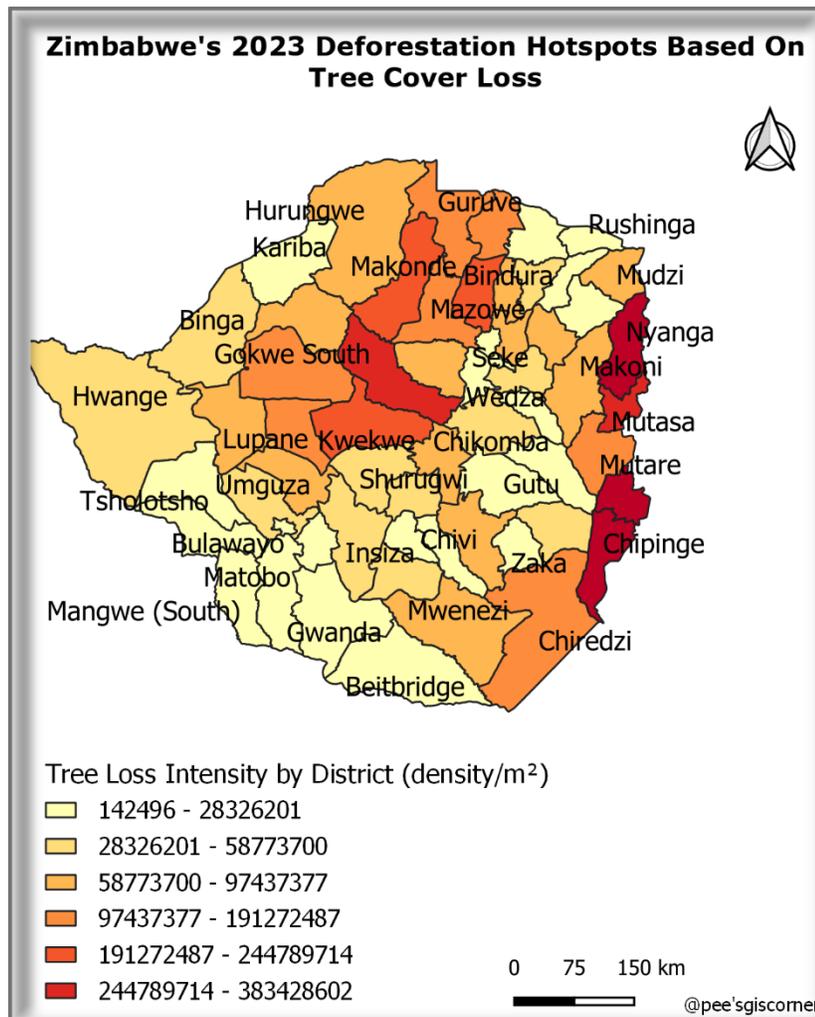


## Deforestation Hotspots in Zimbabwe (2023)



This map highlights the 2023 deforestation hotspots across Zimbabwe, created using a combination of tree cover loss data and administrative boundaries. The analysis reveals tree loss intensity by district, measured in density per square meter (m<sup>2</sup>).

### Data Sources

Tree Cover Loss Data: Extracted from Google Earth Engine (GEE) for the year 2023. The 2023 data was selected as it is the latest available on Google Earth Engine (GEE)

Administrative Boundaries: Sourced from Natural Earth, providing district-level boundary data for Zimbabwe.

### Methodology

Data Preparation:

Tree cover loss data from GEE was processed and converted into vector format to enable further analysis.

### **Kernel Density Estimation (KDE):**

A KDE analysis was performed to generate a continuous spatial representation of tree loss intensity across the country.

### **Zonal Statistics:**

The KDE results were summarized for each district using the administrative boundaries, enabling a clear comparison of tree loss density.

### **Visualization:**

The results were categorized into seven classes of tree loss intensity, ranging from 142,496 m<sup>2</sup> to 38,342,860 m<sup>2</sup>, and styled using a gradient color scheme in QGIS. In this case Natural Breaks(Jenks) was used.

Why Natural Breaks (Jenks)?

Natural Breaks (Jenks) was used because:

- It identifies meaningful divisions in the data by reducing the variance within each class.
- It highlights natural groupings and patterns in tree loss intensity, which is crucial for interpreting spatial distributions of deforestation.
- Compared to equal intervals or quantiles, Jenks better represents the real-world variability in tree loss density, ensuring that districts with similar intensities are grouped appropriately.

### **Key Findings**

Chipinge District exhibits the highest tree loss density, indicating severe deforestation pressures.

Significant hotspots are also visible in districts such as Makoni, Chiredzi, and Kwekwe, which demand focused conservation efforts.

### **Tools and Software**

Google Earth Engine: For sourcing and preprocessing tree cover loss data.

QGIS: For performing KDE, zonal statistics, and cartographic visualization.

### **Purpose and Applications**

This map is a valuable resource for policymakers, conservationists, and environmental planners. It identifies critical areas for intervention and promotes the development of sustainable land management and reforestation programs. The methodology also demonstrates the integration of spatial analysis and GIS tools for impactful environmental assessments.