

# Where Are Local Communities At Risk In The Democratic Republic Of Congo?

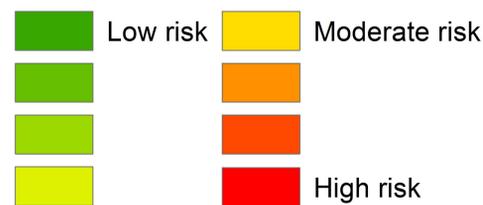
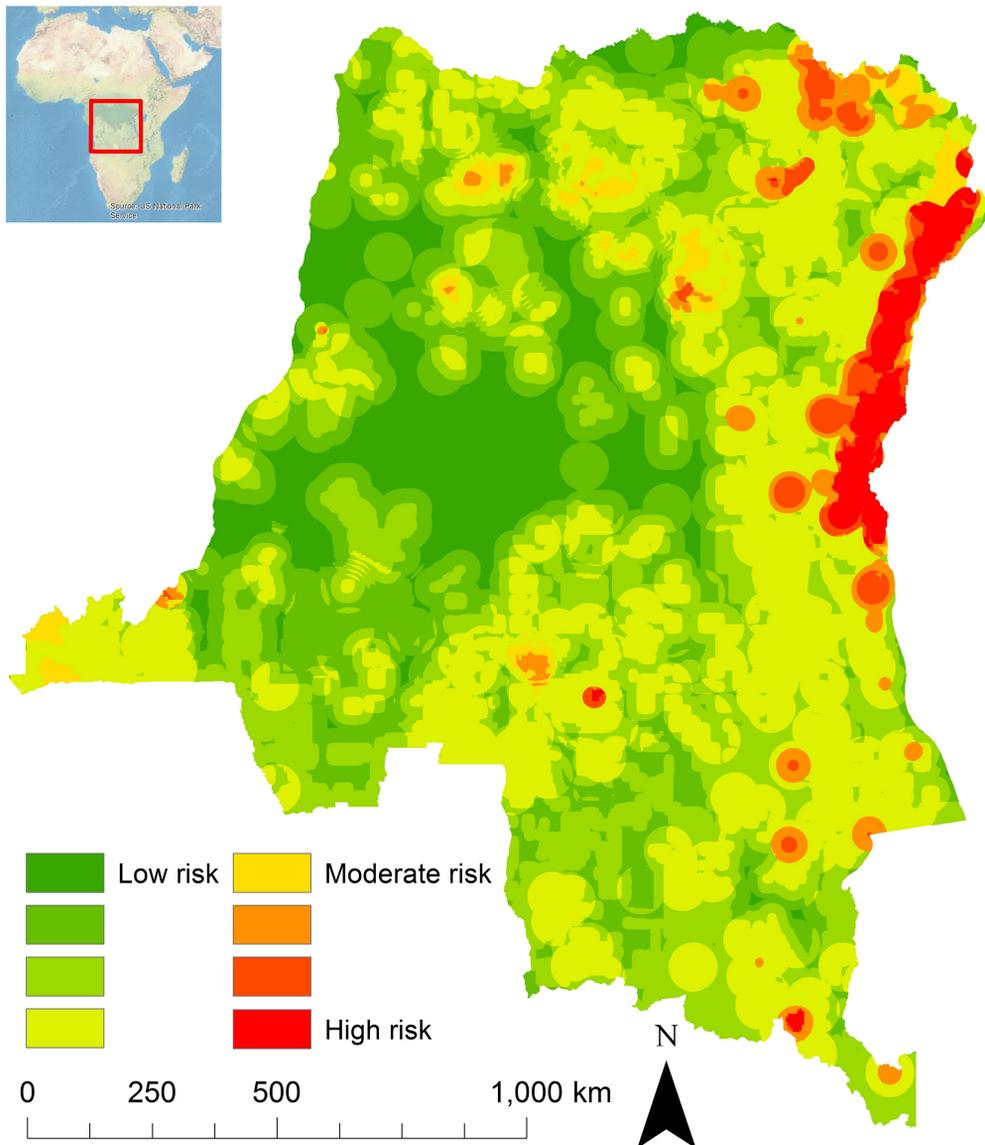
## Introduction

The Democratic Republic of Congo (DRC) has one of the richest natural resources on the earth. The activities of the key natural resource sectors—mining and forestry—have been experiencing rapid growth. However, such activities are potential threats to local communities, since they might destroy ecosystem where the people live in. Unfortunately, the country's environmental endowment has been a source of long-term protracted conflicts as well. These conflicts further affect local communities negatively. By overlaying conflicts, mining, logging, and populations in the DRC, I aim to identify the local communities at risk.

Thus, the key spatial questions are:

- Where are violent conflicts?
- Where are mining permits?
- Where are logging concessions?
- Where are the large populations?
- Which populations are close to mining, logging, and/or conflicts?
- Which populations are at potential risks of damages of ecosystem by conflict, mining, and/or logging?

## Communities At Risk Under Conflicts, Mining, And Logging



## Conclusions

Overall, local communities at risk under the potential threats of violent conflicts, mining activities, and/or logging activities are mostly found in eastern DRC. Close to 30% of the populations live in the communities at high risk.

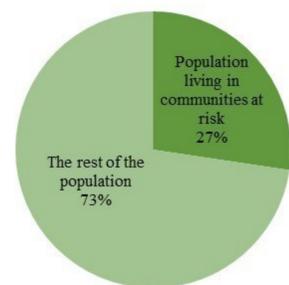
Violent conflicts (2006-current) have been mostly happening in eastern DRC, while the population density is high in the same region. This results in the fact that most communities at high risk are in eastern DRC.

Mining activities have been creating communities at moderate risk all around the DRC.

Logging activities seem to create less potential risk to the local communities, mainly because less populations live and conflicts have not been happening in the logging region.

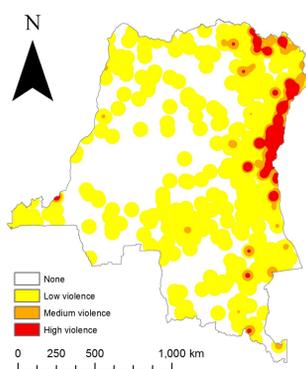
To assess the relationship between conflicts and mining activities is outside the scope of this study, because GIS mapping is a descriptive process. However, further studies in this aspect would be beneficial to protect the populations at risk.

**Summary Statistics:**  
Count And Ratio  
Of Population  
In Communities At Risk

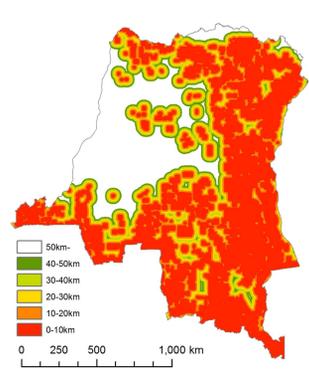


<b>Total population</b>	<b>25,927,558</b>
<b>Population living in communities at risk</b>	<b>9,761,303</b>

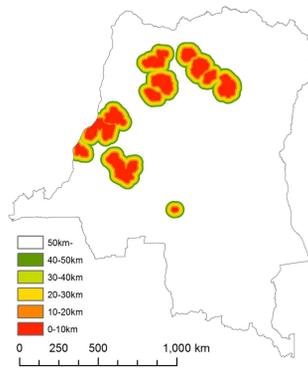
## Violent Conflict Hot Spots



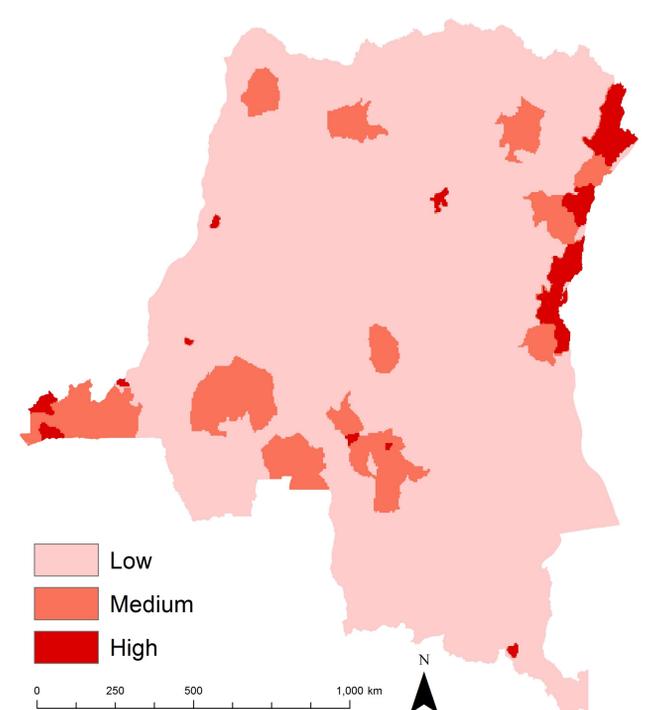
## Distance From Mining Activities



## Distance From Logging Activities



## Population Density



## Methodology

From the three datasets, each representing conflicts, the different types of mining permits, and the different status of forestry concession contracts in the DRC, I selected violent conflicts since 2006; exploration, exploitation, and small mining permits; and validated logging concessions.

For the conflict dataset, I used Kernel Density tool to find conflict hot spots.

For the overlay analysis, I used Reclassify tool and Euclidean Distance tool to create the preference grid for conflict hot

spots, mining permits, logging concessions, and population density. For the reclassification categories, see the table below.

Finally, I performed weighted overlay of the 4 reclassified datasets to find local communities at risk. I used Raster

Calculator, putting a higher weight on conflict hot spots: violent conflict hot spots 40%, distance to mining permits 20%, distance to logging concessions 20%, and population density 20%.

**Table: Reclassification Categories**

	Bad: 5	4	3	2	Good: 1
<b>Violent conflict hot spot</b>	High violence	Moderate violence			Low violence
<b>Distance to mining permits</b>	0-10km	10-20km	20-30km	30-40km	40-50km
<b>Distance to logging concessions</b>	0-10km	10-20km	20-30km	30-40km	40-50km
<b>Population density</b>	High		Medium		Low

**Data Sources:** GADM database of Global Administrative Areas, CIESIN's Population Density Grid, v3 and Population Count Grid, v3, Cadastre Minier (CAMI)'s data representing the different types of mining permits in the DRC, WRI's dataset containing the different status of forestry concession contracts in the DRC, and ACLED Conflict data version 5, DRC.

**Photo Sources:** Conflict photo from The Guardian at <http://www.theguardian.com/global-development/2013/jan/23/crisis-congo-drc-hunger-conflict> accessed on 4/30/15, Mining photo from Resolution Possible at <http://www.resolutionpossible.co.uk/me-to-mine-mobile-connections/#.VUDxHyFVhBd> accessed on 4/30/15, and Logging photo from Greenpeace at <http://www.greenpeace.org/international/en/news/Blogs/makingwaves/illegal-logging-in-drc/blog/43788/> accessed on 4/30/15.

**Cartographer:** Kazue Evans

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**Course:** DHP P207 - GIS for International Applications

**Projected Coordinate System:** Africa Albers Equal Area Conic



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