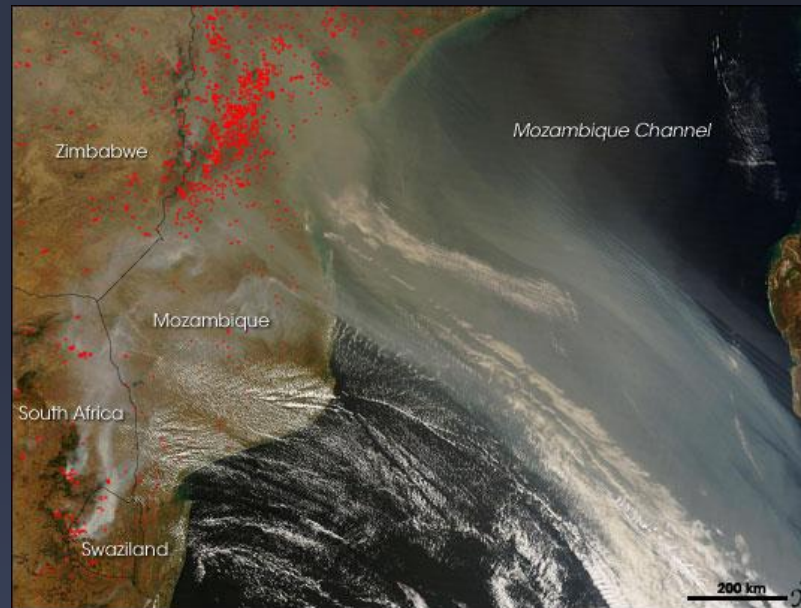


CLIMATE CHANGE AND WILD LAND FIRES: THE IMPLICATIONS FOR MOZAMBIQUE



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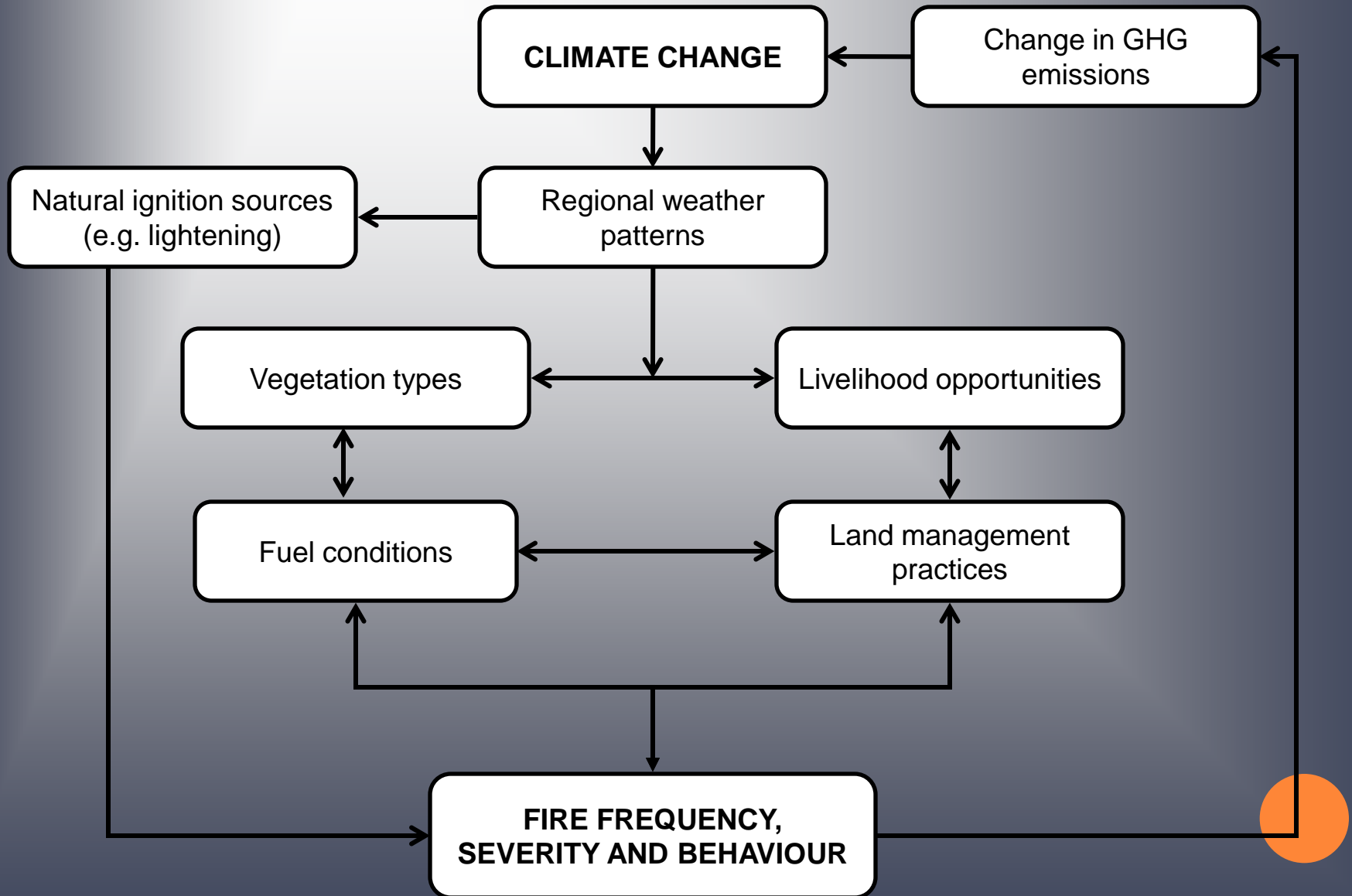
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This research was completed as part of the project “Integrating Vulnerability and Adaptation to Climate Change into Sustainable Development Policy Planning and Implementation in Eastern and Southern Africa” in support of the pilot project “Community-based Fire Management in Central Mozambique”

Funding for this pilot project has been provided by the Global Environment Facility and the Governments of Germany, the Netherlands and Norway

Linkages between Climate, Vegetation, Livelihoods and Fire



CLIMATIC CONDITIONS

- Relationship between Climate and Fire
 - Determines vegetation type and volume; thus fuel conditions and fire regime parameters such as frequency, intensity, severity and seasonality.
 - Direct cause of fires through lightening
- Current Climatic Conditions
 - Two main seasons:
 - Hot and rainy season (October to April)
 - Cold and dry season (May to September)
 - Highly affected by the El Niño Southern Oscillation (ENSO)
 - La Niña phase → enhanced rainfall
 - El Niño phase → drought conditions



CLIMATE CHANGE PROJECTIONS

- General expectations for Mozambique:
 - Temperature increase of 1.8°C to 3.2°C at 2xCO₂
 - Reduction in rainfall of 2% to 3%, however great uncertainty about this projection
 - Increase in rate of evapotranspiration of 9% to 13%
- Conclusion: warmer, drier in general; longer and drier dry season
- However, there is uncertainty as to how ENSO patterns will change and hence influence regional to local weather patterns in the long term



CURRENT FIRE REGIME

- Fire Distribution and Frequency
 - Estimate that about 40% of Mozambique burns each year; most in the northwest and central regions
 - Fires occur on a yearly basis throughout the country
- Seasonality
 - Smaller fires early in the season (April to June)
 - Larger fires as vegetation becomes drier (August to October)
- General Assessment
 - The absence of long term data sets means cannot determine if fires actually are increasing in number and extent



ECOLOGICAL IMPACTS

Mozambique is dominated by miombo forests

- Common miombo species are thought to be fire tolerant; some species depend on fire for reproduction
- However, there is limited scientific knowledge and studies regarding how miombo species respond to and are affected by fire
- Ecology of central Mozambique moving from forests to woodlands/savannahs due in part to more frequent burning; less species rich, more fragmented
 - Savannah areas could increase if fire frequency further increases
 - Reducing fires or limiting their occurrence to early in the dry season could reverse this trend



CAUSES OF WILDLAND FIRES

- ~90% of fires in Mozambique set by humans for agricultural, pastoral and hunting activities or accidentally
 - Many of these fires are not controlled
 - Bush burning typically takes place after the harvest is done, when conditions are drier
- Influenced by:
 - Inadequate or unclear sense of land ownership
 - Insufficient knowledge of use of fire as a management tool
 - Inadequate awareness of fire related legislation and policies
 - Poor enforcement of both traditional and government rules
- Humans are determining fire frequency, intensity and distribution implying that local communities have important role to which the country's fire regime will be altered under the influence of climate change.



RECOMMENDATIONS

- Fire Information and Analysis
 - Need long-term studies on fire behaviour, timing, intensity and frequency of occurrence (long term study plots, remote sensing e.g. use of current and historical MODIS data)
- Fire Prevention
 - Community-based Fire Management
 - National Fire Policies and Institutional Arrangements
- Preparedness
 - Introduction of Fire Danger Rating System
- Fire Suppression and Response
 - Requires improved institutional capacity and coordination
- Restoration / Rehabilitation
 - Improve post-fire management and planting of fire resilient trees



THANK YOU!



Federal Ministry
for Economic Cooperation
and Development



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