

IDENTIFICATION OF LANDSLIDES RISK AREAS IN PIRANGA COUNTY, MINAS GERAIS, BRAZIL



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INTRODUCTION

The increase of urbanization in small cities in Brazil has result in the increase of landslides. In Piranga County, Minas Gerais State (MG), Brazil (Figure 1), landslides are a large problem, due to unrestricted urbanization, surface sealing and poor erosion/slope stability controls (Figure 2). The objective of this project is identifying and mapping landslides areas and the soils in Piranga County, MG, Brazil.

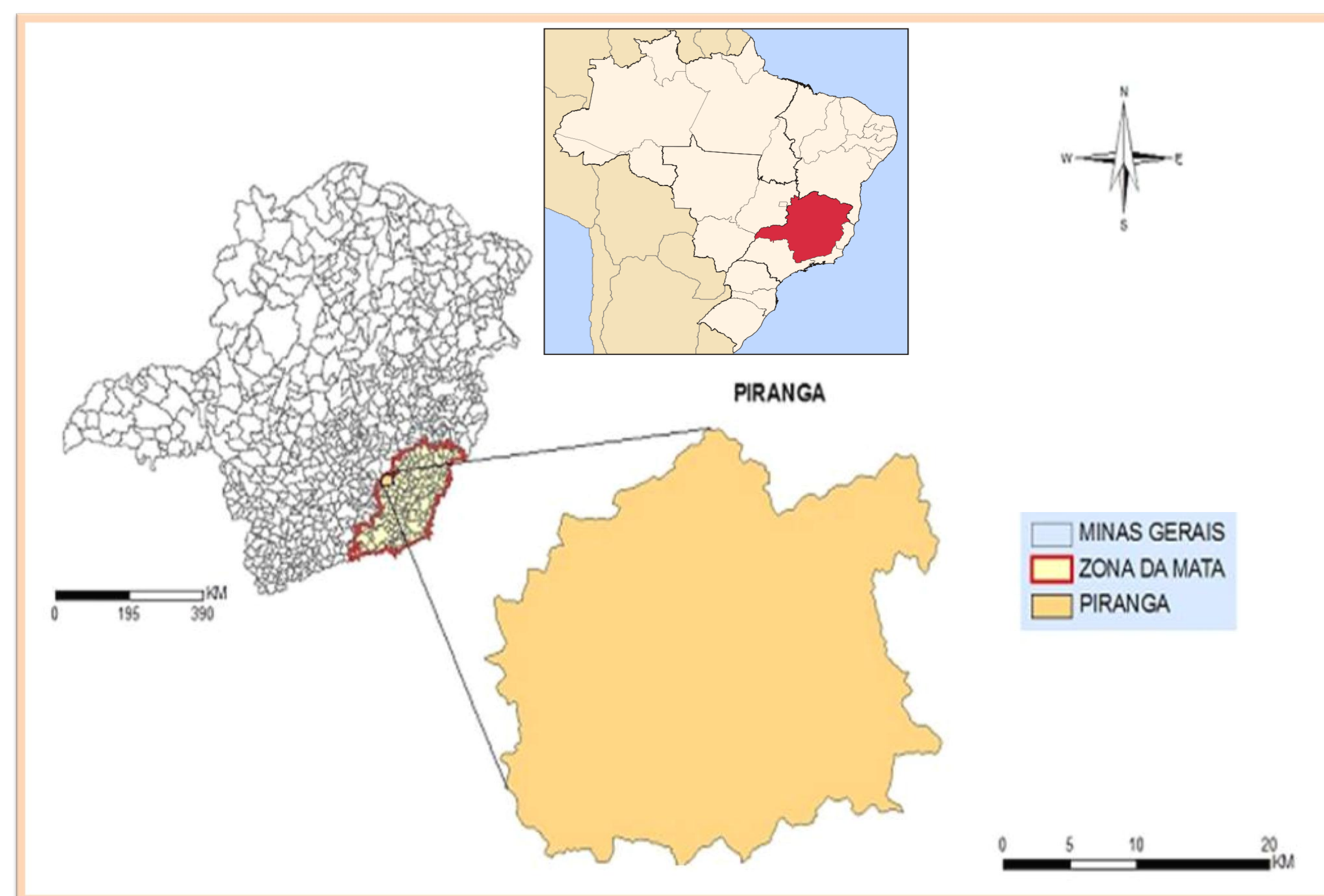


Figure 1: Location of Piranga County in Minas Gerais State, Brazil.



Figure 2: Landslide in Piranga County, Minas Gerais, Brazil

MATERIAL & METHODS

Landslides areas of risk were determined using the following factors: soil type and depth, geologic formation, geological fractures, slope's geometry, precipitation, drainage, vegetation covering, and anthropic interferences (construction, roads design, and sewage network). Soils were used as the main factor to determinate risk areas.

RESULTS & DISCUSSION

Risk qualification and qualification is an important instrument for Piranga County's government. Therefore, four risk criteria were proposed: high risk, median risk, low risk, and no risk (Table 1). Figure 3 illustrates a map with four landslide risk criteria. The region of Piranga County has hills, with shallow soils (Inceptisols) and Oxisols; and valleys, with Ultisols and Aquic Entisols.

Table 1: Risk criteria for Piranga (MG), Brazil

RISK	RISK QUALIFICATION
HIGH	The risk is evident and can affect more than two houses, in areas with risk of landslides, movement of rock blocks, natural instable slopes, and launching of garbage in instable areas.
MEAN	The risk is real, but not evident, and interventions can avoid disasters, which includes areas dense populated.
LOW	Risk points, with accumulation of rubbish, road cuts in steep slopes, lack of infrastructure, and areas dense populated.
NO RISK	Areas without risk of land movements.

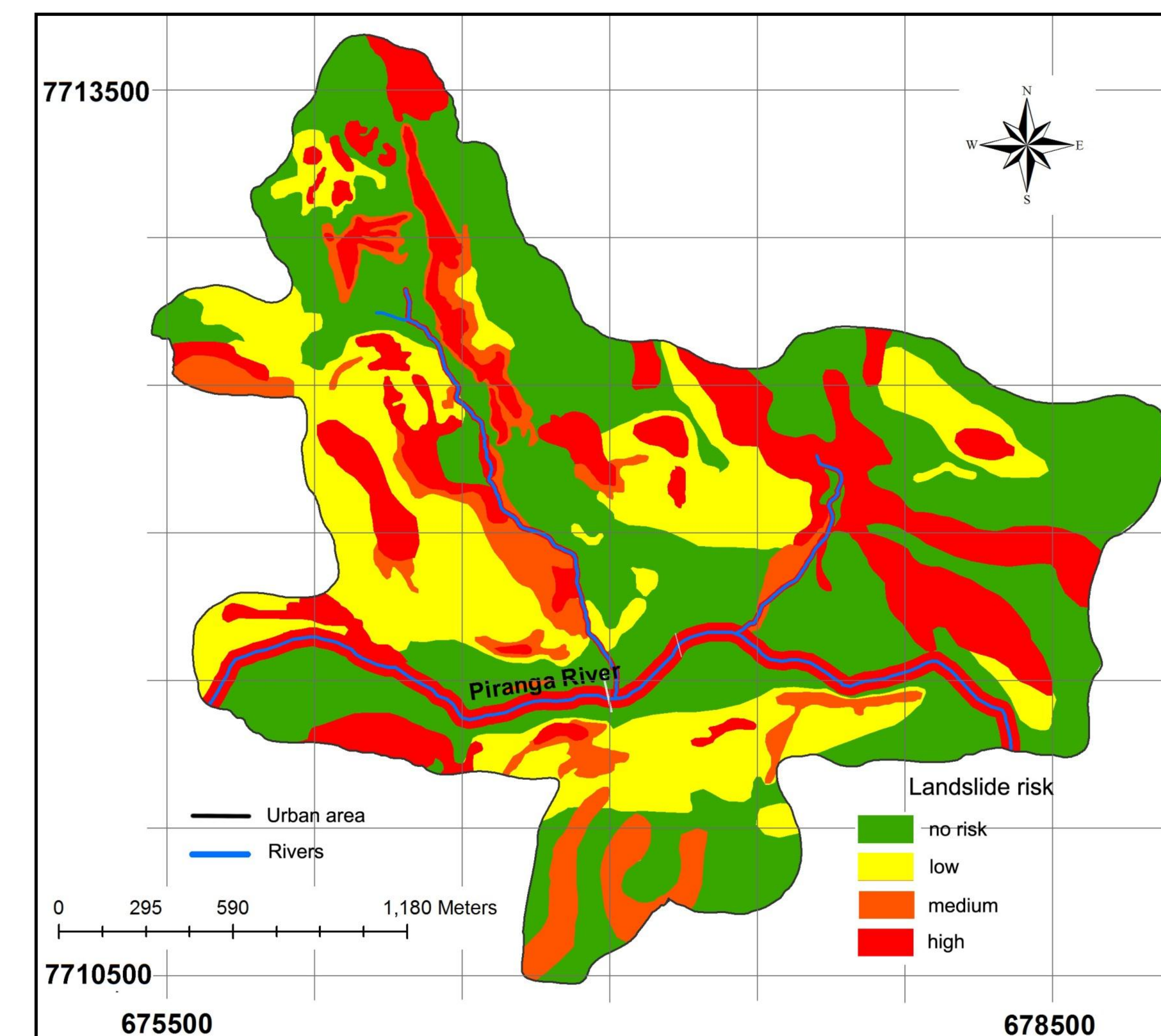


Figure 3: Map illustrating landslide risk in Piranga, MG, Brasil.

CONCLUSIONS

1. Risk qualification and quantification is an important instrument for the County's government; thus, mapping landslides risk areas is a relevant tool for the County.
2. Landslides occur basically in Inceptisols (shallow A and B horizons), instable geological areas, and low drainage areas with high slope.
3. The understand of soil science is an important factor for management of natural disasters.