Navigating the Flames: Understanding Land Use and Wildfire Relationship in Manitoba's Agricultural Landscapes

Oluwasegun Isaac Omonaiye
University of Manitoba
Faculty of Architecture
Department of City Planning

REASONS FOR RESEARCH

In Manitoba, more than 80 per cent of the province is covered with boreal forest (Government of Canada, 2021), and many of the rural communities are constantly facing wildfire challenges, especially during the summer. Over the years, the wildfire threat is no longer restricted to rural communities but has sporadically spread to other parts of the province Canadian National Fire Database (2023). What, then, could be responsible for this change? Some researchers have found that isolated houses within wildland-urban interface (WUI), abandoned farmland, and housing densities may lead to frequent wildfire occurrences. In light of this recurring phenomenon and its far-reaching consequences, investigating the relationship between wildfires and Manitoba's land use planning becomes crucial.

RESEARCH QUESTIONS

This study seeks to examine the influence of land use and zoning regulations on wildfire risk in Manitoba and also identifies planning-oriented strategies that enable sustainable farming in wildfire-risk areas. Based on that, the following research questions will be addressed:

Q1. To what extent do land use and zoning regulations contribute to the risk of wildfires?

Q2. What are the coping strategies/mechanisms for sustainable farming in wildfire-risk areas from a planning perspective?

METHODS

In this research, I used a combination of tools and approaches to explore the relationship between land use and wildfire risk in the agricultural landscape of Manitoba. These methods include:

- Geospatial Analysis
- Policy Scan
- Interviews

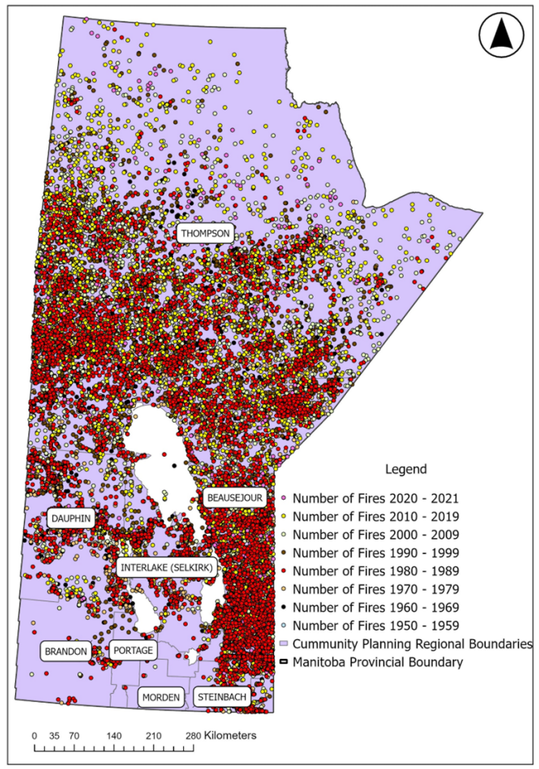
I used geospatial analysis to overlay historical wildfire data/maps on vegetation map, land use map, terrain, and waterbodies to determine the influencing factors and patterns of wildfires in the province.

Through a policy scan, I examined the development plans and by-laws of the 3 areas (Thompson, Dauphin, and Beausejour) most impacted by wildfire over the years.

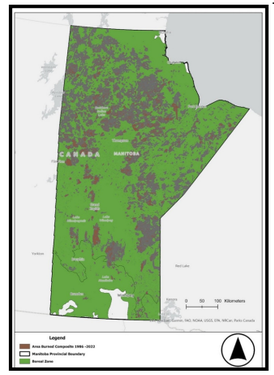
I interviewed 5 professional planners using semi-structured questions via Microsoft Team's call to know their perspectives on the topic and insightful contribution they can proposed to resolving wildfire crisis in the province.

RESULTS/ANALYSIS

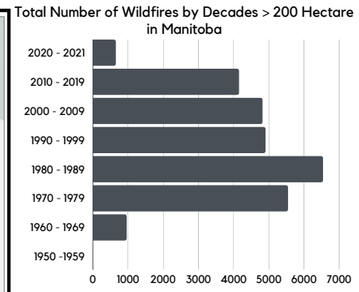
- Wildfires impact more communities in the North than South.
- 1980-1989 Wildfires were the most devastating in Manitoba and Canada.
- Wildfire occurrences are on the decline in Manitoba.
- Land use plays a secondary role in the occurrence of wildfires compared to the primary factors of terrain and vegetation type in Manitoba, a result of the geospatial analysis findings.
- Wildfire-related policies were not integrated into the Zoning regulations or development plans of Thompson, Dauphin and Beasejour Municipalities.
- Planners have more experience with flood-related projects than wildfire projects.
- Permaculture farming style, land conservation through agricultural masterplan, and natural disaster preparedness are coping strategies for sustainable farming in wildfire-risk areas from planning perspective.



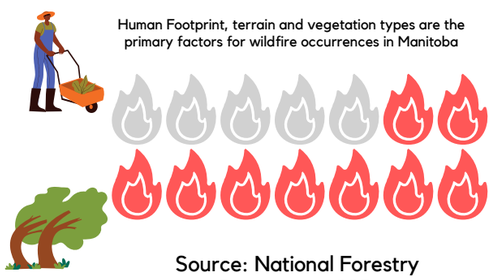
Wildfires in Manitoba from 1950 -2021



Total Area Burned from 1950 -2021



Source: Canadian National Fire Database (CFNDB), 2023.



Source: National Forestry Database, 2023.

LESSONS LEARNED

This research is not only timely but essential for rural communities, agricultural productivity, and the entire Province of Manitoba. Here are a couple of things I learned which is also a summary of the interview findings

- Wildfires' impact and occurrence can be reduced drastically if planners are at the forefront of the community hazard planning process.
- Our province will become safer and more sustainable if wildfire policies are integrated into zoning regulations and community development plans.
- Effective communication and collaborative planning at all levels of government are key to resolving the wildfire crisis in the province.

CONCLUSION

The trend in Manitoba wildfires shows a decline in the number of wildfires in the province. However, the past decades from the 1960s to 1990s were alarming, especially the 1989 wildfire ravaging the entire province due to extreme weather conditions and prevailing winds.

To sustain the steady decrease in the number of wildfires in the province, the planners must be fully involved in the hazard planning process, and wildfire-related policies must be integrated into the zoning regulations and community development plans.

IMPORTANT!

Planners are crucial in addressing and mitigating the wildfire crisis in Manitoba.