



Modeling indigenous tribes' land rights with ISO 19152 LADM: A case from Brazil



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ABSTRACT

The issue of indigenous land rights is a particularly pressing political and socio-economical issue in contemporaneous Brazil. Violent land disputes between non-indigenous land ownership and indigenous people with overlapping claims to land rights is a complex problem. It has been caused by the bureaucratic and slow process of land adjudication that generates insecure property rights leading to the violent land disputes. Another problematic issue on indigenous land is the deforestation process.

Motivated by such pressing issues, and using the experience and results obtained in a previous paper on indigenous forest rights in India, where a recent Act of law defined the situation, the initial team of authors has been extended to include Brazilian land administration experts.

This paper aims to define the indigenous land rights in Brazil, as described under various laws, in the framework of ISO 19152 Land Administration Domain Model, with an emphasis on the spatial dimensions of the definitions.

The existing international convention on indigenous rights, by the International Labour Organisation (ILO) of the United Nations, is referred as a basis for the national legislation enacted in Brazil.

This background review of existing international and national legislation framework supported the following step of establishing the legal sources and definitions for a number of core LADM classes, concerning the Parties, Legal & Administrative and Spatial Units packages. The descriptive text is then complemented with UML diagrams. This is a fundamental step in defining an LADM specialized model for the situation of indigenous land rights in Brazil. From this first description, a contextualized Use Case Diagram is displayed (not currently part of the LADM standard).

Finally, it is expected that the publication of the situation of indigenous land rights by using the LADM framework, as presented here for Brazil, and previously for India, can contribute to broadened discussions by land administration experts worldwide. This is one of the first initiatives (for Brazil) in the use of a specialized model, and in the future can be expanded in order to achieve the modeling of other types of spatial units and related rights, until a complete, multipurpose, country profile LADM.BR is reached that can underpin an integrated cadastre. It can be equally used to test implementation prototypes, using current or experimental geographic information technologies and spatial databases.

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Background

The Amazon has the largest area covered by rainforests on the earth. A large part of these forests fall within the national

boundary of Brazil. In recent decades, especially during 1970s, under the military rule, economic driven expansion reached the northern and western parts of Brazil while penetrating the Amazon which among others caused serious deforestation in that area. The Brazilian Census 2010 counted 896,917 people who declared to be indigenous in about 305 ethnic groups, speaking 274 different languages. From the total indigenous population officially recognized by the government (Decree #22/91 and Decree #1775/96), almost 517,000 (57.7%) lives within indigenous land. 94.9% of this

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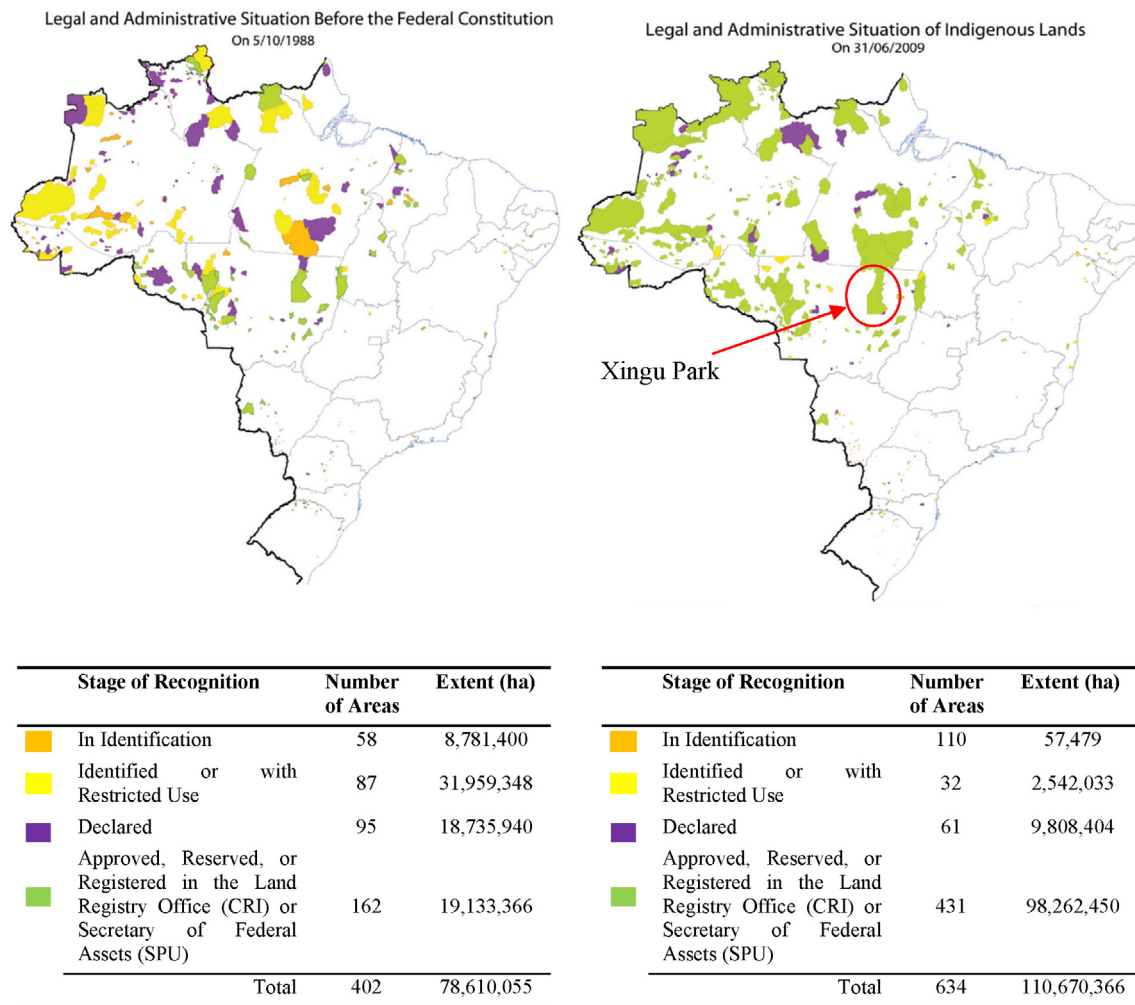


Fig. 1. Changes in Legal and Administrative Situation of Indigenous lands pre and post Federal Constitution of 1988.

Source: Santilli (2010).

indigenous population, lives in rural areas. Around 379,000 (42.3%) lives outside the indigenous land and 78.7% of this population lives in urban area (IBGE, 2010). The habitats are spread across Brazil but are mostly concentrated in and around the Amazon region. The economic expansion brought many of these ethnic groups in direct conflict with the people who were pursuing their own economic interests on the land historically claimed by these ethnic groups.

In the late 1980s, Brazil became a democratic country and adopted a new federal constitution. The Federal Constitution of 1988 recognized the cultural plurality of indigenous people's social organizations and the collective character of these people. The constitution also conferred upon them permanent land rights. To really effectuate this constitutional protection, the indigenous lands have to go through a number of regularization steps to reach the final legal and administrative situation (see Fig. 3).

As illustrated in Fig. 1 by Santilli (2010) from Socio-Environmental Institute (ISA) 2009 report, the legal and administrative situation of the indigenous land before the Federal Constitution (1988) and in 2009 displays a significant differentiation of approved and registered indigenous land.

The indigenous land regularization in Brazil is a bureaucratic and slow process. Some of the indigenous land such as the Marãiwat-sédé (Xavante tribe) located in the Northwest of Brazil had the land claim for decades. On the other hand in Fig. 1, it can be noticed that the Xingu Indigenous Park, created by Decree # 50.455/61, by 2009

had almost all the indigenous land approved and registered. Violent land disputes between non-indigenous and indigenous with overlapping claims to land rights is a fact that cannot be hidden. This problem is increased by the fact that no integrated cadastre of the country exists, and thus it is not easy to even see that claims are overlapping, regardless of the exact legal nature of each. Another problematic issue on indigenous land, caused by third parties, is the deforestation process, which is caused by massive logging of trees, both for their lumber value as well as for clearing the land for large scale economic investments.

Carneiro et al. (2011, 2012) discuss that the territorial occupation and land management of the 2D and 3D Cadastres in Brazil is complexity. Rural cadastral system is centralized and managed by the Federal Government through INCRA. Before 2011, rural property was registered by declaration. The land description was literal and declarative with no control over the accuracy of declarations neither with connection to the rules of land surveying. It opened windows for illegal occupation on public lands and possibilities for overlapping titles of ownership on the same parcel, and different types of ownership across more than one parcel.

This paper aims to define the indigenous land rights in Brazil, as described under various laws, in the framework of ISO 19152 Land Administration Domain Model, with an emphasis on the spatial dimensions of the resources involved and the rights claimed over these resources.

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