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Engin Ibrahim Erdem  
*Florida International University*

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# **Flood Risk and Tenure Regularization in Brazil**

*Engin I. Erdem*

Disaster Risk Reduction Program  
Florida International University

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Submitted to:  
Dr. Richard S. Olson  
Dr. Juan Pablo Sarmiento  
Dr. Gabriela Hoberman

## Introduction

A series of floods and mudslides in January 2011 demonstrated the high degree of flash and river flood risks that Brazil faces. The January 13 floods resulted in the death of more than 800 people, while about 100,000 people became homeless.<sup>1</sup> The floods hit mostly the hilly towns above Rio de Janeiro. President Dilma Roussef confirmed that homes built illegally in these risky areas were the major cause of the high death toll.<sup>2</sup>

Floods and landslides are not rare events in the country; they are frequent and widespread across Brazil.<sup>3</sup> In the past decade, 37 disastrous floods happened while about 5 million people were affected by the rain-related disasters over the last two decades.<sup>4</sup> On average, 120 people die a year as a result of major floods in the past decade. The floods also generated high levels of economic loss. For instance, the 2004 floods in 15 states caused 300 million dollars in losses; the 2008 flooding in Santa Catarina did 400 million dollars in damages, and the April 2009 floods caused losses of 500 million. About 10 percent of the population (19 million) is exposed to river flood risks, while 14 percent are at-risk to flash floods.<sup>5</sup>

Despite the fact that flash and river floods are common across Brazil, the high level of human and economic cost is not fate; rather, deficiencies in the realm of disaster risk reduction (DRR) have played a central role here. The country's increasing rates of urbanization (now 80%) in the past four decades, the dominance of a response approach to disasters over mitigation, and the lack of necessary governmental capacity and political commitment, have all been responsible for the huge human and economic costs the country suffers due to floods. For example, the lack

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<sup>1</sup> *Flood Risk in Brazil*, p.2

<sup>2</sup> "Brazil Floods: Over 350 Dead"

<sup>3</sup> For flood map in Brazil, see: <http://globalfloodmap.org/Brazil>

<sup>4</sup> "After Deadly Mudslides in Brazil, Concern Turns to Preparedness", and "Brazil flood death toll rises to 443, more feared"

<sup>5</sup> *Flood Risk in Brazil*, p.2

of proper control over construction, the heavy pressures of urbanization, and the presence of extensive illegal buildings, caused huge human costs in the January 2011 floods, while recent floods in Australia resulted in much less devastation. In contrast to Brazil, Australia's better early warning capacity, evacuation guides, and drainage infrastructure saved her from high damages.<sup>6</sup> Overall, the January 2011 floods became a major impetus for Brazil to take a step towards Disaster Risk Reduction in order to prevent such high tolls in future natural hazards.

Illegal structures built in high-risk areas pose a major challenge in the wake of river and flash floods in Brazil. As seen in the January 2011 floods, that challenge can only be handled through the proper mechanisms of land administration in the context of DRR sensitive urban management. In this regard, the following section in the paper will examine major developments as regards land tenure and regularization of informal settlements in the country. In doing so, the case of Recife will receive particular attention.

### **The 1988 Constitution and the 2001 Statute of Cities.**

The two key developments concerning land tenure in Brazil's recent past were the enactment of the 1988 democratic constitution and the 2001 Statute of Cities. The end of the 1964-1985 military rule paved the way for important changes in regards to social housing and decentralization. From the 1950s to the 1980s, the country experienced a massive process of urbanization linked to growing industrialization. While only 45 percent of the population lived in cities in 1945, that ratio exceeded 80 percent by the turn of the century (Nunes 2004: 15). In addition to urbanization and a centralized system of land management, inequality in land distribution posed major challenges to meeting the housing needs of millions of Brazilians during the military rule. The 1970s and 1980s witnessed the mobilization of large segments of

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<sup>6</sup> "After Deadly Mudslides in Brazil, Concern Turns to Preparedness"

Brazilian society to promote social housing and a decentralized system of land management in which municipalities could play more important roles. For example, twenty-three areas in the city of Recife were declared as ZEIS-Zones of Special Social Interest in 1983 (De Souza 2004: 3, Fernandes 2010: 57). In contrast to private property, ZEIS signified the right to land in the context of social housing. Keeping urbanization and the societal mobilization of the earlier decades in mind, it was not surprising that the 1988 constitution took important steps in regards to social housing and decentralization (Maricato 2010: 16-20).

The enactment of the 1988 constitution was a milestone development for social housing and regularization of informal settlements in the country. The constitution has allocated two chapters to urban management and underlined the social function of property. It has also recognized ZEIS, and asked municipalities to develop Master Plans as basic instruments for urban development. The constitution has given municipalities leverage to adopt specific housing laws, improve urban infrastructure and create ZEIS. Overall, the 1988 constitution has supported democratic management of cities through greater public participation in the government of cities. For example, public participation has been highly encouraged in the preparation of Master Plans and the creation of ZEIS (Fernandes 2001: 3, Brown et al 2006: 69-92, UN HABITAT 2005: 31). However, ZEIS does not suggest the right to property as they have not provided freehold title for residents; rather, municipal governments have provided guarantees for tenure security for its inhabitants (Fernandes 2010: 59).

A key follow up development to the 1988 constitution was the enactment of the 2001 Statute of Cities. The new law has made several important contributions to tenure security. First of all, it has given priority to the regularization of urban settlements and recognizes the right to urban land, housing, sanitation, urban infrastructure, public services, work, and recreation for all

people, including the poor masses (Brown et al 2006: 68-92). In reinforcing the notion of social housing, the City Statute required the preparation of Master Plans by each municipality. The plans are expected to facilitate the designation of Zones of Special Social Interest and regulate the improvement of infrastructures, which are in support of disaster mitigation efforts. Overall, the enactment of the City Statute was helpful in three major areas: (i) the social function of property, (ii) urban management, and (iii) the tenure regularization of informal properties (Maricato 2010: 6, Fernandes 2010:61). The Statute has contributed to further progress in the reinforcement of social housing in several municipalities in the country. For example, the city of Diadema in Sao Paulo state has become one of the major municipalities that benefited from the enactment of the Statute in the realm of social housing (Reali and Alli 2010: 35-54). Like Diadema, other cities such as Porto Alegre, Belo Horizonte and Recife have also recorded major progress, acquiring international recognition for their successful regularization of informal settlements and preparation of Master Plans in the broader context of urban management (Fernandes 2010: 60). In the aftermath of the enactment of the City Statute, the Ministries of Cities was established in January 2003. The creation of the ministry symbolized the increasing importance of municipalities and urban reform in the country's national agenda. The Lula government (2003-2011) accelerated earlier efforts concerning regularization of informal settlements and urban reform. Despite all these positive developments, Brazil still has a large urban problem. The continued prevalence of informal and illegal settlements (slums, tenements, and favelas, i.e.) throughout Brazil's metropolitan cities poses a great risk in relation to the outbreak of river and flash floods.<sup>7</sup>

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<sup>7</sup> Slums, which are improperly constructed and risky, are home to low-income populations while tenements are worse than slums with their overcrowded, dangerous and dirty composition.

## **Regularization of Informal Settlements: The Case of Recife**

The Northeastern city of Recife is one of the major cases of tenure regularization in Brazil. In the city, about half of a population of 1.5 million live in 600 informal settlements (favelas) organized through the CRRU (Concession of the Real Right to Use) and the ZEIS (Zone of Special Social Interest). Like Belo Horizonte, Recife is also one of the earliest cases where tenure regularization was provided for informal settlements well before the milestone 1988 constitution. A major dynamic behind this was the powerful social movement for tenure regularization that emerged in the city that included church, professional NGOs, and community mobilization. In 1983, 23 areas were declared as ZEIS, operationalized after the enactment of the 1987 PEZEIS law. (Brown et al 2006: 15-20, 68-92, Fernandes 2001: 12, De Souza 2004: 3-5).

The 1988 constitution accelerated tenure regularization programs started in the early 1980s. The constitution gave authority to municipalities to adopt laws concerning social housing (ZEIS i.e.) and to improve infrastructure in informal settlements. Overall, these changes were part of urban reform and democratization processes in the aftermath of the 1964-85 military rule. The constitutional recognition of social housing also had positive repercussions in the acceleration of tenure regularization programs such as the one operationalized in Recife. The Concession of the Real Right to Use (CRRU) in the social housing zones (ZEIS) has not meant the allocation of freehold titles, but still provides important tenure security for people who live in informal settlements. Though the number of CRRU issued in Recife increased over time, the process often took many years, and only a tiny percentage of the Recife population was able to acquire the CRRU. With approximately 150 thousand households in ZEIS areas, only about 1 percent of the potentially eligible population received CRRU documents. (Fernandes 2011: 3,

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Millions of indigenous populations (Afro-Brazilians) live in the inadequate buildings ('favelas') (UN HABITAT 2005: 36-38).

Brown et al 2006: 87).<sup>8</sup> Nevertheless, constitutional recognition of social housing and support by municipalities has enabled tenure security to a great extent. In addition, the Recife municipality has provided services to upgrade infrastructure and enhance resilience to disasters in the ZEIS areas.

The CRRU/ZEIS programs in Recife have involved several positive and negative aspects. On the positive side, these programs have been successful in insulating low-income people from the real estate pressures in the context of social housing, which acquired constitutional protection in 1988. In addition, the programs have not only provided tenure security for low-income people but also resulted in the construction of more disaster resilient buildings. Furthermore, the Recife case has contributed to the post-1988 efforts to democratize urban management in Brazil. In this regard, one should also acknowledge that a strong civil society basis for social housing has been a major dynamic in the city (Brown et al 2006: 15-20, Fernandes 2001: 3-12). On the negative side, the CRRU/ZEIS programs in Recife have issued a very limited number of legal documents for land tenure. As suggested earlier, only about 1 percent of the population has been able to secure CRRU documents. In addition, the 3 to 5 thousand dollar per household cost of legal CRRU documents has made the program very costly as compared to tenure regularization programs in other Latin America countries such as Peru (\$64 per household) (Fernandes 2011: 3). As the following table on urban titling programs in Latin America and the Caribbean shows, there is no single model of tenure regularization in the region. The Recife case poses a sharp contrast to the Peruvian case in which about one and a half million freehold titles were provided at a relatively lower cost. The COFOPRI ('Commission for the Formalization of Informal Properties') program in Peru issued 400,000 freehold titles in 2000 while the program

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<sup>8</sup> From 1995 to 2005, Recife municipality provided only 1423 CRRUs in an estimated 147, 157 households in ZEIS areas in the city (Brown et al 2006: 87).



experienced its high peak in the period of 1996-2004. Two major dynamics played key roles

<b>Country</b>	<b>City/ Nationwide</b>	<b>Implementing Agency</b>	<b>Level of Government</b>	<b>Type of Document</b>	<b># of Documents Issued</b>	<b>Years of Operation</b>
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behind the program: (1) the high level of political commitment by the Fujimori presidency, and (ii) the World Bank's financial support. In the Peruvian case of tenure regularization, squatters in risky areas were also instructed on how to enhance the resilient capacity of their houses (Brown et al 2006: 10-12).

Argentina	Nationwide	Ministry of Social Development	National	Freehold Title	30,000	1990 -
<b>Brazil</b>	<b>Recife</b>	<b>Urbanization Enterprise of Recife</b>	<b>Municipal</b>	<b>Use and Occupation of Superfice Title</b>	<b>3209</b>	<b>1985 -</b>
<b>Brazil</b>	<b>Nationwide</b>	<b>National Secretariat of Urban Programs</b>	<b>National</b>	<b>Unclear, no mention of title type</b>	<b>750,000</b>	<b>2005 -</b>
Chile	Nationwide	Ministry of National Assets	National	Freehold Title	210,653	1979 -
Colombia	Nationwide	National Low income Housing and Urban Reform Institute	National	Freehold Title	14,051	1991-2003
El Salvador	Nationwide	National Registry Center	National	Freehold Title	600,000	1996 -
Guatemala	Departments	Registro de Informacion Catastral	National	Freehold Title	124,679	2000 -
Mexico	Nationwide	Ministry of Social Development	National	Freehold Title	2,500,000	1974 -
Peru	Nationwide	Ministry of Justice	National	Freehold Title	1,400,000	1996 -
Venezuela	Nationwide	National Technical Office for Regularization of Urban Land Tenancy	National	Freehold individual titles or collective land titles	84,000	2002-2005

### **Urban Titling Programs in Latin America and the Caribbean**

**Source:** Brown et al 2006: 111-115

**Note:** The table includes a select number of countries (9) from Latin America and the Caribbean. Original table in Brown et al 2006 provides more cases (32).

## **Conclusion and Recommendations**

The January 2011 floods in Brazil demonstrated that the country faces severe risks related to floods, which happened frequently throughout the country in the past decade. Particularly notable was how the increasing number of informal settlements and houses in risky areas expanded the amount of human and economic costs associated with flash and river floods. As a result, the January 2011 floods showed that Brazil's approach to disasters needs a major overhaul, with a faster move from response-oriented action towards the disaster prevention and mitigation efforts that take place at the heart of DRR policies. Unless such a move is realized, the forthcoming floods and other natural hazards in the country will continue to generate massive deaths and economic losses.

In Brazil's recent history, the 1988 Constitution, the 2001 Statute of Cities, and the creation of the Ministry of Cities in 2003 were major positive steps to promote social housing and to empower municipal governments in land management. Requiring the preparation of Master Plans for cities was also very useful for DRR sensitive land management. In the post-1988 period, Recife and a few other municipalities undertook projects concerning regularization of informal settlements and improvement of infrastructures. In these projects, freehold titles were not allocated; rather, CRRUs were granted in the ZEIS areas. Although one cannot deny that these social housing initiatives are positive, they are insufficient as millions of people are still living in favelas and other informal settlements across the country.

Slums and tenements, as the most crowded and least hygienic types of informal settlements, are exposed to the highest levels of risk to disasters. Because courts do not recognize the legal rights of residents in these constructions, they are not able to benefit from insurance mechanisms. Therefore, they are the most vulnerable kinds of informal settlements, and need

urgent action by the federal and municipal governments. Governments at the local and federal levels could generate more resources for slum upgrading (UN HABITAT 2005: 80).

A fundamental component of better Disaster Risk Management is the level of political commitment at the local and federal levels of government. When an adequate political commitment exists, more financial resources and necessary laws could be generated for DRR in general and tenure regularization and upgrading of informal settlements in particular. The increasing amount of social housing projects, the creation of the Ministry of Cities, and more community level participation in the management of cities during the Lula government (2003-11) could be considered clear examples of the significance of political commitment.

Success at tenure regularization is also much related to the broader context of urban reform. Acknowledging that Brazil is one of the most unequal countries in the world in terms of distribution of land across different economic segments of society, it should not be surprising that the country has massive amounts of informal and illegal settlements. The post-1988 period of tenure regularization through ZEIS/CRRUs certainly made important progress, particularly in a few cities. However, the country still has a large number of informal settlements, which are at high risk to disaster. Therefore, land reform will continue to remain a crucial item for tenure regularization in the future.

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