



## CHAPTER 5 Social Landscapes

Source: A Perfect Storm in the Amazon Wilderness: Development and Conservation in the Context of the Initiative for the Integration of the Regional Infrastructure of South America (IIRSA): 63

Published By: Conservation International

URL: <https://doi.org/10.1896/978-1-934151-07-5.63>

---

BioOne Complete ([complete.BioOne.org](https://complete.BioOne.org)) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/terms-of-use](https://www.bioone.org/terms-of-use).

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

---

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

## CHAPTER 5

### Social Landscapes



Round village of Kayapo Indigenous People. The Amazon is home to hundreds of traditional communities, including the Kayapo, who successfully maintained their cultural traditions (©Russell A. Mittermeier/ CI).

People who live in the Amazon's rural areas are among the poorest inhabitants of the continent,<sup>74</sup> with some of the highest rates of illiteracy and worst health conditions in Latin America (IBGE, 2006). The region's poverty is partially the result of its geographic isolation. IIRSA investments in transportation infrastructure will greatly reduce this isolation and will undoubtedly promote economic growth and create new businesses opportunities and jobs—all of which will increase tax revenues and improve public services. Not surprisingly, most policymakers and the average citizen assume that the social impacts of IIRSA will be overwhelmingly positive. However, a more careful evaluation reveals that the distribution of these social effects will not benefit many of the region's current residents. Moreover, the relatively rapid introduction of economic and social change will generate a range of negative impacts in rural communities, including indigenous societies.

<sup>74</sup> We make this statement with a caveat: indicators based on income are not wholly indicative of well-being and must be interpreted carefully. Because most rural Amazonian economies have limited access to wage labor and rely on subsistence activities to provide life's necessities, lower incomes are to be expected.

The conservation value of Amazonia stems in large part from its relative lack of human intrusion (Mittermeier *et al.* 2003), a direct result of the dispersed rural settlement that characterizes the region. Most Amazonian communities are small and contain a few hundred people. Even among the population centers with more than 1,000 individuals, the vast majority (78 percent) have fewer than 30,000 inhabitants, indicating that most villages and towns are modest in size. Despite its sparse population, Amazonia is culturally diverse with more than 281 different indigenous, nonmigrant languages; of this total, 213 are unique to the region (Figure 5.1). In addition, numerous distinct immigrant groups have settled in the area in the centuries since Francisco de Orellana first sailed down the Amazon from the Andes in 1542. Many of these nonindigenous and mestizo communities have unique social customs that have evolved over time and depend on the exploitation of the natural resources of the region. Consequently, the social landscape of the Amazon is characterized by sparse human habitation that is distributed among small settlements but contains considerable cultural diversity, reflecting the persistence of traditional indigenous and nonindigenous cultures.

### MIGRATION, LAND TENURE, AND ECONOMIC OPPORTUNITY

IIRSA and PPA investments in highway corridors will stimulate the migration of hundreds of thousands, if not millions, of people into the region. This mass migration will include impoverished peasants looking for a small plot of land, middle class farmers, and affluent cattle ranchers, as well as corporations

seeking large tracts of inexpensive land or rich mineral deposits.<sup>75</sup> However, in addition to this land rush, there will be parallel growth of regional urban centers as part of an evolving settlement hierarchy (Haggett *et al.* 1977, Ellis & Allard 1988); this will create opportunities for commerce that will be exploited primarily by urban migrants from other parts of the continent.<sup>76</sup>

Many of the Amazon's rural inhabitants will experience substantial adverse impacts from this migratory onslaught. One of the most obvious will be increased competition for land and other resources. Most of the traditional communities have never experienced such competition. With a rural population density of only 1.1 persons per square kilometer (Mittermeier *et al.* 2003), Amazonia provides its residents with access to large tracts of forest and aquatic habitats for food, fiber, timber, and other resources as part of a subsistence lifestyle that is fundamental to their cultures (Steward 1948). This access is defined by cultural mores that have developed because of sparse human settlement and low levels of demand: many have land parcels, but they rarely have legal title and rely instead on the principle of physical occupation and land tenure based on culturally defined patterns of inheritance that may extend over several decades of prior fam-

<sup>75</sup> The precedents for this type of migratory phenomena are historically abundant and include most of the settling of the U.S. Midwest. Some of Oklahoma's "Sooner" settlers, for example, ignored the regulatory framework by arriving before the official date of land distribution.

<sup>76</sup> Two famous historical precedents are the California gold rush, where merchants who sold supplies to gold miners went on to form businesses that eventually evolved into the famous Levi Straus, the Central Pacific Railroad, and Armour Meat Packers ([http://www.baltimoreopera.com/studyguide/fanciulla\\_04.asp](http://www.baltimoreopera.com/studyguide/fanciulla_04.asp)). Many of the first commercial enterprises in the Amazon were founded by Lebanese migrants whose descendants are still residents of the region, or who occupy prominent positions in the São Paulo business and professional community (<http://www.la.utexas.edu/research/paisano/EECText.html>).

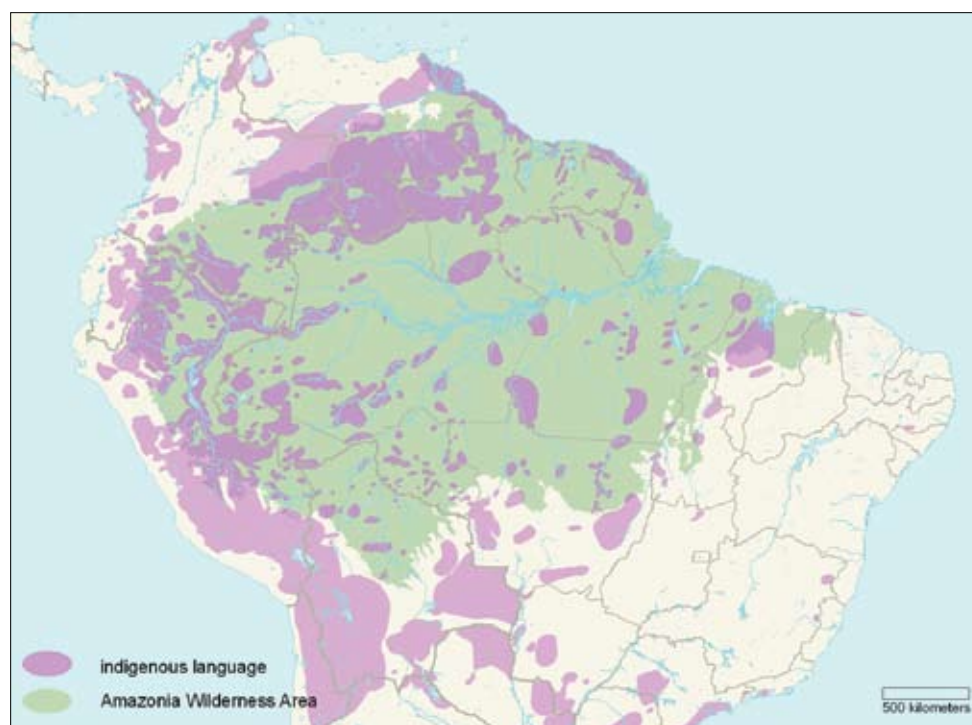


Figure 5.1. The Amazon is one of the last redoubts of indigenous cultures, with 231 extant languages scattered across the basin, particularly in the more remote wilderness areas of the western Amazon and Guayana Shield (language data from Global Mapping International 2006, [www.gmi.org/wims](http://www.gmi.org/wims)).

ily use. The migration of new residents, both rich and poor, will increase competition and restrict access of traditional groups to both forest and aquatic resources, interfering with long-established patterns of resource use and land tenure (Figure 5.2).

Less obvious but not less serious are the impacts that rural peoples will suffer due to the rapidity of change in their previously isolated communities. Change to cultures is inherent, and all cultures react and adapt. However, rapid, large-scale change often exceeds the capacity of some traditional cultures to adapt successfully. One example of the adverse effects associated with rapid modernization and the opening of a previously isolated wilderness is Alaska during the final decades of the twentieth century. Although the region had experienced development of sorts over many decades, it remained relatively isolated due to a lack of infrastructure and a harsh climate that impeded settlement. However, the construction of a 1,350-kilometer-long oil pipeline to connect production fields on the North Slope with shipping facilities at Prince William Sound introduced change at a scale new to the region. Large numbers of migrant workers arrived at the same time that the new roads penetrated previously inaccessible areas. Such development generated many benefits for Alaska, but it also introduced a variety of negative impacts for rural peoples, including the indigenous groups who were the primary inhabitants of the region (Berry 1975). Among the most alarming were high rates of alcoholism and substance abuse that led to high rates of suicide, all of which can be linked to rapid culture change (Kraus & Buffer 1979, Kettl & Bixler 1991). Although the Amazon is very different from Alaska, the similarities of the situation (wilderness areas and the predominance of isolated traditional communities) and the emergence of similar impacts as a result of rapid culture change (Hezel 1987, 2001) are more than sufficient to warrant that these negative impacts be given serious analysis.

One source of cultural stress will be the introduction of new ideas and values that will compete with traditional ways of life. For example, individuals who are successful in dealing with migrants may have more status than traditional leaders, a phenomenon that has been observed under similar conditions elsewhere, and one that introduces stress and conflict within indigenous communities. Most residents will not be competitive in an increasingly sophisticated urban job market. Although they have traditional knowledge that serves them well in their forest and riverside communities, rural schools with limited budgets and antiquated curriculums have not provided them with the skills required by a modern economy.

Local elites will fare better than the general population and may even benefit from the land rush because they occupy administrative positions in regional and local government. They can use their political influence to obtain title over land and then sell it to newcomers. On the Andean piedmont, leaders of peasant unions (*sindicatos*) obtain titles to large sections of land, divide it into smaller properties, and sell plots to settlers, who are usually a mixture of new arrivals and second-generation migrants expanding family assets, as well as to long-time residents and even indigenous families who realize that the world is changing and that formal title to a small plot is a better bet than traditional use rights to a rapidly shrinking resource. The frontier landscape

is often distributed as larger properties as well. These are sold directly to ranchers and agroindustrial enterprises or are subdivided into medium-sized farms and ranches. Many medium- to large-sized properties are owned by urban elites who are putting their savings into what is perceived to be a safe investment.

State land is literally up for grabs, and even protected areas and forest reserves are subject to invasion because the state has not effectively exercised its authority. In almost all instances, migrants and locals are fully aware that their land deeds have a



Figure 5.2. Many of the Amazon's rural communities are composed of indigenous groups or descendants of migrants who came to the Amazon during rubber or gold booms; most families lack basic services such as water and most depend on forest resources for food and fuel (© Hermes Justiniano/Bolivianature.com).

questionable legal history but expect government to cede title to avoid social conflict. Most feel completely justified, viewing themselves as citizens with a right to occupy empty lands either because they have been denied economic opportunities (*sem terras*) or because their investment will create jobs and wealth for the country (urban investors and cattlemen). Private property is not exempt from invasion and settlement—especially because many of the original land deeds were acquired via fraudulent means.

The lack of a functional regulatory land tenure system in much of the region and the inability of the judicial system to punish noncompliance are important factors in the land use dynamic (Fearnside 2001b). The failure of the system is manifest not only in the chaotic settlement process, but also in the levels of violent conflict that characterize many parts of the Amazon. The murder of Sister Dorothy Stang is the most recent prominent manifestation of this conflict over land. Sister Stang was an advocate of small land holders and forest dwellers and was working to create a forest reserve opposed by loggers and cattle ranchers, in Pará, Brazil.<sup>77</sup> IIRSA will contribute to this social conflict by opening up more land and increasing land values in the areas surrounding the new transportation corridors. To mitigate this situation effectively, the issue of land tenure and the corruption that accompanies most aspects of the land titling process must be addressed.

<sup>77</sup> According to the Pastoral Land Commission, about 1,380 people have been killed in land conflicts in Brazil since the mid-1980s (<http://www.washingtonpost.com/wp-dyn/articles/A40503-2005Feb20.html>).

## INDIGENOUS GROUPS AND EXTRACTIVE RESERVES

Fortunately, many indigenous groups have responded to the changing social dynamic in the greater Amazon and have organized their communities to file claim to large tracts of land (Figure 5.3). Their success speaks to the resilience of their internal social organization and the timely assistance they have received from civil society and international organizations. Indigenous communities are vocal advocates of sustainable development and forest conservation; these affirmations are amply supported by satellite images, which show dramatic differences in land use between indigenous reserves and adjacent nonindigenous areas, with the indigenous lands remaining relatively intact next to large-scale deforestation (Figure 5.4) (Schwartzman *et al.* 2000, Ruiz-Pérez *et al.* 2005). The success of indigenous reserves in halting deforestation highlights the importance of land tenure. Although their proactive efforts to protect their land are certainly a factor in avoiding deforestation within their land holdings, equally important is the knowledge that squatters will not be able to acquire title to that land. Farmers and ranchers do not randomly invade and occupy lands; they do so only when there is a high probability that their actions will eventually allow them to obtain title and that their investments in infrastructure and land clearing will not be lost, either to the true landowner or by the inability to sell the land and recoup their investments.

The conflict between cattle ranchers and forest dwellers, including indigenous groups and immigrant populations descended from rubber tappers, gave birth to the environmental and social movement led by Chico Mendes, the peasant activist who was murdered in 1988 for challenging individuals engaged in land speculation (Hecht & Cockburn 1989, Cowell 1990). Since then,



Figure 5.3. During the 1990s, large tracts of land were ceded to traditional communities in recognition of their historical claims to forest and aquatic resources; most of these lands are zoned for forest management and are an important complement to the protected area system throughout the Amazon.

fifty-eight extractive reserves have been created in the Brazilian Amazon, and similar reserves exist in Bolivia and Peru; most are quasi-protected areas where the exploitation of rubber and Brazil nuts is encouraged, but logging and agriculture are theoretically restricted. Extractive reserves have many enthusiastic proponents who seek to reconcile conservation with demands for social justice and have received significant investments from Brazilian institutions and from the World Bank.<sup>78</sup> Political activism by forest dwellers in Acre has brought about policies to subsidize rubber production; it has also created cooperatives and local processing facilities that improve the quality and add value to rubber and Brazil nut production (Campos *et al.* 2005, Ruiz-Pérez *et al.* 2005).

However, economists continue to question whether extractive reserves can fulfill their development objectives (Bennett 2002, Goeschl & Iglori 2004). Their success as a conservation option and economic management system ultimately depends on the ability of residents to generate higher incomes by diversifying forest products. Unfortunately, this has not yet happened, and forest inhabitants are opting for increased agricultural production and timber extraction (Ruiz-Pérez *et al.* 2005).<sup>79</sup> Extractive

<sup>78</sup> The Brazilian Environment Ministry and the World Bank have invested \$17 million in four extractive reserves in Brazil since the mid-1980s (World Bank 2006).

<sup>79</sup> In Bolivia, there is an ongoing land tenure conflict between Brazil nut concessionaires who have long dominated the region with large land concessions, and peasant settlers, many of whom are former employees of the concessionaires who have established communities and land claims adjacent to concessionaire properties. Settlers establish their land claims under Bolivian law by clearing and farming lands. A recent study of peasant perceptions of land value established that agricultural use was considered the first priority and that the forest was viewed as a secondary resource to be exploited for Brazil nut and timber.

reserves will require additional economic inputs to make them viable; the only realistic source of these funds would be direct payment for ecosystem services to compensate inhabitants for forest conservation (Hall 2004, Fearnside 2005b). Similarly, the long-term conservation of indigenous lands must ultimately be based on economic incentives, or many of these groups will be tempted to exploit their timber resources nonsustainably over the medium term to improve their standard of living (Fearnside 2005b).

## MIGRATION AND HUMAN HEALTH

Land use change can also have serious effects on the health of human communities, both long-time forest residents and recent arrivals. The history of diseases introduced to indigenous populations is as old as the first journey down the Amazon River by Francisco Orellana. Since then, the settlement of the Amazon has been characterized by periodic booms that inevitably lead to catastrophic epidemics in isolated populations with little resistance to cosmopolitan diseases such as measles, mumps, and chicken pox (Mann 2005). The most recent well-publicized example of this unfortunate phenomenon is the Yanomami indigenous group of Roraima, Brazil and southern Venezuela, who experienced outbreaks of diseases after contact with *garimpeiro* miners, missionaries, and possibly even anthropologists (Neel 1974, Sousa *et al.* 1997, Tierney 2000). Even today, there are documented cases of indigenous groups living in voluntary isolation in southwestern Peru where construction of the Inter Oceanic Highway, an IIRSA-sponsored investment, will soon begin. Increased logging activity in the Alto Purus region has apparently caused some of these communities to migrate into Manu National Park (pers. comm. N. Pitman 2005).

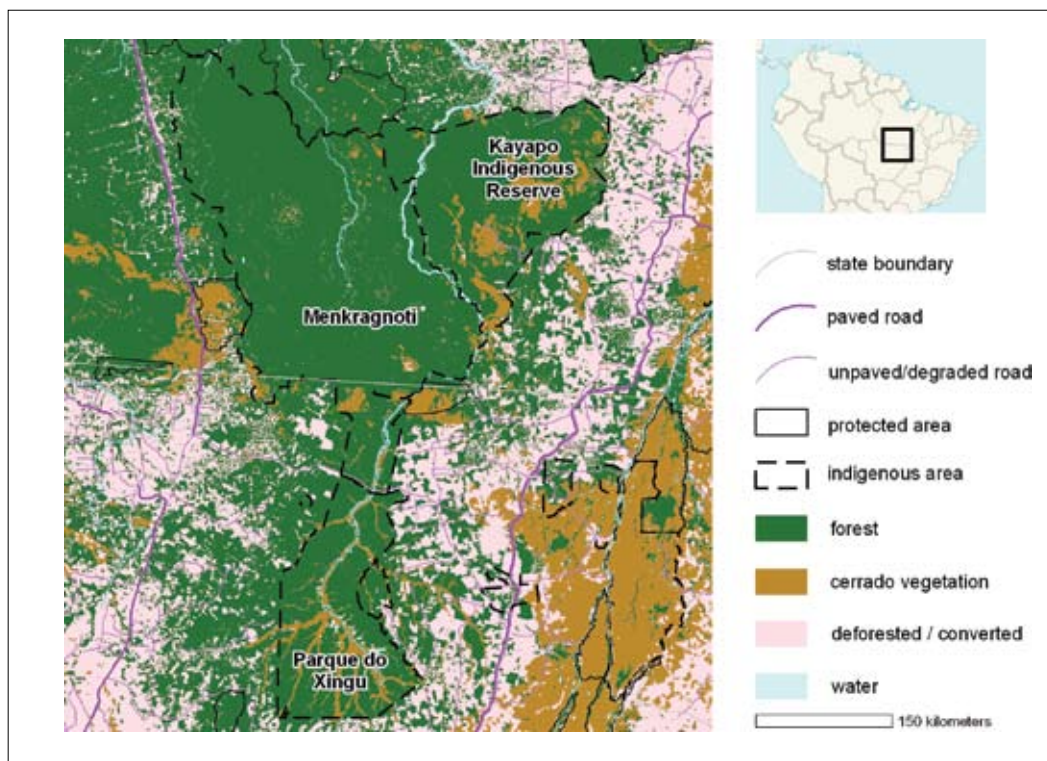


Figure 5.4. Land tenure is an important driver of deforestation, as shown by this map of the Kayapo Indigenous Reserve in Mato Grosso, Brazil. Deforestation occurs up to the boundaries of the reserve, which remains largely intact. The efforts of the Kayapo to protect their land are assisted by the certain knowledge that squatters will never be able to acquire title to it.

The health of migrant settlers also suffers from tropical diseases that have traditionally been associated with forest ecosystems. Recent studies in Iquitos, Peru, show that malaria transmission is greatest in deforested areas because the malarial vector, a specific mosquito species, is more abundant in the grassy habitats and stagnant pools characteristic of recently deforested landscapes (Vittor *et al.* 2006). Even those diseases believed to be highly dependent on forest mammals as alternative hosts, such as the leishmaniasis parasite, which has been shown to increase in colonized areas because the parasite's vector organism, the sand fly (Figure 5.5), has successfully managed to infect both dogs and humans (Campbell-Lendrum *et al.* 2001). The impact of deforestation on human health is not limited to forest dwellers or small farmers living in primitive conditions on the edge of the forest. The increasing incidence and severity of forest fires is also causing increased respiratory illnesses in both rural and urban settlements across the continent.

One of the most serious threats to human health in local populations will be the introduction of the human immunodeficiency virus (HIV). Research over the past two decades has shown that in-migration is almost always accompanied by the introduction or increased incidence of HIV infections (Colvin *et al.* 1995). The regional integration and improved transportation systems that are at the heart of IIRSA will almost certainly increase the incidence of HIV in remote corners of the Amazon, following a pattern that has been amply documented in other parts of the world (UNAIDS 2006). The introduction of HIV will coincide with an increase in prostitution that is all too common in the frontier areas of the Amazon. Outbreaks of HIV will outpace the capacity of local health systems to manage the spread of the virus and the consequences of a subsequent AIDS epidemic. In a manner not unlike the initial exposure of once-isolated people to the common childhood diseases of the Old World, HIV in the first decades of the twenty-first century could devastate local traditional populations, a dreadful and needless repetition of history.

Environmental changes are intimately connected to social impacts, and many of the social impacts associated with IIRSA investments will have a distinctly local character and will be difficult to predict. What may appear as a largely positive social impact may have negative consequences for certain sectors of the population. Similarly, a project that may benefit a nation or group of nations may not benefit local populations. The new methodologies for environmental evaluation incorporate an extensive participatory process that is increasingly enforced by lending agencies and national governments. The purpose of this process is to identify the concerns, needs, and aspirations of the local population before the onset of migration. These evaluation methodologies are discussed in the next chapter in the context of past development and the failure of governments and multilateral agencies to manage economic growth on the Amazonian frontier.

### THE MANAUS FREE TRADE ZONE

Manaus presents a stark contrast to other cities of the western Amazon. The prosperity in Manaus stems largely from the creation of a free trade zone and policies to promote economic growth. Manaus has experienced steady economic growth over four decades and created the only economy in the Amazon that



Figure 5.5. Previously rare diseases are spreading as human population increases in colonized areas, and pathogens adapt to changing environments. This sand fly (*Lutzomyia* sp.) is the vector for the leishmaniasis parasite, now a common disease in colonized regions of Bolivia (© Peter Nasrecki/CI).

is not dependent on natural resource extraction. Tax incentives and the avoidance of import tariffs have been the most important motivation for both foreign and national companies to establish assembly plants (Fabey 1997). Initial investments were largely in the electronics industry, motorcycles, and chemicals, but now also include biotechnology. Economic growth has spurred the creation of other businesses that provide the growing population with a broad range of goods and services typical of any modern economy. Tourism is an important component in the Manaus economy and is considered to have almost unlimited growth potential.

The Brazilian state is now seeking to diversify the Manaus economy by creating a value-added manufacturing sector based on the renewable natural resources of the Amazon, a strategy that will rely on the region's fisheries, timber, and nontimber forest products. The free trade zone will be expanded to 153 urban areas cities in the Brazilian Amazon, and the Getúlio Vargas Foundation will search for economically viable and environmentally sustainable business opportunities.<sup>80</sup>

Commerce plays a large role in the local economy and is a strategic component of the free trade zone. Manaus relies on three separate but linked transportation models. Air cargo services provide rapid and efficient connections for high-value products and supplies. River transport links Manaus with overseas ports, as well as being the conduit for the sale of manufactured goods to the rest of Brazil. IIRSA investments in highways will provide the third leg of this transportation model, particularly the ability of manufactured goods from Manaus to compete in the Andean market.

Within Manaus growth has led to a variety of environmental problems common to urban areas; however, the central Amazon has avoided the widespread regional deforestation that accompanies resource-based economic growth. The low deforestation rate is partly due to the limitations of the region's extremely infertile soils, but the Manaus experience demonstrates that a modern economy based on the manufacture of goods and services can provide economic opportunity to the inhabitants of the Amazon.

<sup>80</sup> The resources for this program have been budgeted at \$183 million. The largest part (\$58.85 million or 32 percent of the total) is dedicated to Amazonas state. See [http://www.suframa.gov.br/modelozfm\\_desregional\\_id.cfm](http://www.suframa.gov.br/modelozfm_desregional_id.cfm).