other regions, environmentally, socially and economically.

Through this case study and these interviews, I hope to broaden the scope and show the government's failure in creating a shared environmental identity that hinders the implementation of environmental and conservation policies. Through common complaints of the different actors heard in my interviews I could understand their shared discontent with institutions, and this insight sheds light on a bigger picture of the difficulties that institutions, both domestic and international, find in formulating efficient policies and programs that are applicable at all levels of implementation.

The paper starts with the theoretical context, using the notion of the "Tragedy of the Commons" to discuss the problems of harmonizing conservation and production in a public policy and institutional framework. It then goes on to analyze the literature on the subject of institutional failure in resource management, which, according to Acheson, is very limited.<sup>11</sup>

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<sup>10</sup> *Paulistas* are those born in the state of São Paulo, my home state.

<sup>11</sup> Acheson, James M. "Institutional Failure in Resource Management." *Annual Review of Anthropology* 35 (2006): 117-134.



Followed is a section where deforestation and institutional failure are contextualized within history and colonization policies in the Amazon, presenting a brief commentary on the consequences of deforestation as well. The next section aims at explaining why cattle ranching is so predominant in the region and identifying the main natural, economic and cultural factors driving the expansion of this activity. Within this explanation, the research highlights the dilemmas surrounding the Brazilian Forestry Code and the issue of land tenure in the Amazon. After, there is swift toward a deeper analysis of cattle ranchers' identity, with insights from interviews that show the constant duality between conservation and production, as well as the impact of international pressure in their identity and activity. Finally, the paper presents possible ways forward and the concluding remarks.

### **III. A Tragedy of the Commons in Public Policies**

In his acclaimed article "The Tragedy of the Commons," Hardin argues that under rational choice behavior, where each individual wants to maximize his or her own gains, natural resources are exploited. The invisible hand, proposed by Adam Smith, in fact does not promote the public interest but it rather causes shared but minimally felt damages to the commons. Hardin advocates that it is not possible to grow without limits in a world with limited resources and that "freedom in a commons brings ruin to all."<sup>12</sup> In other words, the conservation of common but limited resources is not of interest to individuals pursuing their own self-interest—it implies harm in the short run with no tangible guarantees that the desired results will be achieved. Consequently, individual rational thinking leaves the group worse off.<sup>13</sup>

Any self-restraining mechanism, accordingly, is often acting counter individuals' interests, because "every new enclosure of the commons involves the infringement of

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<sup>12</sup> Hardin, Garrett. "The Tragedy of the Commons." *Science* 162, no. 3859 (1968): 1243-1248, 1244

<sup>13</sup> Acheson, "Institutional Failure," 119

somebody's personal liberty.”<sup>14</sup> Rationally, a person that chooses or is forced to suppress his or her production for the common good perceives a loss of benefit, whereas others with no limitations enjoy the profits. In the first stages of exploitation, individuals may not recognize that resources are being exploited. Thus, common-pool resources are subtractable and interconnected with the free rider problem because people cannot be easily excluded from usage and will fully benefit from resources regardless of their level of cooperation.<sup>15</sup>

Solving collective action and free rider problems requires the creation of institutions to manage the commons. Institutions serve to increase the costs of exploiting scarce resources and this can be achieved through the existence of managements rules, such as how much is to be exploited, how and by whom. “Whom” rights indicate the need of property rights, in order that owners are assured that only they will benefit from the management of resources. From an environmental perspective and in the case of the Amazon, private property only seems to contribute to deforestation. Acheson describes that private ownerships “promotes efficient use because the owners ... are free to use them in ways that grant them the highest income and to reject the less productive options,”<sup>16</sup> which tends to promote cattle ranching rather than forest conservation in the Amazon, as standing forests are not as profitable and trees grow slowly. However, scholars argue that when ownership rights are insecure and the management institutions that regulate private property are unable to guarantee long-term tenure and benefits for preservation, environmental degradation flourishes.

Yet, Hardin argues that laws, “always behind the times, require elaborate stitching and fitting to adapt to this newly perceived aspect of the commons”<sup>17</sup> and the Amazon regions finds

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<sup>14</sup> Hardin “Tragedy of the Commons,” 1248

<sup>15</sup> Acheson, “Institutional Failure,” 119

<sup>16</sup> Ibid, 120

<sup>17</sup> Hardin “Tragedy of the Commons,” 1245

itself within this “tragedy.” In the case of Brazil the institution is failing. The Brazilian government is unable to administer the commons because its environmental and land legislation fail to address local realities and needs. Cattle ranchers and family-based producers are in constant unease to comply with environmental laws because of their loose right to land. They believe that land insecurity “weakens our activity, because who will want to expand their business here if there is no security in the investment?”<sup>18</sup> Laws also change constantly and are presented to them with no explanation, tangible benefits for voluntary cooperation, or guarantees of success, and they struggle to comply with it. A tragedy of the commons situation creates a natural resources crisis, and a large consensus is emerging that the cause of resource degradation is institutional.<sup>19</sup> The following section analyses this framework.

#### IV. Institutional Failure

When societies cannot respond spontaneously to resource degradation, governmental institutions must intervene and promote resource utilization that generates forward-looking investments, handling scarcity.<sup>20</sup> Although “during most of our history, resource management has not been a primary goal of the government,”<sup>21</sup> institutions are now needed to manage and put a price to scarce resources.

However, not every “commons” situation results in tragedy, whereas some managed commons are still overexploited. Swanson questioned the reasons behind successes and failures in resource management and concluded that the underlying cause is institutional. Institutions must be capable of channeling human intentions toward an outcome consistent with the

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<sup>18</sup> Interview with Luah Tomas. FAEPA, Belém. March 13, 2010

<sup>19</sup> Acheson, “Institutional Failure.” Lopez, Franklin. “Sustainable Development and Institutional Failure: The Case of Ecuador.” *The Independent Review*, IX 2005. Deacon, Robert. “Deforestation and the Rule of Law in a Cross-Section of Countries.” *Land Economics* 70, no. 4 (1994): 414-430. Swanson, Timothy M. “The Economics of Environmental Degradation: An Institutional Approach.” In *The Economics of Environmental Degradation: Tragedy for the Commons?*, edited by Timothy M. Swanson, 1-28. Brookfield, VT: United Nations Environmental Programme, 1996.

<sup>20</sup> Swanson, “Economics of Environmental Degradation.”

<sup>21</sup> Acheson, “Institutional Failure,” 123

preservation of a scarce resource, but as an institution competes for legitimacy in areas of their jurisdictions, within the institution itself, and within the international community, they might fail to administer the commons.<sup>22</sup> Swanson's institutional approach to environmental degradation "attempts to identify the imperfections within the existing systems that cause them to fail to register or to respond to important forms of scarcity."<sup>23</sup> He argues that government policies can directly affect environmental degradation, such as subsidies for land-use conversion or more subtle ways such as lack of adequate funding for management of natural resources. Tucker & Ostrom also argue that "if institutions to govern forests are absent, unenforced, or poorly defined, the result is open access, leaving the forest in an unrestricted state."<sup>24</sup>

Within the institutional approach, Huntington proposed that modernizing societies undergo rapid social and economic change, while the development of political institutions falls behind. He argues that social and economical changes increase political consciousness and expand political participation, undermining "traditional sources of political authority and traditional political institutions."<sup>25</sup> Brazil fits within his description of a modernizing society, as the process of institutionalization—ultimately granting value, stability and legitimacy to the state—is incomplete, making it difficult for "demands upon the government to be expressed through legitimate channels and to be moderated and aggregated in the political system."<sup>26</sup> Ranchers in Santarém often expressed their dissatisfaction and feeling of not being heard; one have said:

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<sup>22</sup> Peluso, Nancy Lee. "'Reserving' Value: Conservation Ideology and State Protection of Resources." In *Creating the Countryside: The Politics of Rural and Environmental Discourse*, edited by Melanie DuPuis and Peter Vandergeest, 135-165. Philadelphia: Temple University Press, 1996, 138.

<sup>23</sup> Swanson, "Economics of Environmental Degradation," 10.

<sup>24</sup> Tucker, Catherine, and Elinor Ostrom. "Multidisciplinary Research Relating Institutions and Forest Transformations." In *Seeing the Forest and the Trees: Human-Environment Interactions in Forest Ecosystems*, edited by Emilio Moran and Elinor Ostrom, 81-104. Cambridge, MA: The MIT Press, 2005, 82.

<sup>25</sup> Huntington, Samuel P. *Political Order in Changing Societies*. Fredericksburg, VA: Yale University, 1968, 5.

<sup>26</sup> Ibid, 55

“Many laws are created, and they don’t think... they are created and the president signs them. I think the government should protect the environment, but with no radicalism, in a rational manner. But this is not happening, things are verticalized, no one is listened to and this bothers us, we don’t profit and it limits our production.”<sup>27</sup>

Swanson pinpointed the difficulty in identifying and consulting those who will be affected by policies due their large numbers, logistical barriers and lack of a proper channel for discussions,<sup>28</sup> but this disenfranchisement can result in local officials and individuals working around the rule rather than complying with it. The federal government, therefore, might unintentionally undermine local authority instead of supporting and encouraging their participation.<sup>29</sup>

The tragedy of the commons affecting the Amazon is not only happening at the local level in cities like Santarém. It also happens within the government itself, between agencies, local and federal governments, and individuals, prioritizing their own interest over the public’s interest.<sup>30</sup> They are also seeking to maximize their political clout and, as a consequence, create impractical and inefficient regulations. Also, government officials and agencies have different interests and perspectives of what is ultimately best for the country.

This tragedy within the government is impacting decision-making and “development policies in the [Amazon] region are frequently incoherent because they are determined by a plethora of conflicting government agencies.”<sup>31</sup> Most political actors want to awe the international community without dealing with domestic implications. This multi-faceted

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<sup>27</sup> Interview with Luah Tomas. SIRSAM, Santarém. March 12, 2010.

<sup>28</sup> Swanson, “Economics of Environmental Degradation,” 14.

<sup>29</sup> Moran, Emilio F. *People and Nature: An Introduction to Human Ecological Relations*. Malden, MA: Blackwell Publishing, 2006, 128.

<sup>30</sup> Acheson, “Institutional Failure,” 123.

<sup>31</sup> Anderson, Anthony. “Deforestation in Amazonia: Dynamics, Causes and Alternatives.” In *Alternatives to Deforestation: Steps Toward Sustainable Use of the Amazon Rain Forest*, edited by Anthony Anderson. New York: Columbia University Press, 1990, 10.

influence of various interest groups, in addition to the endemic corruption in Brazil, contributes to the distortion of information as it goes up the hierarchical ladder. Top decision makers, thus, simplify society in numbers and maps to make policy and receive faulty and incomplete information, formulating national policies that do not take into consideration local variations.<sup>32</sup>

In the Brazilian case, the institution of government is failing because: 1) it fails to regularize land titling and guarantee land tenure; 2) it fails to internalize international environmental problems and succumbs to international pressure without careful domestic consideration; 3) it does neither provide economic incentives nor an open market for forest conservation; and 4) it lacks coordination of interests and objectives among competing agencies and individuals within the government. These aspects are presented and detailed through this paper, but we now look at the history of the region to understand how policies came to be and how they have changed along the years, creating a confusing system for producers to comply with.

## **V. Historical Context of Deforestation and Institutional Failure**

General explanations for deforestation can be simplified based on an international comparative analysis of common factors.<sup>33</sup> A developmental explanation of deforestation maintains that causes include clearing land for agriculture, commercial logging, fuel wood gathering and cattle raising, but views these activities as consequences of unsustainable traditional practices related to poverty, rapid population growth, ignorance and public policies. Economic development and economic incentives that alleviate poverty are seen as possible solutions to halt deforestation.

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<sup>32</sup> Acheson, "Institutional Failure," 125-126.

<sup>33</sup> The following explanations are found in Dauvergne, Peter. "The Politics of Deforestation in Indonesia." *Pacific Affairs* 66, no. 4 (1994): 497-518, 500-503.

A second explanation is environmental, which stresses that large development projects and international companies and organizations financing such projects—motivated by profit maximization—contribute to deforestation in Third World countries. Solutions would include debt forgiveness, an effective international regime that would favor environmentally friendly trade and the empowerment of local populations. Within the environmental explanation, a third one focuses on the destructive impact of government policies on forests. Under this view, decision-making in tropical forest countries is influenced by economic pressures, a westernized-view of development and international financial institutions. Both environmental and public policy explanations, in agreement with the dependency theory,<sup>34</sup> assert that debt-burdened and less developed countries enter the world economy as agricultural exporters, driving up the demand for land conversion and destructive forest practices.<sup>35</sup> In the Brazilian Amazon, the underlying causes of deforestation include all of the above, but the main factors are livestock expansion, infrastructure development, impunity of crimes, weak government agencies, and the constant duality between production and conservation.<sup>36</sup> The region has long been highly influenced by macroprocesses such as public policies, international prices, economic development and consumption.

When the military took control of the Brazilian government in the 1970s, a strong sense of nationalism and development was instated. At the time, only 3.7 per cent of the Brazilian population lived in the Legal Amazon area, which led the government to consider the emptiness of the Amazon as a national security concern. Fear that bordering countries and foreign powers

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<sup>34</sup> For an explanation of the dependency theory see Cardoso, Fernando Henrique, and Enzo Faletto. *Dependency and Development in Latin America*. Berkeley, CA: University of California Press, 1979.

<sup>35</sup> VanWey, Leah, Elinor Ostrom, and Vicky Meretsky. "Theories Underlying the Study of Human-Environment Interactions." In *Seeing the Forest and the Trees: Human-Environment Interactions in Forest Ecosystems*, edited by Emilio Moran and Elinor Ostrom, 23-56. Cambridge, MA: The MIT Press, 2005, 32-33.

<sup>36</sup> Gonçalves, Marco Antonio. *The Brazilian REDD Strategy: How the Country has Achieved Major Deforestation Reduction in the Amazon*. Ministry of Environment, Brasília: German Technical Cooperation Agency, 2009.

would invade and claim the land that the military believed had great wealth potential caused for a massive program of migration to the demographic vacuum that was the Amazon. Thus, the Amazon gained a new status as the future of Brazilian development. They called it the colonization by “real Brazilians” to guarantee ownership, regional development and national integration.<sup>37</sup>

In this effort, military leaders promoted migration of poor landless peasants from the Northeast with the availability of cheap land and special financing conditions. This move benefitted both the poor peasants who could own their land for production and the large landowners who feared their invasion.<sup>38</sup> However, the new land opportunities and fiscal incentives drove more and more farmers and ranchers to the region. Soon enough, not only small farmers had migrated, but also the large landowners from the Southern states took advantage of the cheap land. Under historic rates of inflation at the time, the government was giving away money at negative interest rates, which the World Bank observed in a study: “cattle ranching is a low profit activity in Amazonia and only continues because it benefits from government credits and subsidies.”<sup>39</sup> Government subsidies, fiscal incentives and credit opportunities largely contributed to cattle expansion and deforestation. Such policies accorded an economic value to forests, which is gained only when they are destroyed.<sup>40</sup> Swanson and Hecht & Cockburn identified that government policies assist in environmental decline through land-use conversion because, during economic modernization, they are driven by rational choice. Prior to international attention to the environment, colonization of the Amazon and forest-pasture

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<sup>37</sup> Barbosa, Luiz C. *The Brazilian Amazon Rainforest*. Lanham, MD: University Press of America, 2000, 30. Hecht, Susanna, and Alexander Cockburn. *The Fate of the Forest: Developers, Destroyers and Defenders of the Amazon*. New York: HarperCollins Publishers, 1990.

<sup>38</sup> Barbosa, *Brazilian Amazon*, 38.

<sup>39</sup> Margulis, Sergio. *Causes of Deforestation of the Brazilian Amazon*. Working Paper No. 22, The World Bank, Washington, DC: The World Bank, 2004, xvii.

<sup>40</sup> VanWey et al., “Theories”



conversion were seen as an investment and a rational choice made under the financial constraints of a developing country.<sup>41</sup> In Brazil, environmental policy dates back to 1965 with the Forestry Code and later enforced, in 1973, with the creation of the Special Secretariat for the Environment (SEMA). This agency, however, was created within the Ministry of Interior with the intention to preserve the environment without compromising economic development and industrialization.<sup>42</sup>

Colonization strategies, as well as Brazil's economic and social systems induced both capital and labor to move to the Amazon frontier.<sup>43</sup> Instead of focusing on land reform under an extensive and comprehensive Land Statute, the military chose to distribute land in the Amazon with no careful planning. What resulted was a "context in which the struggle for land and the struggle for resources became intense and almost invariably ended in the destruction of yet more forest."<sup>44</sup> The Land Statute of 1964<sup>45</sup> allows the federal government to expropriate any land at any time for the purpose of agrarian reform, while owners cannot dispute the decision in court and only receive compensations for prior investments in the land. During the military regime around 30 million hectares of land were transferred to private owners mainly through fiscal incentives.<sup>46</sup> A way to secure land, under the Statute, was to prove that land was cultivated and used for a year and a day,<sup>47</sup> either with crops or cattle. As a consequence, "every large landowner knows that land must be farmed intensely"<sup>48</sup> to guarantee ownership, because legal actions are not enforced and they might risk occupation or expropriation. Cattle ranchers in the Amazon share this view as well:

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<sup>41</sup> Swanson, "Economics of Environmental Degradation," 78.

<sup>42</sup> Hall, Anthony. "Environment and Development in Brazilian Amazonia: From Protectionism to Productive Conservation." In *Amazonia at the Crossroads: The Challenge of Sustainable Development*, edited by Anthony Hall, 99-114. London: Institute of Latin American Studies: University of London, 2000, 1000.

<sup>43</sup> Stewart, Douglas Ian. *After the Trees: Living on the Transamazon Highway*. Austin, TX: University of Texas Press, 1994, 266.

<sup>44</sup> Hecht & Cockburn, *Fate of the Forest*, 140.

<sup>45</sup> Navarro, Zander. "Expropriating Land in Brazil." In *Agricultural Land Redistribution*, edited by Hans Binswanger-Mkhize, Camille Bourguignon and Rogier van den Brink, 267-290. Washington, DC: The World Bank, 2009.

<sup>46</sup> Navarro, "Expropriating Land," 273.

<sup>47</sup> Hecht & Cockburn, *Fate of the Forest*, 167.

<sup>48</sup> Navarro, "Expropriating Land," 277.

“[20 years ago] in order to start with the documentation we had to work at least fifty per cent of the land, and now it has changed, you can only on twenty per cent. Government criteria was ‘if you want land in the Amazon, you have to work on it, you’re not supposed to have land to keep it still.’”<sup>49</sup>

Non-used land was also taxed for a while, encouraging deforestation and preventing investments in intensification. The necessity to clear land to claim ownership also encouraged illegal logging and illegal land grabbing to flourish in the Amazon. The interviewed IBAMA representative recognized that illegal acts and impunity are framed within a historical context:

“Why is it illegal? First, the biggest justification of all, and that we have to agree, is that occupation in the region was not planned. The government put the people there and didn't give any authorization or title.”<sup>50</sup>

Until this frenetic search for land began, only 2.5 per cent of the forest had been cleared and its economy was mostly based on extractivism.<sup>51</sup> Since the initial vision, the Amazon has become the fastest growing region in the country, where more than 80,000 kilometers of roads have been constructed, doubling between 1970 and 2000.<sup>52</sup> In the decade immediately after the government's incentives started—from 1978 to 1988—225,300 square kilometers were deforested in the Legal Amazon.<sup>53</sup> Additionally, since 1988 approximately 350,033 square kilometers of forest have been cleared,<sup>54</sup> destroying a total of 18 per cent of the region.<sup>55</sup> Fortunately, most of the Amazon is still conserved because of inaccessibility to most of its large

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<sup>49</sup> Interview with Luah Tomas. SIRSAM, Santarém. March 12, 2010.

<sup>50</sup> Interview with Luah Tomas. IBAMA, Santarém, March 9, 2010.

<sup>51</sup> Gonçalves, *The Brazilian REDD Strategy*, 11.

<sup>52</sup> Margulis, *Causes of Deforestation*, 17.

<sup>53</sup> The Legal Amazon encompasses nine Brazilian states, Acre, Pará, Amazonas, Roraima, Amapá, Mato Grosso and parts of Tocantins and Maranhão.

<sup>54</sup> INPE. *Estimativas Anuais Desde 1988 até 2008 (Annual Estimatives from 1988 to 2008)*. 2008. [http://www.obt.inpe.br/prodes/prodes\\_1988\\_2008.htm](http://www.obt.inpe.br/prodes/prodes_1988_2008.htm) (accessed November 25, 2009).

<sup>55</sup> Gonçalves, *The Brazilian REDD Strategy*, 12.

area, but this might change with inevitable future infrastructure investments such as roads and dams.

Today, deforestation makes up 75 per cent of Brazilian greenhouse gas emissions, and approximately 20 per cent of the total global emissions.<sup>56</sup> Although the Brazilian cattle industry is not fully responsible for all the damages, it is the world's largest driver of deforestation, accounting for 14 per cent of the world's total deforestation annually.<sup>57</sup> The National Institute of Spatial Research (INPE)<sup>58</sup> has recently published a study estimating the greenhouse gas emissions of the Brazilian cattle industry from 2003 and 2008, taking into consideration deforestation for pasture formation, burning of pasture, and livestock enteric fermentation.<sup>59</sup> The study concluded that the emissions from the cattle industry is about half of all Brazilian emissions and that emissions associated with the Amazon region were the highest. During the period analyzed in the study, around 110,000 square kilometers were deforested in the Amazon, with 75 per cent destined to cattle ranching. Deforestation is the preferred technique for pasture conversion because higher productivity of land is achieved immediately after cutting, with no need for pasture enhancements until some time into the future.

Additionally, scholars have identified a clear link between rates of deforestation and international price fluctuations of meat and soy,<sup>60</sup> especially after Brazil became the world's largest exporter of beef in 2003. The country has felt the impact of higher beef prices in 2008,

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<sup>56</sup> Greenpeace. *Slaughtering the Amazon*. NGO Report, Amsterdam: Greenpeace International, 2009, 119.

<sup>57</sup> Ibid, 14.

<sup>58</sup> Bustamante, Mercedes, Carlos Nobre, and Roberto Smeraldi. *Resumo e Principais Conclusões: Estimativa de Emissões Recentes de Gases de Efeito Estufa pela Pecuária no Brasil*. Available at: <[http://www.inpe.br/noticias/arquivos/pdf/Resumo\\_Principais\\_Conclusoes\\_emissoes\\_da\\_pecuaria\\_vfinalJean.pdf](http://www.inpe.br/noticias/arquivos/pdf/Resumo_Principais_Conclusoes_emissoes_da_pecuaria_vfinalJean.pdf)>, São José dos Campos, SP: INPE, 2009.

<sup>59</sup> Enteric fermentation is a natural part of the digestive process of ruminant animals, such as cattle, which produces methane as a byproduct and is released into the atmosphere from animal effluences. This form of methane emissions can be reduced by either manipulating animal diet, using additives or genetic engineering; according to Pew Center. *Enteric Fermentation Mitigation*. October 2009. <http://www.pewclimate.org/docUploads/Enteric-Fermentation-09-09.pdf> (accessed April 24, 2010).

<sup>60</sup> Karsenty, Alain. "What the (carbon) market cannot do..." *Perspective Forests/Climate Change*, November 2009.

when deforestation spiked once again after being in constant decline since 2004.<sup>61</sup> Other factors contributing to ranching expansion and deforestation will be further outlined in the following sections, but include factors such as appropriate climate, improved sanitation and FMD control, free trade policies, domestic and international demand, and culture.

### **Consequences of deforestation**

Moran's forest transition theory proposes that forest ecosystems go through cycles of deforestation due to human-environment interactions. Humans interacting with nature have long adapted and modified their surroundings to overcome their own limitations, adjusting to changes and favoring human objectives that fundamentally disturb the ecosystem. However, any change in land cover—mainly forest cover—has great environmental consequences because forests provide ecological services, protect biodiversity, stabilize climate, and sequester carbon.<sup>62</sup>

The Brazilian government, as well as the international community, has recognized the necessity of action to halt deforestation in the Amazon, as its biome is extremely important for the maintenance of ecosystems and natural patterns. Firstly, deforestation reduces biodiversity and drives many species to extinction. It can also create negative climate change effects domestically and internationally. For instance, drastic changes in the tropical forest cover can alter rain patterns in the rest of the country—intensifying storms in the Southeast and making stronger dry seasons. A recent study concluded that if the Amazon loses 20 per cent of its total area—only a three per cent loss increase from current rates—fires, deforestation and climate change effects would contribute to the loss of “critical mass” of the forest, which would enter in

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<sup>61</sup> Tollefson, Jeff. "Paying to Save the Rainforests." *Nature*. August 19, 2009.

<http://www.nature.com/news/2009/090819/full/460936a.html> (accessed November 3, 2009).

<sup>62</sup> Moran, Emilio. "Human-Environment Interactions in Forest Ecosystems: An Introduction." In *Seeing the Forest and the Trees: Human-Environment Interactions in Forest Ecosystems*, edited by Emilio Moran and Elinor Ostrom, 3-22. Cambridge, MA: The MIT Press, 2005.

a spiral cycle of self-destruction.<sup>63</sup> The region would suffer more frequent extreme climate events and change climate patterns in all of Brazil. Longer and stronger dry seasons, as well as more intense rainfalls would harm agricultural production in other regions.

If it is well known that cattle ranching is the larger contributor to deforestation, why is it still so prevalent in the Amazon region? As mentioned previously, numerous factors contribute to ranching expansion and deforestation. The following section will examine these factors, so as to better understand Brazil's priorities, which have long allocated greater importance to the growth of the ranching economy and focused on its greening, rather than restructuring the current economic model so that it focus on forest preservation and sustainable development.

## VI. Why Cattle Ranching?

Brazil's tensions between conservation and production are due mainly to the fact that the Brazilian economy greatly benefits from the cattle industry, as the country became the world's second largest beef producer and the largest exporter. In 2006 cattle ranching occupied 20 per cent of the national territory with a herd of 169 million and export revenues totaling US\$4.3 billion.<sup>64</sup> The Legal Amazon, however, has seen the largest increase of cattle herd in the country, expanding its frontier into forested land. From 1997 to 2007 there was a 77.4 per cent increase of herd in the nine states of the Legal Amazon, while the national growth rate was only 23.7 per cent. With 44 per cent increase of pasture land between 1985 and 2006, the Legal Amazon now hosts 33 per cent of the total Brazilian herd. Four states alone carry 86 per cent of regional cattle—Mato Grosso, Pará, Tocantins and Rondônia.<sup>65</sup> The factors driving this dramatic increase

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<sup>63</sup> Miranda, Giuliana. *Amazônia só tolera mais 3% de desmate, após perder 17% da extensão*. January 29, 2010. <http://www1.folha.uol.com.br/folha/ambiente/ult10007u686392.shtml> (accessed February 4, 2010).

<sup>64</sup> Comitê Interministerial sobre Mudança do Clima. "Plano Nacional Sobre Mudança do Clima, Brasil." Federal Government of Brazil, Brasília, 2007, 59.

<sup>65</sup> Arima, Eugênio, Paulo Barreto, and Marky Brito. *Pecuária na Amazônia: Tendências e Implicações para a Conservação Ambiental*. Belém, PA: Imazon, 2005. Smeraldi, Roberto, and Peter May. *A Hora da Conta: Pecuária, Amazônia e Conjuntura*. São Paulo: Amigos da Terra-Amazônia Brasileira, 2009.

are numerous, including favorable climate conditions, low costs, high demand, government policies, and impunity, among others.

Higher productivity cattle are to be found in the 40 per cent of the region where there is good rain distribution, which along with a constant temperature—24°C/75°F—, abundant light and humidity, favors grass growth.<sup>66</sup> The intensive rainfall in the region also contributes to the expansion of cattle rather than other agricultural crops such as soybean plantations, which are more concentrated in the Center-West region.<sup>67</sup> Another ecological factor contributing to ranching is the high acidity of the Amazon soil, making about 80 per cent of it infertile for agriculture. Tropical forests hold most of its nutrients in trees' roots, which are washed away by the rain when land is cleared and left unprotected, dropping the level of soil fertility drastically—after clearing, grass is one of the few viable plants.<sup>68</sup>

As it will be further explained below, ranching makes much sense economically. Owners tend to invest where their money will give higher and faster returns, and cattle have always been considered a good investment because they can be quickly sold and there is little price fluctuation in comparison to crops.<sup>69</sup> Even small producers have always used cattle as a guarantee under unpredictable weather circumstances. Another benefit is that cattle do not require massive transportation arrangements as they walk themselves within a region with poor infrastructure. For instance, in Santarém, most of the cattle that were moved from the *várzea* regions during the flood would swim across alone, while their owners went by boat.

Costs of ranching in the Amazon are also much lower than the rest of the country for several reasons. While investment on land is the main cost of production, most of the land is

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<sup>66</sup> Arima et al., *Pecuária na Amazônia*. Interview with Luah Tomas. FAEPA, Belém. March 13, 2010.

<sup>67</sup> Margulis, *Causes of Deforestation*.

<sup>68</sup> Stewart, *After the Trees*, 53.

<sup>69</sup> Ibid, 87-88.

either easily acquired outside of government regulations—illegally—, or cheap in comparison to the rest of the country.<sup>70</sup> Ranching also uses less labor per unit hectare than crops, lowering the costs even further.<sup>71</sup> Amazonian cattle have, additionally, a price comparative advantage, as FMD and high transportation costs are deducted from the final price. Cheap cattle drives up demand, increases land speculation and valorization, and stimulates ranchers to increase their numbers, expanding into new land.<sup>72</sup>

Another factor influencing the uncontrolled expansion of cattle in the Amazon is the increase of *frigoríficos*<sup>73</sup> in the region. Large *frigoríficos*, mostly financed by the government, were attracted to the region starting in 2003 due to the higher supply of cattle and improved sanitation.<sup>74</sup> *Frigoríficos* are extremely powerful in Brazilian politics and have strong economic ties with the government. Beyond subsidizing the cattle industry, the Brazilian government also offers special credit opportunities and financing conditions to the sector through its National Bank for Social and Economic Development (BNDES). In 2008, the Bank allocated 49.8 per cent of its industrial loans to the cattle and processing sectors, while the remaining 50.2 per cent were divided among the auto industry, biofuel mills and others.<sup>75</sup> Public banks also largely finance the activity of the actual cattle ranchers; in the Amazon, approximately 81 per cent of credit comes from federal and state banks.<sup>76</sup>

Another factor driving expansion is the close link between cattle ranching and logging, as the latter is a predecessor of the former. Loggers in the Amazon region clear the land to sell wood and timber and the capital gained in this transaction is then invested in pasture and

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<sup>70</sup> Land in the Amazon is generally five times cheaper than in the state of São Paulo, in the southeast.

<sup>71</sup> Stewart, *After the Trees*.

<sup>72</sup> Arima et al., *Pecuária na Amazônia*.

<sup>73</sup> *Frigoríficos* are establishments that slaughter animals, and produce and process beef.

<sup>74</sup> Smeraldi & May, *Hora da Conta*, 19.

<sup>75</sup> Ibid, 20.

<sup>76</sup> Ibid, 35.

ranching. In addition, infrastructure created for log transportation facilitates transportation once the land is converted.<sup>77</sup> Therefore, loggers driving deforestation are also responsible for the expansion of cattle ranching because “one thing follows the other. First you have the selective wood extraction, then the standing forest loses its value and the person cannot manage it well. [He or she] turns to cattle to earn money on top of that land.”<sup>78</sup>

Economically, there is a tendency for even greater cattle expansion in the Amazon region. Current infrastructure development projects are an indirect incentive to ranchers, and pasture land with agricultural potential is a main challenge. As grain production is more profitable, pastures suited to agriculture could be converted within the next few years, pushing cattle even deeper into the forest. Conversion of pastures in the Center-South of Brazil to intensive agriculture also will help make Amazonian cattle more competitive.

Furthermore, population increase and emerging middle classes in China, India, Russia, and even in Brazil, will drive up demand for beef. It was not until 2003 that Amazon states began exporting beef and this was due to better sanitary conditions and control of FMD. As the disease is treated in more and more regions, current higher-risk areas, such as Santarém, will gain access to larger domestic and international markets (see Picture 2). Internationally, Brazilian beef is at a comparative advantage as costs of production are low, especially as developed countries diminish or eliminate their domestic subsidies to rural producers, which will increase their

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<sup>77</sup> Arima et al., *Pecuária na Amazônia*.

<sup>78</sup> Interview with Luah Tomas, IBAMA, Santarém, March 9, 2010.



costs.<sup>79</sup> However, industrialized countries may wish to switch to import barriers based on environmental criteria for their beef imports.<sup>80</sup>

**Picture 2**



An example of a sanitation campaign in Santarém, by ADEPARÁ. The poster says: “When you vaccinate against FMD, your cattle becomes profit”

The expansion of cattle ranching is concerning because it has negative ecological and socioeconomic consequences. The military regime first promoted it because they believed cattle ranchers were a “prototype for development” and perceived that “cattle ranching actually improved the quality of the soil by increasing soil nutrients.”<sup>81</sup> Consequently, the idea was instated that transforming forest into pasture was an actual improvement of the land,<sup>82</sup> which is a mistake as the Amazon soil cannot sustain long-term ranching and it easily degrades the soil.

<sup>79</sup> Arima et al., *Pecuária na Amazônia*. The Doha round of the World Trade Organization, which began in 2000, has been focusing most of its negotiations on agriculture and the establishment of a fair trading system that will correct distortions in agricultural markets. Negotiations are based on differential treatments for developing countries, and aim at increasing market access and at reducing export subsidies and domestic supports that distort trade; in WTO. *The Doha Declaration Explained*. 2006. [http://www.wto.org/english/tratop\\_e/dda\\_e/dohaexplained\\_e.htm](http://www.wto.org/english/tratop_e/dda_e/dohaexplained_e.htm) (accessed April 23, 2010).

<sup>80</sup> Arima et al., *Pecuária na Amazônia*.

<sup>81</sup> Barbosa, *Brazilian Amazon*, 41.

<sup>82</sup> Fearnside, Philip M. "Deforestation in Brazilian Amazonia: History, Rates, and Consequences." *Conservation Biology* 19, no. 3 (2005): 680-688, 685.

Also, logging and deforestation increase the susceptibility of forest fires, releasing more greenhouse gases into the atmosphere.

The disparities between small- and large-scale production, as analyzed by Stewart, is also a preoccupying socioeconomic consequence. Family-based agriculture takes advantage of the heterogeneity of soil to determine where the best soil for agriculture and ranching is, in addition to relying on family labor and deep understanding of land necessities. On the other hand, large-scale cattle ranchers use the entirety of the land for grass and hires outside labor. In Stewart view, ranching is not efficient because it neither increases agriculture production, nor provides employment, stripping “an area of the possible employment generated by forest extraction or by intensive agriculture.”<sup>83</sup>

Besides a direct relationship to deforestation and soil degradation, ranching has also been associated with agrarian conflicts, corruption, illegal occupation and slavery. Yet, the activity is still a way to guarantee and protected land tenure, and the status associated with owning cattle is very much strong in Brazilian culture—the Luso-Brazilian culture made cattle a social symbol of pride, enjoyed by large landowners.<sup>84</sup> And this has a powerful influence on how cattle ranchers see themselves.

However, they have faced stronger environmental pressures over the years to comply with environmental legislation as the international community focuses its attention in their activity as the main cause of continuing deforestation in the Amazon region. Being for decades under government protection, ranchers are now isolated as the bad guys. Their greatest constrain at the national level has been the Brazilian Forestry Code.

## **VII. The Forestry Code**

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<sup>83</sup> Stewart, *After the Trees*, 88.

<sup>84</sup> Hecht & Cockburn, *Fate of the Forest*, 173.

When governments fail, their policies will consequently also be ineffective because they will only be optimal from a narrow perspective, disenfranchising major interest groups. This is the case of the Brazilian Forestry Code,<sup>85</sup> which is one of the most comprehensive resource management legislations in the world. It establishes regulations for preservation of forests within each private property, as well as in public lands. Under the code, native vegetation in Permanent Preservation Areas (APP) cannot be removed, which includes the margins of rivers and lakes, tops of mountains, indigenous land, etc, and land distribution for agrarian reform cannot include APPs. Private properties in the Amazon region must also maintain a Legal Reserve, or 80 per cent of native vegetation, intact, with its location approved by a competent environmental agency. Owners can engage in extractive and sustainable forest management activities within those 80 per cent, but no deforestation is allowed. Property owners that are not in compliance with their Legal Reserve must engage in reforestation activities with the assistance of state environmental agencies. Additionally, public and private financing institutions must give priority to projects of forestation, reforestation and acquisition of machinery for these services. However, within the institutional approach, the Forestry Code is not successful because, among other things:

“[Producers] think it is impracticable... It is not presented as something to be worked on over the years, and it doesn't present the alternatives. They end up understanding that it is more like a punishment, a sanction to the group ... and they have a certain resistance.”<sup>86</sup>

The Forestry Code aimed at making land management more efficient as the government did not have the ability to do so, and it assumed that the best way to preserve the forest was to institute preservation in private lands. At first, the Code established a Legal Reserve of 50 per

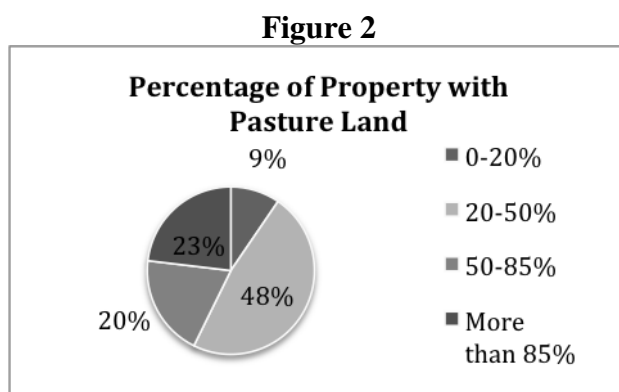
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<sup>85</sup> Presidência da República. *Lei N 4.771, Código Florestal*. September 15, 1965. [http://www.planalto.gov.br/ccivil\\_03/LEIS/L4771.htm](http://www.planalto.gov.br/ccivil_03/LEIS/L4771.htm) (accessed February 11, 2010).

<sup>86</sup> Interview with Luah Tomas. IPAM, Santarém, March 11, 2010.

cent of a private land, shifting to 80 per cent in 2001, through president Fernando Henrique Cardoso's executive order, mainly due to international pressure. This sudden change left many ranchers and small-scale producers in incompliance with the law but with no resources to invest in reforestation or intensification.<sup>87</sup>

Minervino, Cardoso & Ortolani conducted an empirical study to determine the characteristics of cattle ranching in Santarém and, among other findings, it discerned that only 9.5 per cent of properties are in accordance with the Code, while the majority of properties would comply with the former Code that established that 50 per cent of could be used for production. The results are shown in the Figure 2.



Source: Minervino, Cardoso & Ortolani 2008

The Forestry Code, however, faces difficulties in implementation because most property owners in the Amazon do not have, in fact, an official title to their land. Land titling and tenure is one of the region's greatest failures and it needs to be addressed in order to facilitate compliance with the Code. The following section will delve deeper into the land issue.

### VIII. The Land Issue

An interesting example of the mess of land tenure in Brazil is when considering the percentage of land that is "protected" in the state of Pará. Protected area characterizes land that is

<sup>87</sup> Siqueira, Ciro. *Aniversário do Código Florestal Brasileiro*. February 11, 2009. [http://www.estadao.com.br/estadaodehoje/20090211/not\\_imp321820,0.php](http://www.estadao.com.br/estadaodehoje/20090211/not_imp321820,0.php) (accessed February 27, 2010).

separated from production, either as an indigenous land, or as a conservation unit. Conservation units can be allocated for strict protection or sustainable usage, and each of these categories encompasses many different “types” of usages, or labels. As there are so many criteria for what a protected area is and whether it is a federal, state or municipal area, the percentages of protected land vary greatly depending on the source. For instance, the Brazilian Institute of Geography and Statistics (IBGE) computes that 30 per cent of Pará is under protection (see Table 1), as indigenous land and conservation units.<sup>88</sup> The National Institute of Colonization and Agrarian Reform (INCRA) states that protected areas in Pará account for 51 per cent of total land.<sup>89</sup> The Pará Environmental Secretariat claims 57 per cent<sup>90</sup> and the NGO Socioenvironmental Institute, 48.<sup>91</sup> Finally, in my interview with the president of the Federation of Agriculture and Ranching of Pará, an interest group, he advocated that 76 per cent of Pará was already reserved for environmental protection.

A similar situation happens when analyzing different sources to determine the area protected in the entire Legal Amazon. The Environmental Agency and the Socioenvironmental Institute do not include indigenous land in their data and report 10.2<sup>92</sup> per cent and 22 per cent, respectively, of protected areas. IBGE claims 36 per cent (see Table 1).

**Table 1**

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<sup>88</sup> IBGE. *Áreas territorial e as de estabelecimentos agropecuários de terras indígenas e de unidades de conservação, segundo as Grandes Regiões e Unidades da Federação*. 2006.

[http://ibge.gov.br/home/estatistica/economia/agropecuaria/censoagro/brasil\\_2006/tab\\_brasil/tab6.pdf](http://ibge.gov.br/home/estatistica/economia/agropecuaria/censoagro/brasil_2006/tab_brasil/tab6.pdf) (accessed April 9, 2010).

<sup>89</sup> Brito, Brenda, and Paulo Barreto. "Impactos das novas leis fundiárias na definição de direitos de propriedade no Pará." *IMAZON: O Estado da Amazônia*, March 2010: 1-7.

<sup>90</sup> SEMA. *Unidades de Conservação Federais, Estaduais e Municipais do Estado do Pará*. 2009. <http://www.sectam.pa.gov.br/interna.php?idconteudocoluna=4625> (accessed April 9, 2010).

<sup>91</sup> ISA. *Unidades de Conservação na Amazônia Legal*. October 20, 2009. [http://www.socioambiental.org/uc/quadro\\_geral](http://www.socioambiental.org/uc/quadro_geral) (accessed April 9, 2010).

<sup>92</sup> IBAMA's data only includes federal lands. IBAMA. *Unidades de Conservação (UC) Federais na Amazônia Legal*. 2004. <http://www.ibama.gov.br/siucweb/estatisticaAmazoniaPorTipoUso.php> (accessed April 9, 2010).

States in the Legal Amazon	Area (ha)							Percentage of territory as IL+CU
	Territory	Agriculture /Ranching	Percentage of territory in A/R	Indigenous Land (IL)	Percentage of territory as IL	Conservation Units (CU)	Percentage of territory as CU	
Acre	15,258,138	3,491,283	23	3,333,405	22	4,085,482	27	49
Amapá	14,281,458	873,789	6	4,803,557	34	6,138,153	43	77
Amazonas	157,074,568	3,634,310	2	64,142,748	41	16,734,831	11	51
Maranhão	33,198,329	12,991,448	39	2,479,198	7	852,748	3	10
Mato Grosso	90,335,790	47,805,514	53	20,905,066	23	2,386,278	3	26
Pará	124,768,951	22,466,026	18	17,919,193	14	19,635,579	16	30
Rondonia	23,757,616	8,329,133	35	4,315,396	18	3,229,775	14	32
Roraima	22,429,898	1,699,834	8	3,353,452	15	5,807,316	26	41
Tocantins	27,762,091	14,292,923	51	2,551,702	9	599,828	2	11
<b>TOTAL</b>	<b>508,866,839</b>	<b>115,584,260</b>	<b>23</b>	<b>123,803,717</b>	<b>24</b>	<b>59,469,990</b>	<b>12</b>	<b>36</b>

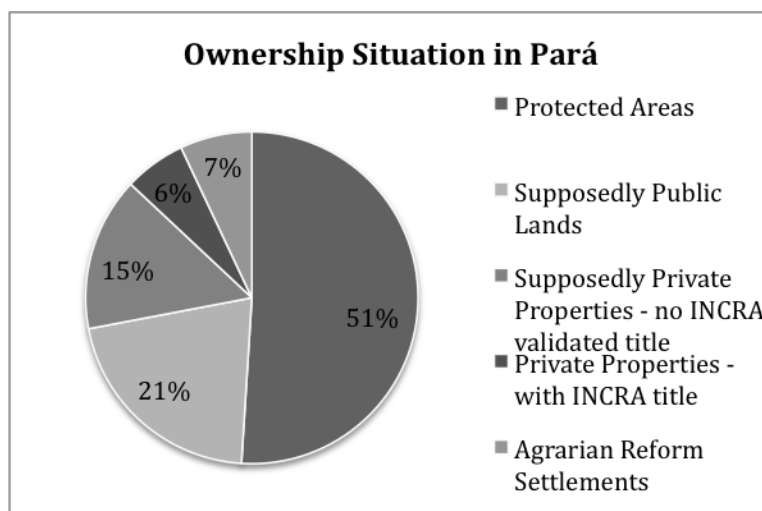
Source: IBGE 2006

Brito and Barreto from the Amazon Institute of People and the Environment (IMAZON) recently studied the impact of land laws in defining property rights in the state of Pará and found that there is 36 per cent of its territory with no proper demarcation—and, therefore, not in control of the state. Using gathered data from the National System of Rural Registry, of INCRA, they show how only 6 per cent of private property has a validated title (See Figure 3). This information is mostly estimated and as it was shown previously, data concerning protected lands in the Amazon are fairly unreliable. The authors also point out that part of protected areas and public lands are likely to be occupied by informal squatters. They concluded that the non-definition of land tenure results in juridical insecurity for investments, restrictions to obtain credit, difficulties for conservation activities and enforcement of regulations, in addition to the constant land struggle between social groups.<sup>93</sup> Lopez and Deacon have also found a similar situation in Ecuador and numerous other countries, where the degree of ownership insecurity and unregistered properties has a positive relationship with deforestation and degradation, because of political environments that are not conducive to investment.<sup>94</sup>

### Figure 3

<sup>93</sup> Brito & Barreto, "Impactos das novas leis"

<sup>94</sup> Lopez, "Sustainable Development," Deacon, "Deforestation and the Rule of Law." Also the relationship between ownership insecurity and high deforestation is fairly agreed upon among other authors, such as Moran, *People and Nature*, VanWey et al., "Theories," Tucker & Ostrom, "Multidisciplinary Research," and Swanson, "Economics of Environmental Degradation."



Source: Brito & Barreto 2010

The low degree of assurance of property rights in the Amazon has numerous consequences. Swanson identified that when environment policies fail, lands are invested “in other uses because the society views these other uses as affording a better prospect of future returns.” Because there is no apparent economic benefit in standing forests and reforestation efforts in the short-term—and there is also fear of expropriation—the land is converted to other uses, such as cattle ranching. Conservation, nonetheless, is an act of long-term investment but “sustainable management will remain illusory unless economic decision criteria are changed.”<sup>95</sup>

Because of insecure land tenure in the Amazon region, property “owners” have no incentive to think long-term in regard to their land. This is more often the case of large-scale cattle ranchers that might have their land taken away by the government for agrarian reform settlements or conservation units, as exemplified in the case below:

“[The government] creates [conservation units] here, and then who is inside has to leave and they call this a pirate cow. Pirate is the reserve that came after the cow.”<sup>96</sup>

<sup>95</sup> Fearnside, Philip. “Conservation Policy in Brazilian Amazonia: Understanding the Dilemmas.” *World Development* 31, no. 5 (2003): 757-779, 766.

<sup>96</sup> Interview with Luah Tomas. SIRSAM, Santarém. March 12, 2010.

Small-scale producers also live in fear that, because they have no official title to their land, it might also be taken away by larger owners through hard power.

“Due to the lack of documentation, [the small producer] cannot guarantee a bigger land, because suddenly, comes another person and grabs the land. And here there is very little people with documentation provided by INCRA, very little.”<sup>97</sup>

Therefore, both large- and small-scale producers prefer to deforest to guarantee ownership and to rip the profits out of the land immediately, as the future is uncertain. Acheson summarized this insecurity as such: “short-term [private] control shortens the time horizons; uncertain control discourages potentially profitable projects; lack of control incites costly races for possession.”<sup>98</sup>

In 2009, the Brazilian government proposed a bill—MP 458—that would attempt to regularize public land occupied irregularly, promoting and facilitating legal ownership. Some of the conditions for ownership require that the land be the main income generator to the individual.<sup>99</sup> Supporters of the bill reinforce that it will make it easier to monitor and penalize illegal claimers as they become responsible for abiding by the Forestry Code and other land laws. On the other hand, critics argue against the bill because owners that do not currently live in the land, but are the original illegal land claimers and have employees working on it, will also be allowed to formalize their entitlement. But, according to supporters, they are making justice to those who migrated to the region back in the 1970s with government incentives but decided to earn a second income as large-scale ranching became less profitable. As some users of the land will be able to acquire rights over them for free, the Bill might encourage more people to occupy

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<sup>97</sup> Interview with Luah Tomas. APRUSAM, Santarém, March 11, 2010.

<sup>98</sup> Acheson, “Institutional Failure,” 121.

<sup>99</sup> BBC Brasil. Entenda a MP 458, prestes a ser sancionada por Lula. June 24, 2009. [http://www.estadao.com.br/nacional/not\\_nac392220,0.htm](http://www.estadao.com.br/nacional/not_nac392220,0.htm) (accessed November 20, 2009).



public lands illegally.<sup>100</sup> Also, as the Bill does not require government inspection prior to titling, private property might be created on protected or indigenous lands. Lastly, the Brazilian government is sending a message that illegality will eventually be rewarded and not penalized; it can set precedents for more illegal frontier expansion.<sup>101</sup>

Moreover, undergoing agrarian reform is not fixing the problem. Most settlements are only granted after the landless pressure the government through invasions or political actions. However, cattle ranchers in Santarém complained that when the government does decide to create a settlement, it creates on private land that was already being produced, normally creating another problem where there was none. Many new settlers are also under market pressure to sell their land once they are titled because of the land speculation in the Amazon region. As land title to new settlements take a long time to be issued, settlers do not have access to credit, “basic food baskets,” and environmental licenses that they are entitled to. Finally and possibly as a consequence, new rural settlements tend to not alter land ownership patterns where it happens, and inequality and poverty levels do not change.<sup>102</sup> Santarém producers suffer within a failed agrarian reform mainly because new settlements are established either in land already in use or in areas with no energy or water. Additionally, lack of infrastructure prevents children from attending local schools and increases the cost of transporting their products.

How to conduct a proper and effective agrarian reform is beyond the scope of this paper, although what is needed is more than an effective land redistribution system. Brazil needs a land tenure reform, as defined as a “program designed to change the legal and institutional framework

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<sup>100</sup> Brito & Barreto, “Impactos das novas leis,” 2.

<sup>101</sup> Greenpeace, *Slaughtering the Amazon*

<sup>102</sup> Navarro, “Expropriating Land,” 282-283.

for land administration,”<sup>103</sup> that speeds the process of land titling, respects the property of those who lived and worked in the land for generations and enforces legislation and payments. To complicate matters even further, Binswanger-Mkhize and others affirm that land reform is a process rather than an end in itself; it constantly reemerges and has to be modified according to emerging political, social and economic circumstances.<sup>104</sup> The discussion now shifts to cattle ranchers’ identity associated with land ownership and how it contradicts (or not) most environmental concerns.

### IX. *Pecuarista* Identity

Brazilian culture, influenced by Portuguese colonization, has been labeled patrimonialistic, hierarchical, oligarchic, and *coronelist*. The latter is a term that was first used by Victor Nunes Leal in 1949 to describe the activities of *coroneis*, as characterized by “a large landowner, feared and respected for his achievements and wealth, a rural political boss ... who shares his authority with no one.”<sup>105</sup> The social order implanted in Brazil during colonialism granted land and absolute power to “a dozen ‘*coroneis*’ loyal to the Portuguese monarchy” and it is still “very much alive and well in Brazil today.”<sup>106</sup>

These *coroneis* modernized into *pecuaristas*—and migrated from the south to the Amazon—who also attach great prestige in landholding, connecting it to their social identity. Payne described landholding as “more than a way of life, it is a cultural background, an identity”<sup>107</sup> that has influenced the creation of the Rural Democratic Union (UDR) in 1985. The

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<sup>103</sup> Binswanger-Mkhize, Hans, Camille Bourguignon, and Rogier van den Brink. “The Growing Consensus on the Importance of Land Redistribution.” In *Agricultural Land Redistribution: Toward Greater Consensus*, edited by Hans Binswanger-Mkhize, Camille Bourguignon and Rogier van den Brink, 3-44. Washington, DC: The World Bank, 2009, 4.

<sup>104</sup> Ibid.

<sup>105</sup> Domingos, Manuel, and Laurence Hallewell. “The Powerful in the Outback of the Brazilian Northeast.” *Latin American Perspectives* 31, no. 2 (2004): 94-111, 94.

<sup>106</sup> Sallinger-McBride, Jan, and Lia Roberts. “Conflict Between the Landed and the Landless in Brazil.” *International Journal on World Peace* 15, no. 4 (1998): 61-90, 64.

<sup>107</sup> Payne, Leigh. *Uncivil Movements: The Armed Right Wing and Democracy in Latin America*. Baltimore, MD: The Johns Hopkins University Press, 2000, xxi.

UDR was formed first as a response to other social movements, such as the Landless Movement (MST), that were raising awareness about rural inequality and organizing to demand reform. The UDR, later, served as a powerful political machine during the drafting of the new Brazilian Constitution in 1988, ultimately defeating the agrarian reform amendment to the constitution.<sup>108</sup> The purpose of the UDR was to influence national rather than local politics, “creating a superparty organization—without any links to parties—to support farming and ranching,”<sup>109</sup> free enterprise and protection of private property. Because of this and their emotional attachment to land, Payne concluded that the government could not easily find a way to compensate them financially for their land.

Members of the UDR were associated with numerous murders throughout the years, including the rubber-tapper Chico Mendes’ assassination, but it is assumed that economic and political powers have protected them from condemnation. The UDR eventually lost its political clout and appeal in 1994 and it does not formally exist anymore; nonetheless, its impact on the *pecuarista* identity is still strong and clear.

Impunity and corruption in the Amazon are highly propagated and widely accepted by the authorities. The frenetic search for the land has continued to lay out its destructive social and environmental path in the Amazon, and to create martyrs in these struggles. Recently in 2005, the American missionary Dorothy Stang was gunned down by a contract killer after years fighting for the land rights of small producers. Many social movements, such as the MST and the Land Pastoral Commission (CPT) have associated *pecuaristas* to a mafia-like power structure with economic and political influence.<sup>110</sup> *Pecuaristas*’ associations have successfully attempted

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<sup>108</sup> Ibid, 104-108.

<sup>109</sup> Roberto Caiado, quoted in Payne, *Uncivil Movement*, 108.

<sup>110</sup> Munhoz, Fabíola. *Massacre de Carajás: passados 14 anos, Amazônia ainda é palco de violência no campo*. April 15, 2010. <http://www.amazonia.org.br/noticias/noticia.cfm?id=351711> (accessed April 23, 2010).

to criminalize many of these social movements over the years, and today, as before, they believe that agrarian reform undermines Brazil's development and economic progress.<sup>111</sup> Recently, environmental protection and the establishment of conservation units have joined the list of limitations. The quotes below from my interviews illustrate this frustration with environmental concerns:

“Now, today, we are being prevented from working.”<sup>112</sup>

“Sixty per cent [of the Amazon] is already secured, and [Minister of Environment] Minc wants to get to eighty per cent. That will leave twenty per cent for us. Out of this twenty we can only work on the twenty per cent [of the Forestry Code].”<sup>113</sup>

This resistance to environmental ideas is, in reality, a resistance to government control and imposition in their business, in addition to an acceptance of the current economy model in which they thrived under. Ranchers are more likely to be right leaning in politics and profit-driven. They often said they would be “more environmentalist than any person from Greenpeace or any other NGO” whenever it becomes profitable to preserve the forest, or with an “economic matrix in which a standing tree is worth more than the tree knocked down for the production process.”<sup>114</sup> In the meantime, they seek additional income outside of ranching.

The UDR was also the responsible for initiating the trend of “weekend cattle ranchers,” as more and more members became urbanized and involved in politics. Furthermore, as identities “consist of social relations and their representations”<sup>115</sup> from the perspective of one actor over another, the UDR was effective at using language to shift perceptions about farmers. Through the

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<sup>111</sup> Payne, *Uncivil Movements*, 127.

<sup>112</sup> Interview with Luah Tomas. SIRSAM, Santarém. March 12, 2010.

<sup>113</sup> Ibid. I have not been able to confirm the 60 and 80 per cent statistics mentioned, therefore, the purpose of this quote is merely to show how cattle ranchers feel limited by environmental policies.

<sup>114</sup> Ibid

<sup>115</sup> McAdam, Doug, Sidney Tarrow, and Charles Tilly. *Dynamics of Contention*. New York: Cambridge University Press, 2001, 133.

usage of the word rural producers rather than *fazendeiros*, the organization hoped to move away from its connection with exploitative *coroneis* and toward the role of providers of food and jobs to the nation, altering the “shared definition of a boundary between two political actors and of relations across that boundary.”<sup>116</sup>

In her study, Bruno<sup>117</sup> interviewed numerous presidents of rural associations and found that they see the government as responsible for all factors that impact agriculture and ranching, and also for poverty and inequality. For most of Amazonian colonization, large-scale producers have accepted state intervention and flourished under it. According to Bruno, they now claim they have been “charmed” and misled by government policies and “they cannot (or do not wish to) see themselves as main actors in the process,”<sup>118</sup> exempting themselves from any responsibility.

For this research I was able to officially interview three cattle ranchers, two being Santarém natives and one who moved to the region in the 1950s. They all raised cattle because their parents did so as well, besides holding other jobs in the city, and none lived in the farm, as explained:

“Many are leaving the activity, that’s why they have other jobs. You can count on your fingers the ranchers that dedicate solely to the activity. [They do it] because it is family tradition, or because people really like it.”<sup>119</sup>

For them, Brazil is a country of agricultural production that has the potential to end world hunger, and their role is to create jobs and income for their families, in addition to “produce beef,

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<sup>116</sup> Ibid, 162.

<sup>117</sup> Bruno, Regina. “Com a Boca Torta pelo Uso do Cachimbo”. Estado e Empresários Agroindustriais no Brasil. In *Mundo Rural Brasileiro: Ensaio Interdisciplinares*, edited by Luiz Flávio Costa, Georges Flexor and Raimundo Santos, 271-284. Rio de Janeiro, RJ: Editora da Universidade Rural, 2008.

<sup>118</sup> Ibid, 275.

<sup>119</sup> Interview with Luah Tomas. SIRSAM, Santarém. March 12, 2010.

food, to the market.”<sup>120</sup> They are also proud Brazilians and this pride is perceived through the quality of the beef they produce.

“I’ve walked the five continents of the world, and we are seeing that Brazil is demonstrating high competency in agribusiness... I tell you that here we probably produce the best beef in the world, with the green, organic, grass-fed cattle.”<sup>121</sup>

As Bruno stated and I confirmed in the interviews, ranchers feel they should not be treated like villains and destroyers of the Amazon because they have acted according to government policies over the years. The government, on the other hand, is constantly changing their policies with no consultation or understanding of the reality, mostly because of international pressure. Ranchers feel politically disenfranchised in environmental issues:

“Another limitation I see would be the determination of some environmental policies without previous discussion with the Amazonian community.”<sup>122</sup>

At the same time, however, channels for communication exist and large landowners have been largely influential in politics. The Rural Union of Santarém is a local branch of the national political machine called Confederation of Agriculture and Ranching, whose president is an elected Senator in the Brazilian Congress. The recent debates over changes in the Forestry Code have included public hearings throughout the country in order to listen to citizens’ concerns.<sup>123</sup> Additionally, a commission was created in Congress to debate and propose changes to the Code based on these public hearings, which environmental and social NGOs have criticized as being

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<sup>120</sup> Ibid.

<sup>121</sup> Interview with Luah Tomas. FAEPA, Belém. March 13, 2010

<sup>122</sup> Ibid.

<sup>123</sup> Chiaretti, Daniela. *Esquenta debate sobre o Código Florestal*. February 17, 2010. <http://www.amazonia.org.br/noticias/noticia.cfm?id=345197> (accessed February 27, 2010).

run by representatives of large landowners and not representing the different sectors of the Brazilian society.<sup>124</sup>

Nonetheless, at the local level, interviewed ranchers showed a clear disconnection, confusion and general inability to comply with environmental legislation created by the federal government and its agencies. This lack of consensus, again, arises from the government's own confusion and contradiction over its priorities.

### **X. Conservation vs. Production**

In Santarém, where opposing political actors have not reached the point of violent conflict, the main disagreement is over the purpose of the Amazon region. The representative of IBAMA strongly believed that “we can’t implement a development model as it was implemented in the mid and south of the country. [Here] it is another soil, another vegetation. To put in people’s mind that the purpose of the region is forestry, extractive, selective logging and forest management is very difficult.” The interviewee recognizes here the significance of the *coronelist* identity in shaping the region’s development model. This view that the Amazon should be solely dedicated to forestry was certainly not shared with the cattle ranchers’ idea that cutting a tree is not a crime:

“Can you imagine if there was only forests here, we would live off of what? ... We have plenty awareness that there are certain regions that must be a hundred per cent preserved. But there are others that have to be a hundred per cent used. Now, it does not mean that we are going to go out deforesting. My feeling is that there needs to be an equilibrium in everything.”<sup>125</sup>

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<sup>124</sup> Amazônia.org.br. *ONGs criticam "Código Ambiental" dos ruralistas*. October 27, 2009. <http://www.amazonia.org.br/noticias/noticia.cfm?id=332799> (accessed February 9, 2010).

<sup>125</sup> Interview with Luah Tomas. FAEPA, Belém. March 13, 2010.

However, there is a consensus among *pecuaristas* that there is no need to create additional conservation units because the existing ones are enough, whereas the representative of IBAMA pushed for larger protected areas. Ranchers see that it is possible to reduce the expansion of cattle through productivity intensification, establishing suitable land for ranching, increasing the longevity of productive sites, and recuperating degraded ones.<sup>126</sup> Ranchers support the zoning of the Amazon into different land purposes but demand incentives to intensify their activity within their production areas, which is feasible because the technology does already exist, but it is expensive.

With this in mind, FAEPA created a program called Projeto Preservar, that aims to encourage ranchers to incorporate agrosilvopastoral systems in their land, merging cattle with agriculture and sustainable forest management. The program was created as a response to international attention on Pará's cattle ranching and "we want to show the world that first, we are producing here products that are legal and with environmental sustainability. There is no reason to work illegal."<sup>127</sup> They argue that "we are working with some premises, and one of them is not to go further into the forest, ... and to promote our development in harmony."<sup>128</sup> However, in their view, protected areas might eventually have to be open for production because of future generations' demands for food, and they call for government flexibility in this issue.

Government agencies are also often in contradiction with each other. It is fairly common to see the Ministers of Environment and Agriculture attacking and demeaning each other's efforts in public, while local and federal judges override each other's decisions. Furthermore, agencies in charge of implementing legislation, such as the environmental agency IBAMA, are

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<sup>126</sup> Serrão, Emanuel A., and José Toledo. "The Search for Sustainability in Amazonia Pastures." In *Alternatives to Deforestation: Steps Toward Sustainable Use of the Amazon Rain Forest*, edited by Anthony Anderson, 195-214. New York: Columbia University Press, 1990, 205.

<sup>127</sup> Interview with Luah Tomas. FAEPA, Belém. March 13, 2010

<sup>128</sup> Ibid.



underfunded and strained with little personnel. IBAMA also faces barriers to enforce the laws it is supposed to protect; Greenpeace has reported that in 2005 the agency “issued fines totaling US\$ 697 million, of which only 0.5 per cent were paid.”<sup>129</sup> Between 1995 and 2003, it has only collected 2.12 per cent of environmental fines above R\$10,000.<sup>130</sup>

The agency finds it difficult to enforce the payment of fines because the judiciary usually does not support its actions and, in fact, they often contradict each other. IBAMA’s biggest concern, according to its representative I had the chance to interview, is the leniency of punishments for environmental crimes.

“They consider a lot more economic concerns and even social ones, than specifically environmental ones. So judges annul [environmental] infractions and allow the person to stay in the area.”<sup>131</sup>

Regardless of strict environmental legislation, therefore, punishment for infractions is not severe. Convicted individuals are not detained and can easily forgo paying the fines, choosing instead to pay “basic food baskets” for low-income families. In IBAMA’s point of view, “judges have to understand, ok, the person has the right to property ... but these are individual rights. The environment question must prevail over individual rights.”<sup>132</sup>

In this contradiction between conservation and production, the latter is winning notwithstanding there can be an equilibrium. A central factor in Amazonian deforestation is, in reality, an institutional failure in adapting to sustainable development in a manner that grants due importance to local identities attached to landholding. The following section presents the consequences of international pressure on promoting this institutional failure within Brazil.

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<sup>129</sup> Greenpeace, *Slaughtering the Amazon*, 16.

<sup>130</sup> Arima et al., *Pecuária na Amazônia*, 43.

<sup>131</sup> Interview with Luah Tomas, IBAMA, Santarém, March 9, 2010.

<sup>132</sup> Ibid.

## XI. International Pressure

Conklin & Graham<sup>133</sup> identified in their study of the relationships between Amazonian Indians and international environmental movements that the internationalization of local struggles greatly impact the local political situation. They see transnational encounters as beneficial, allowing the creation of a middle ground where a new system of meaning and exchange is constructed. When international and domestic actors meet they perceive their goals as achievable within a “global ecological imaginary.”<sup>134</sup> This global community is constructed by conservationists who “depict their agendas as being in the common interest of everyone equally.”<sup>135</sup> In the case of partnerships between international NGOs and indigenous people in the Amazon, this process has been successful in creating common ideas and images to bind them together.

According to Swanson, however, the global community is, in fact, failing to internalize global values and concerns.<sup>136</sup> Contradictions between reality on the ground and ideas created globally about environmental systems put unrealistic pressure on governments and contribute to governmental institutional failure. Swanson goes even further and states that “many domestic policy failures will require the creation of international institutions before they will be ‘corrected’ from the global perspective.”<sup>137</sup> Such regimes, however, are also constantly changing. It was not until recently that a country’s international image has begun to be shaped by its ability to control natural resources and not only economic might. Resource control is more and more often defining a country’s power in the international community.<sup>138</sup>

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<sup>133</sup> Conklin, Beth, and Laura Graham. "The Shifting Middle Ground: Amazonian Indians and Eco-Politics." *American Anthropologist* 97, no. 4 (December 1995): 695-710.

<sup>134</sup> *Ibid.*, 697.

<sup>135</sup> Peluso, ““Reserving Value,”” 139.

<sup>136</sup> Swanson, “Economics of Environmental Degradation,” 17.

<sup>137</sup> *Ibid.*, 78.

<sup>138</sup> Peluso, ““Reserving Value,”” 138.

But at the local level, in a city like Santarém, cattle ranchers feel disenfranchised politically and complain that policies are being created without prior consultation or explanation, shifting constantly. They believe they are caught in the middle of a two-way dialogue between the federal government and the international community. This dialogue assumes that cattle ranchers are villains and is setting the image that “Brazilians are deforesting everything,”<sup>139</sup> although the government has promoted their growth for many years. Now, environmental policies are created in contradiction with decades of developmental policies, and ranchers are caught in a limbo.

International concern over the Amazon, especially from the industrialized countries of Europe and North America, is also seen as highly hypocritical in the ranchers view. Although some producers view the role of international non-government organizations (NGOs) as beneficial to give small producers a voice and to raise consumer awareness in other parts of Brazil and the world, large-scale ranchers strongly oppose their efforts, as shown below:<sup>140</sup>

“We’ve taken sixteen per cent of the Amazon.”<sup>141</sup> Europe has two per cent of primary forests. The United States has sixteen. So we have eighty-four per cent and nowadays it is not necessary to deforest anymore... What we want is that they go back to their lands. The Amazon is ours, we know what to do. No one wants to deforest ... so we don’t want interference here.”<sup>142</sup>

The international community, therefore, plays a role in contributing to the government’s inconsistencies in relation to environmental concerns. Nonetheless, it is able to help in an effective. This and other ways forward will be presented in the next section.

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<sup>139</sup> Interview with Luah Tomas. SIRSAM, Santarém. March 12, 2010.

<sup>140</sup> However, they recognize that NGOs monitor legislation much more than the government does.

<sup>141</sup> This number is incorrect. The actual number is 18 per cent, as stated earlier.

<sup>142</sup> Interview with Luah Tomas. SIRSAM, Santarém. March 12, 2010.

## XII. Ways Forward

Governmental institutions, for years, have not contributed to improve pasture management and soil fertility in the long run. Incentives to expand cattle ranching in the region were neither based on scientific knowledge nor followed by adequate technical assistance.<sup>143</sup> The Brazilian government, nonetheless, is quick to launch a variety of programs and action plans as a response to different pressures, both domestic and international. For instance in 2004, responding to the second highest yearly rate of deforestation, it created the Action Plan for Prevention and Control of Deforestation in the Amazon (PPCDAm). The plan integrates forest monitoring with remote sensing systems, land use planning and land titling, greater inspection and law enforcement, and promotion of sustainable usage of natural resources.<sup>144</sup> A plan of this magnitude would solve most of the problems in the region, but proof that is actually being implemented is difficult to find—and is one of many.

A possible solution to balance production with conservation in the Amazon, merging science with policy in an effective way, could be Ecological-Economic Zoning (ZEE). The initiative was first introduced in 1990 at both a national and state level to determine different optimal land uses in the Amazon region. It is mainly a technical task, with collection of information and scientific data, but it also encompasses sociopolitical forces to accommodate competing interests.<sup>145</sup> Implementation of ZEE requires a categorization of land areas in terms of their best uses, utilizing maps, soil samples, biodiversity inventories and other technical information to determine what land uses are optimal for ranching, agriculture, and forestry.<sup>146</sup> The idea can be incorporated into a computerized database linking ZEE areas of Amazonian

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<sup>143</sup> Interview with Luah Tomas. FAEPA, Belém. March 13, 2010.

<sup>144</sup> Gonçalves, *The Brazilian REDD Strategy*, 8-9.

<sup>145</sup> Hall, "Environment and Development."

<sup>146</sup> Mahar, Dennis. "Agro-Ecological Zoning in Rondônia, Brazil: What are the lessons?" In *Amazonia at the Crossroads: The Challenge of Sustainable Development*, edited by Anthony Hall, 115-128. London: Institute of Latin American Studies: University of London, 2000, 115.

states with satellite images and remote sensing from the National Institute of Spatial Research (INPE).<sup>147</sup> Zoning can be undertaken at a macro level in the entire Amazon, at the state and municipal level, and also at the private property level, embracing agrosilvipastoral systems.

ZEE demands a strong political commitment and can be weakened by political and economic interests, because this zoning is based on the premise that there will be winners and losers. Cattle ranchers in Santarém, however, viewed ZEE favorably as it assumes that ranching will not disappear from the Amazon, but instead, it will be protected and incorporated into the development model of the region. Furthermore, it is fairly agreed and understood among ranchers that trees will not have to give up space for cattle. With the establishment of production and conservation areas through ZEE, intensification of agriculture and ranching in already deforested areas will be promoted with the introduction of relatively simple technologies in low-productivity pastures to avoid further deforestation. This technology has the “potential for long-term maintenance of soil fertility and livestock production,”<sup>148</sup> retaining satisfactory levels of productivity with minimal ecological risks for the forest.

As mentioned before, zoning demands political support, in addition to long-term constant commitment from both the public and government officials. To gather this broad support, Mahar proposed that the federal government allows a Legal Reserve within private properties of only 50 per cent in those states that present and implement, successfully, a Ecological-Economic Zoning.<sup>149</sup> Dividing the Amazon into optimal land use zones will move the government one step closer to balancing conservation with production, as zoning will help establish a consistent

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<sup>147</sup> Hall, “Environment and Development,” 105-106.

<sup>148</sup> Serrão, Emanuel A., and José Toledo. “The Search for Sustainability in Amazonia Pastures.” In *Alternatives to Deforestation: Steps Toward Sustainable Use of the Amazon Rain Forest*, edited by Anthony Anderson, 195-214. New York: Columbia University Press, 1990, 196.

<sup>149</sup> Mahar, “Agro-Ecological Zoning,” 126-7.

institutional base to advance other priorities, such as land distribution, law enforcement, and economics incentives for conservation.

The first public policy that can be reexamined after ZEE is land distribution. Under this item, the government can create additional conservation units—in reality rather than just on paper—on areas with low agricultural potential, high biodiversity concentration, and high-risk areas. Conservation units are easier to monitor than private lands because restrictions are clearer within them<sup>150</sup>—a physical demarcation separating these areas would facilitate enforcement even further.<sup>151</sup> Accordingly, conservation units allocated as indigenous land and as sustainable usage can be promoted as employment and income generators for traditional populations and producers of forest products. Separating the Amazon into zones would also help restructure and expedite the land titling process, promoting a partnership between federal, state and local governments, in which local governments would work within their jurisdiction to determine how to allocate local properties, while keeping in mind the state and national zoning of the land. Government officials can request that each property owner presents a microzoning plan of their land, in compliance with the Forestry Code, in order to receive a title. Deforested land could also be taxed prior to titling in order to avoid further clearings. Additionally, agrarian reform settlements would be created in already deforested areas, with prompt subsidies for soil regeneration.

The second public policy reexamined, as a consequence of an improved institution capable of handling land distribution and titling, is the enforcement of property and environmental laws, which could significantly improve judicial processes and eliminate the impunity pattern so endemic in the region.<sup>152</sup> It is also necessary to harmonize the differences between the judiciary and IBAMA so that the two can cooperate rather than undermine each

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<sup>150</sup> Arima et al., *Pecuária na Amazônia*, 41.

<sup>151</sup> Mahar, “Agro-Ecological Zoning.”

<sup>152</sup> Arima et al., *Pecuária na Amazônia*.

other. Law enforcement can also be strengthened through public and private financing institutions, with the determination of strong environmental criteria and conditionality for financing and credit to activities in the Amazon region.<sup>153</sup> Smeraldi & May have proposed that all public financing and subsidies prioritize improvement in pasture productivity, rather than solely financing the purchase of cattle and machinery.<sup>154</sup> An initiative under this framework was implemented in 2008 through the National Monetary Council (CMN), which demanded that any rural credit or loan be given only to rural producers who present a Certificate of Rural Property Registration, an Environmental License that proves the farm's environmental compliance, and an authorization from the State Secretariat of the Environment to implement the financed project.<sup>155</sup> These criteria, indeed, look great on paper, but are not viable to producers, who often have a difficult time getting these documents from the appropriate agencies.

Consequently, a third public policy to rethink based on ZEE and a stronger land management institution is economic incentives and subsidies. This would focus on creating economic incentives for compliance with the laws, rewarding those property owners who preserve and manage their land sustainably. Interviewed ranchers expressed their utmost interest in conserving the Amazon if only it was profitable. Current conservation efforts are viewed as barriers and limiting, both to large and small producers in Santarém. Acheson has also stated that “farmers are often blamed for the problems stemming from [government's] inadequate design,” specifically when the government does not provide enough economic incentives to maintain a specific design. Incentives to ranchers would encompass financial assistance to keep the forest standing, intensify production within the determined 20 per cent of the Forestry Code, and to reforest cleared areas.

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<sup>153</sup> Ibid, 44.

<sup>154</sup> Smeraldi & May, *Hora da Conta*, 56.

<sup>155</sup> Ibid, 42.

Certainly, the government of Brazil also faces severe financial constraints to implement its legislation as any other developing and developed country. Brazil, following international patterns, is significantly more focused on generating fiscal surpluses and growing its GDP rather than investing in social and environmental programs.<sup>156</sup> Infrastructures projects as well as agricultural exports generates higher rates of return to the country in the short-term and also puts Brazil at a comparative advantage in the international market. Just as cattle ranchers find themselves caught between production and conservation, the government is in the same situation within the international community. Economists and developers praise the country for its rapid economic recovery after the last global financial crisis, while environmentalists condemn all that the country is doing wrong.

The international community has a chance to help developing countries like Brazil with financial resources dedicated solely to forest conservation. REDD (reducing emissions from deforestation and degradation) proposes a good solution in this sense, as farmers could earn by the amount of carbon they detain from the atmosphere, or in other words, it would subsidize conservation. REDD was first suggested in 2007 during the United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties in Bali, Indonesia. REDD mechanisms would be included in a post-Kyoto agreement and aims to encourage international financing of sustainable forest management, adding a monetary value to trees that are standing.<sup>157</sup>

Brazil was first opposed to the idea of developed countries offsetting their emissions by giving money to developing countries and the former Minister of Environment, Carlos Minc,

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<sup>156</sup> Young, Carlos Eduardo F. "Financial Mechanisms for Conservation in Brazil." *Conservation Biology* 19, no. 3 (2005): 756-761.

<sup>157</sup> Tollefson, Jeff. "Paying to Save the Rainforests." *Nature*. August 19, 2009. <http://www.nature.com/news/2009/090819/full/460936a.html> (accessed November 3, 2009). Laurence, William F. "Can Carbon Trading Save Vanishing Forests?" *BioScience* 58, no. 4 (2008): 286-287.



was afraid that REDD mechanism would solely benefit large landowners rather than the small producer. Being concerned with its sovereignty over the Amazon region, Brazil instead has proposed an Amazon Fund—to be managed by BNDES—in which international donors (states, banks, and companies) would direct capital into a common pool and the Brazilian population would submit sustainable projects for funding. For this system to be complete and successful, it should be backed by a strong monitoring system that could be easily implemented with a GPS and satellite system from the INPE that would analyze productivity and livestock occupation, and it would also detect initial phases of land degradation.<sup>158</sup> If the system triumphs, it can serve as an example for other countries in similar situations.

Although the Amazon Fund is certainly benefiting several projects that are worthwhile and deserve recognition, it is not a national standardized plan aiming at restructuring environmental conservation in Brazil. Instead of creating a national and consistent plan, financial resources are going to specific locations. One of the main concerns of REDD is the emergence of a “leakage” problem, in which a focus on lowering deforestation in a specific region could increase deforestation in another, adjacent area.<sup>159</sup> For leakage to be avoided, distribution of resources should be maximized, consistent, and long-term focused and most of the Amazon Fund projects do not seem to fit this parameter. One of the projects funded is a Bolsa Floresta that would give monthly stipends, for five years, to inhabitants of conservation units. When asked his opinion about such a program, the president of the Association of Rural Producers of Santarém, representing small-scale producers, answered:

“Look I don’t know, because looking from another perspective, there might be shortage of food. Because at the moment that I get money to preserve, I won’t be committed to

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<sup>158</sup> Tollefson, “Paying to Save.” Bustamante et al. *Resumo e Principais Conclusões*

<sup>159</sup> Laurence, “Car Carbon Trading Save.”

producing food anymore. I believe this might shift the interest away from production because the person will have an income”<sup>160</sup>

On the other hand, large-scale cattle ranchers of Santarém do want to get paid for maintaining their 80 per cent of forests standing:

“We can only produce on 20 per cent—which is not efficient—and the other 80 per cent you have to preserve for the good of community, but nobody pays you for this. It’s our feeling here that if you want everything pretty, pay us to keep it pretty. We have children to feed, children to go to school.”<sup>161</sup>

Ecological-economic zoning is the first step to the establishment of a formal institution able to manage land and environmental concerns as one and further promote other policies that would help legitimize environmental efforts in Brazil. A zoning would also promote the implementation of a traceability and certification mechanism of the beef supply chain, similar to what exists currently through the Forest Stewardship Council (FSC) for logging.<sup>162</sup> Efforts at traceability are already being implemented in Brazil and both domestic and international consumers are more aware of the consequences of their purchases. For instance, the state of São Paulo recently passed a law forbidding the state to import beef that is not environmentally sustainable. The city has to demand proof that the product is not coming from deforested areas, illegally-appropriated and indigenous land, and that producers have not employed slave or child labor.<sup>163</sup>

Stewart, on the other hand, proposed something similar to a ZEE in his 1994 book *After the Trees*, but strongly advocating family-based agriculture. Through his research along the

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<sup>160</sup> Interview with Luah Tomas. APRUSAM, Santarém, March 11, 2010.

<sup>161</sup> Interview with Luah Tomas. SIRSAM, Santarém. March 12, 2010.

<sup>162</sup> Smeraldi & May, *Hora da Conta*, 57.

<sup>163</sup> Valor Econômico. *São Paulo Exige Carne "Sustentável"*. January 20, 2010. <http://www.amazonia.org.br/noticias/noticia.cfm?id=341837> (accessed February 09, 2010).

Transamazon highway, he concluded that small farmers make better use of their land for several reasons. They are able to understand the necessities of their land better than a large-scale weekend-only rancher who hires personnel to oversee the land. Stewart argues that the Brazilian government should focus on family-based producers because they, for their own benefit, already zone their land according to soil fertility. Discouraging large landholdings, redistributing already cleared land to family-based producers, and opening the market to forest products will promote sustainable forest management and benefit those who need it the most.<sup>164</sup>

As shown in this paper, though, cattle ranchers have a strong identity based on historical and economic factors. They will not easily give up part of their identity, unless it is embraced by the environmental movement.

### **XIII. Conclusion**

The need for effective management institutions in guaranteeing resource preservation is clear. However, “there is no consensus on what those institutions are,”<sup>165</sup> both on an international and domestic level. This lack of consensus is mainly driven by the also common lack of consensus of what sustainable development is, which can be considered a “symbolic issue that encapsulate[s] positions on a number of dimensions”.<sup>166</sup> Current generations have no accurate and precise method to “define and establish sustainable levels of extractions of renewable natural resources,”<sup>167</sup> and any attempt will involve uncertainty.

However, the Amazon region is the last frontier left unopened by agriculture and ranching in the country. It is of utmost importance that a sustainable model for conservation and production is developed in the area. This paper has argued that the Brazilian government has

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<sup>164</sup> Stewart, *After the Trees*, 112-113.

<sup>165</sup> Acheson, “Institutional Failure,” 117.

<sup>166</sup> McAdam, *Dynamics of Contention*, 168.

<sup>167</sup> Tucker & Ostrom, “Multidisciplinary Research,” 83.

struggled to adapt to sustainable development and, consequently, have failed to create effective environmental and land legislation. As a result, cattle ranching, the main activity responsible for deforestation in the Amazon, is disconnected with environmental concerns. Ranchers have resisted stronger environmental demands because they see it as a punishment to their activity and have felt disenfranchised in the policy making process.

Fearnside suggested that the Amazon region is “not capable of solving the problems of other regions, such as lack of effective land reform,”<sup>168</sup> but I’m tempted to disagree, as ineffective land tenure and reform greatly affect the Amazon. The land reform issue should be, if anything, firstly solved in the Amazon region so that environmental laws can be enforced and proper financing can become available to the population. For conservation to be economically feasible, the Brazilian government should focus primarily on clearly defining land regulation and titling. Land reform, however, might be the most difficult reform for a modernizing democratic government such as Brazil, because it means “the forceful taking away of property from one group of people and giving it to another” and “pluralistic politics ... are often incompatible with effective land reforms.”<sup>169</sup>

Yet, I have proposed Ecological-Economic Zoning as a first step in the direction of securing land rights, improving law enforcement and promoting economic incentives to conservation, mainly through Reducing Emissions from Deforestation and Degradation (REDD) mechanisms. The government must also address the concerns of local populations, that strongly demand for better sanitation, energy and logistic infrastructures. They have demanded a better education system as well, that would empower the local population. Education has also the

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<sup>168</sup> Fearnside, Philip. "Predominant Land Uses in Brazilian Amazonia." In *Alternatives to Deforestation: Steps Toward Sustainable Use of the Amazon Rain Forest*, edited by Anthony Anderson, 233-251. New York: Columbia University Press, 1990, 246.

<sup>169</sup> Huntington, *Political Order*, 385, 388.

potential to transform the pre-conceptions of economic development and conservation as separate and opposite to each other.

The ultimate goal of the government should be to develop a public ecological and environmental conscience, changing the perception that humans are separated from nature. Moran has argued that a key component in managing the commons is trust<sup>170</sup>; trust that the institution is working effectively and consistently, that all will benefit equally, that those who cooperate will be rewarded and that those who do not will be punished. This trust is easily lost when individuals of a society sense that the institution is serving special interests rather the public good. When ranchers and farmers are unable to trust the institutions to enforce laws or resolve conflicts, “they will take measures to do so themselves, often in a way that is inefficient and draws resources from more productive activities.”<sup>171</sup> Trust is also fostered through the empowerment of local governments that are in a better position to understand local necessities and provide ampler communications channels for debates and political participation. The involvement of local communities and resource-users who depend on forest for survival also builds trust and helps legitimize decision making.<sup>172</sup> Policies, in general, could benefit greatly if decided locally and supported economically by the federal government.

Finally, because ranching is so strongly connected to *pecuaristas*’ identities, the government needs to work within that framework. An effective institution must remove the motives for deforestation, calling cleared land an ecological destruction rather than an “improvement,” as it has been for most of Amazonian colonization.<sup>173</sup> It must also promote preservation in a way that includes ranching. Conklin & Graham discerned that international

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<sup>170</sup> Moran, *People and Nature*, 121.

<sup>171</sup> Deininger, Klaus. “Monitoring and Evaluation of Land Policies and Land Reform.” In *Agricultural Land Redistribution*, edited by Hans Binswanger-Mkhize, Camille Bourguignon and Rogier van den Brink, 397-433. Washington, DC: The World Bank, 2009, 400.

<sup>172</sup> Hall, “Environment and Development.”

<sup>173</sup> Fearnside, Philip. “A prescription for Slowing Deforestation in Amazonia.” *Environment* 31, no. 4 (May 1989): 16-22.

environmentalists have broadened their idea of preservation to include indigenous people and sustainable forest management. Would it be possible for them, as well as the Brazilian government, to also include ranching in this perspective? Recognizing the cultural background and importance of cattle in Brazil and hoping to work together should not be harmful. I conclude this paper with an insightful quote from one of my interviews:

“[Sustainable development] is very difficult because sometimes the interests are contradictory, and you need a dialogue moving in a way to incorporate different interests. You can’t just say ‘stop ranching because we want the forest.’ I believe that the politics of sustainable development in the region are much more to discuss how much we can advance with the productive systems ... without acting irrationally with the resources.”<sup>174</sup>

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<sup>174</sup> Interview with Luah Tomas. IPAM, Santarém, March 11, 2010.

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