

Global Exposure of Transmission and Distribution Networks to Fires

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Motivation ?

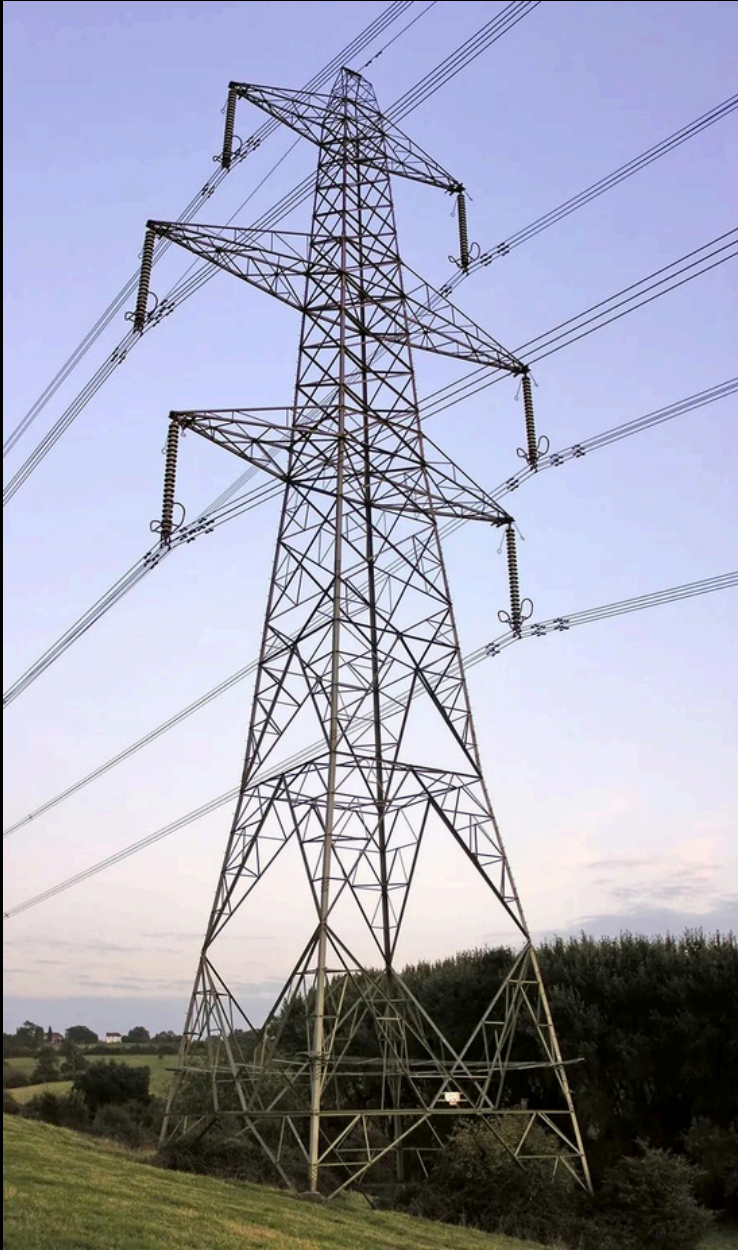


Between March 2024-Feb 2025

3.7 Million km² Burned [1]

100 Million people impacted [1]

Wildfire risk is **incorporated** by
utility companies [2]



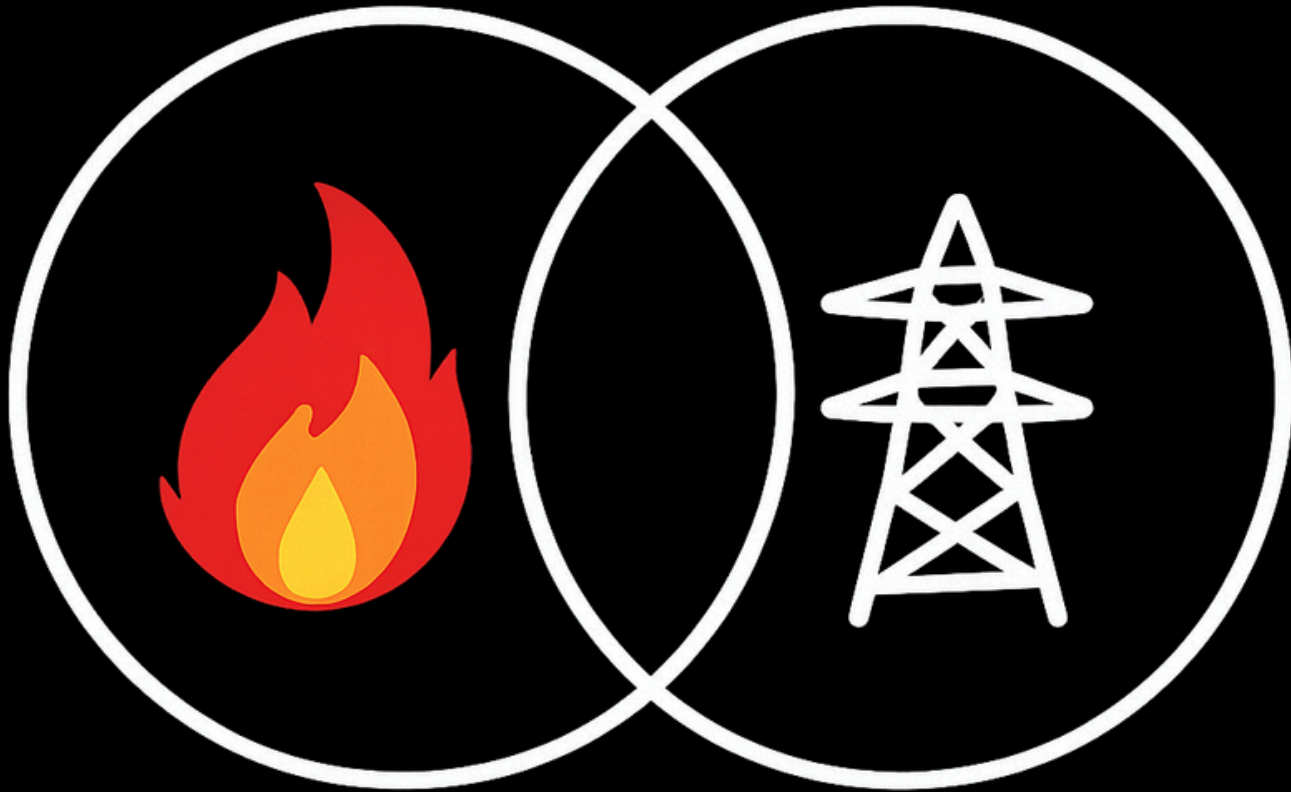
Future Exposure?

Global grid will need to grow by over **50%** [3]

\$22.5 Trillion investment by 2050 [3]

Strong likelihood climate change will **worsen**
future fire weather [4]

Spatial Intersection Method



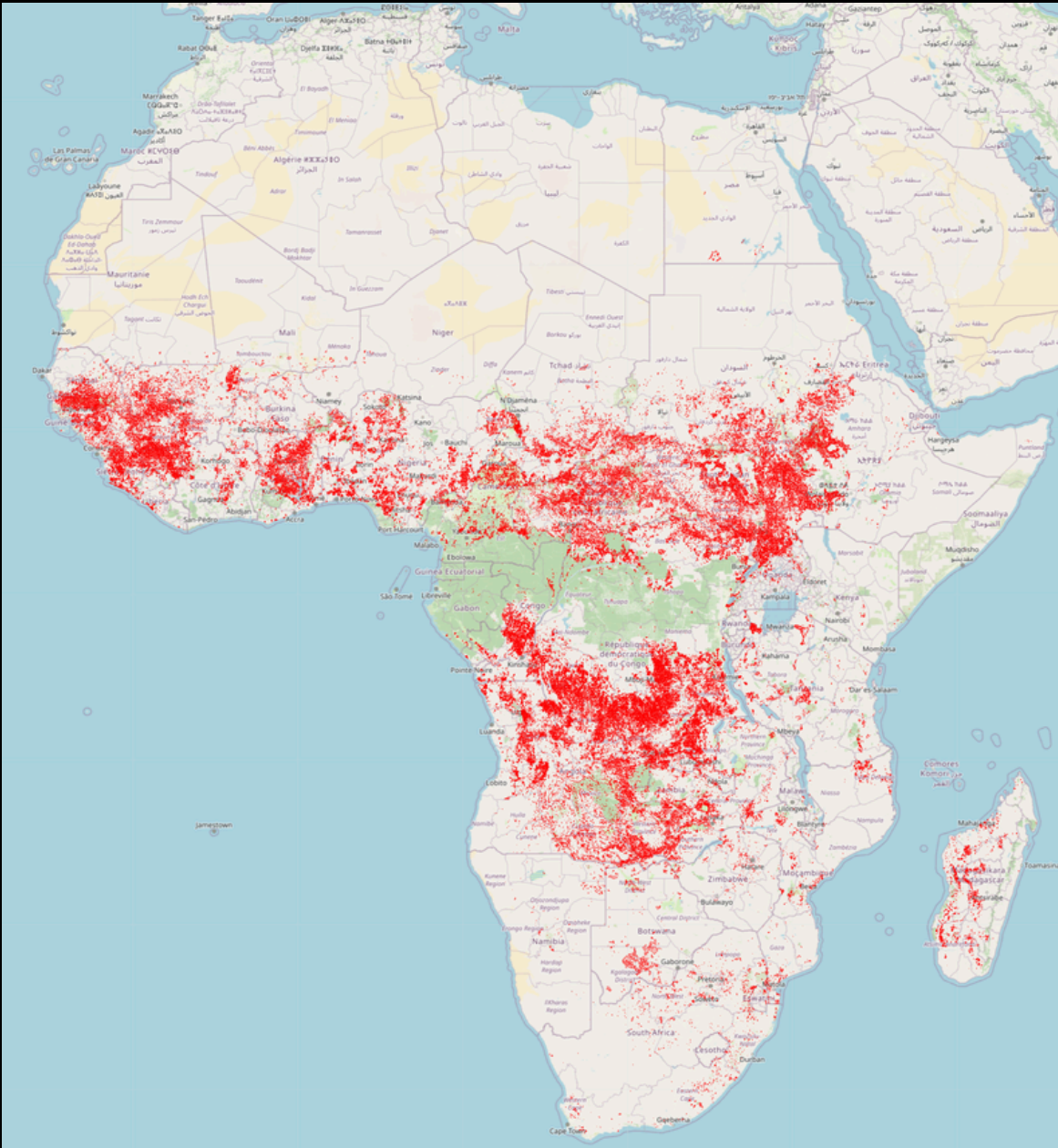
4 Metrics developed:

Frequency

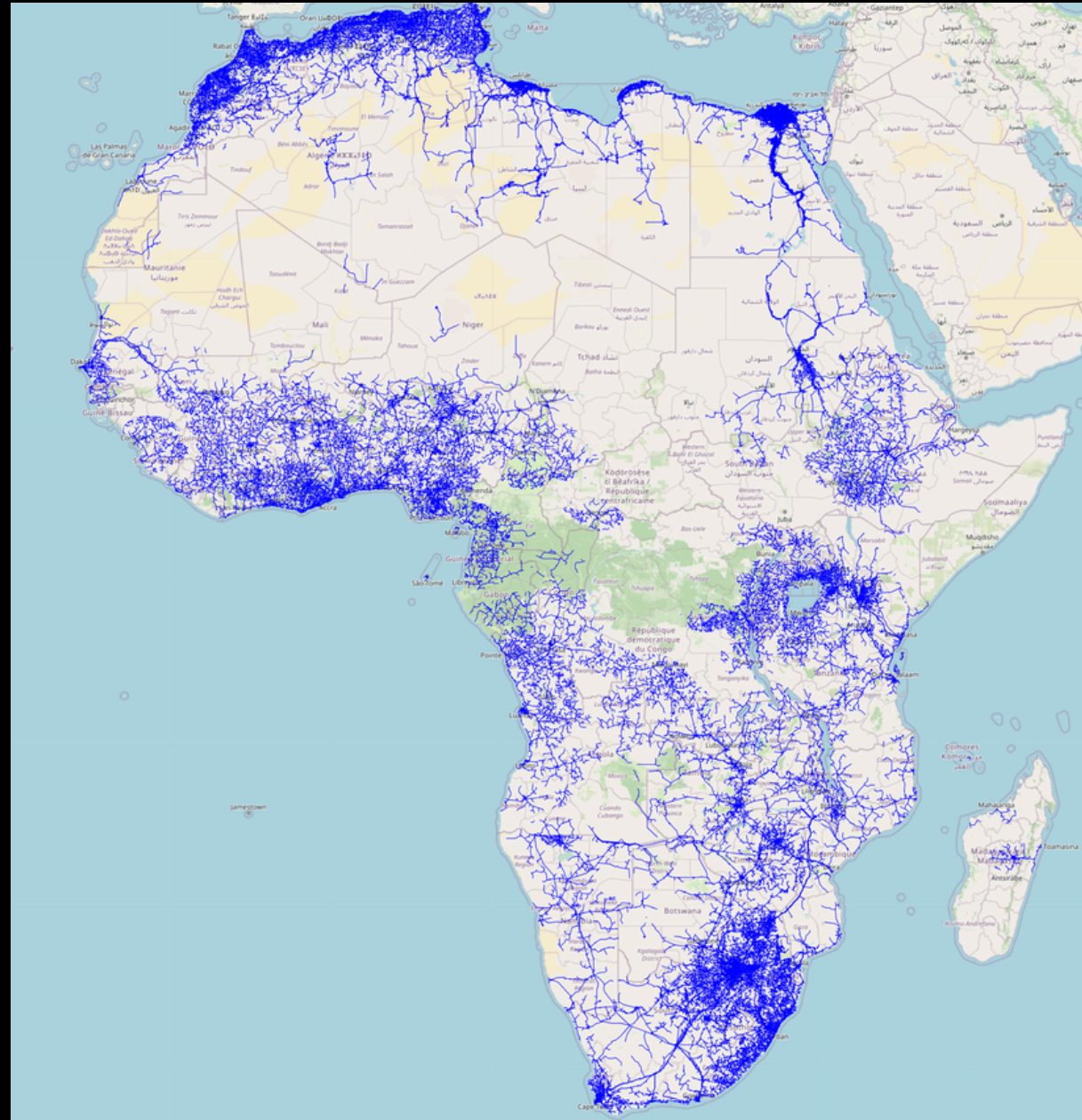
Duration

Extent

Severity

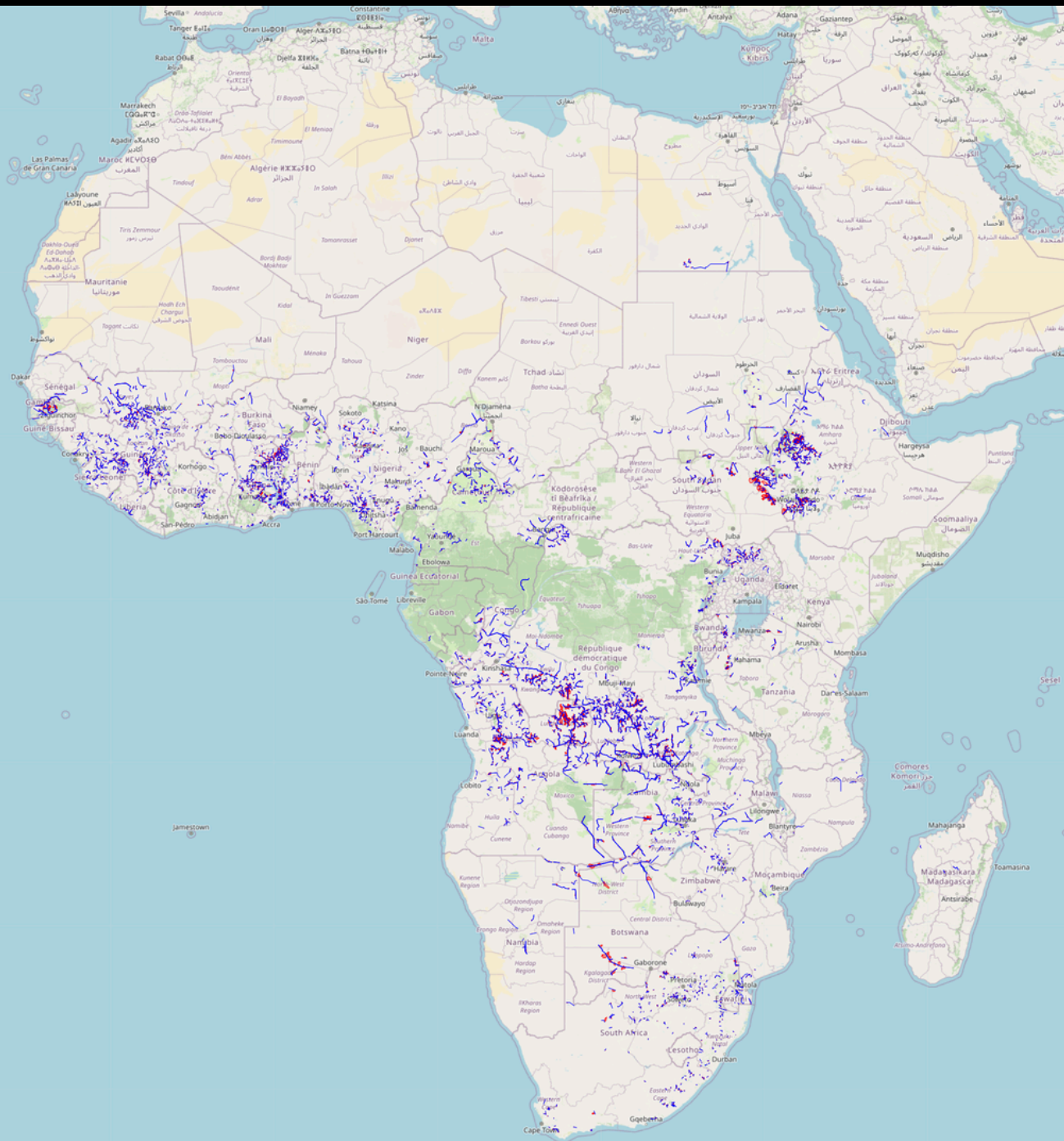


Global Fire Atlas [5]



GridFinder [6]

Direct Intersections



Blue = Transmission & Distribution Lines [5]

Red = Fire Perimeters [6]

Key Results

11% Lines Exposed Globally

172 Nations and Territories

Significant Disparity in Exposure

In a Subset of Nations **Exposure is Routine Not the Exception**

Conclusion & Future Work

**First globally complete
assessment**

**Modelling for future
exposure**

**How can exposure be
converted into real risk?**

References

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- [2] Pacific Northwest National Laboratory. Wildfire mitigation plans database. URL <https://wildfire.pnnl.gov/mitigationPlans/pages/landing>
- [3] Energy Transitions Commission. Building grids faster: the backbone of the energy transition. URL <https://www.energy-transitions.org/publications/building-grids-faster/>.
- [4] Giovanni Di Virgilio, Jason P. Evans, Stephanie A. P. Blake, Matthew Armstrong, Andrew J. Dowd, Jason Sharples, and Rick McRae. Climate change increases the potential for extreme wildfires. 46(14):8517–8526. ISSN 0094-8276, 1944-8007. doi: 10.1029/2019GL083699. Num Pages: 10 Place: Washington Publisher: Amer Geophysical Union
Web of Science ID: WOS:000481818900071. Clarke, Ben, et al. "Extreme weather impacts of climate change: an attribution perspective." *Environmental Research: Climate* 1.1 (2022): 012001.
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Thank you

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