



Miombo Network Research: overview

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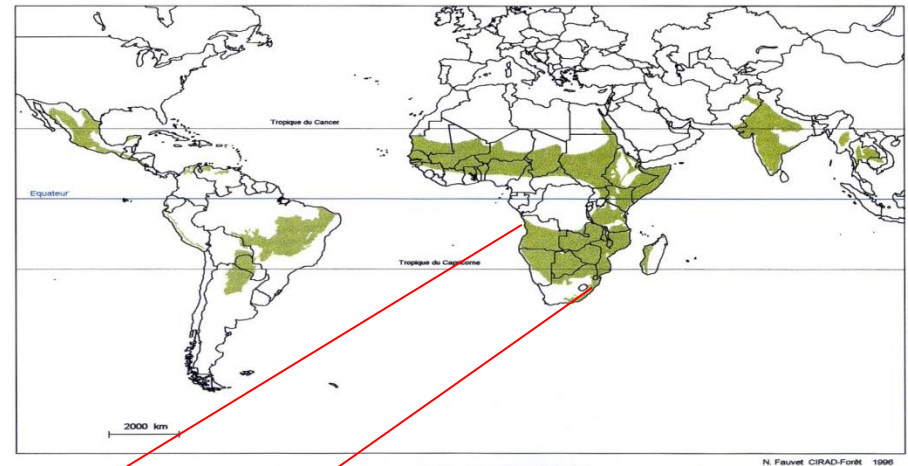
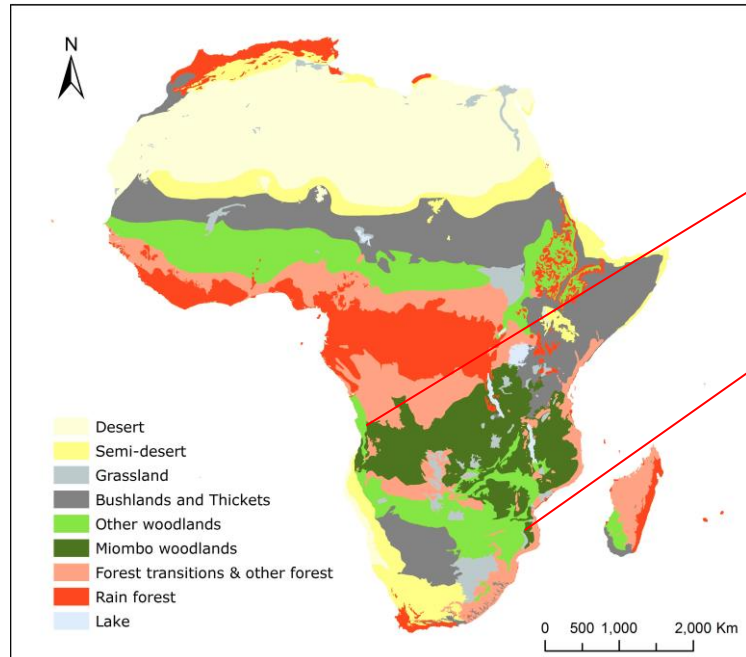
<http://miombonetwork.org/>

BBL, World Bank
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Miombo Network Research: New aspects in Landscape Restoration

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(MN steering Committee)

Rationale



- The largest dry forest ecosystem.
- Occupies about 2.7 million km² in Southern Africa across 7 countries (Mozambique, Malawi, Tanzania, Zimbabwe, Zambia, Angola and DRC).
- Provide goods and services for over 70% of rural and urban populations in the region.
- Woodlands store 18-24 PgC carbon (Ryan et al., 2016).



Research areas

- Core area I: Patterns, Processes and drivers of miombo ecology and land cover change.
- Core area II: Landscape restoration of miombo woodlands
- Core area III: Miombo woodlands management and climate change adaptation
- Core area IV: socio-ecological relationships in miombo woodlands
- Core area V: governance and leadership for miombo woodlands sustainability

Fire is part of Miombo Ecology

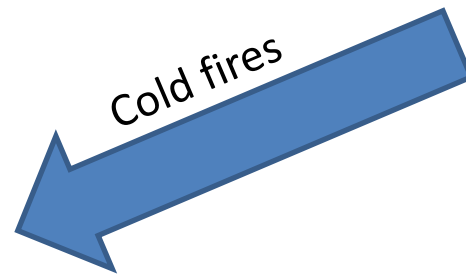
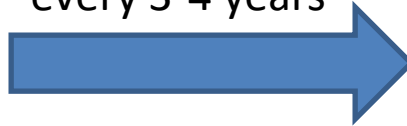
- Have long existed in MW (probably ~200,000 years ago).
- A major management tool for rural people (90% of fires are anthropogenic).
- Some species are adapted and other depend on fires to survive.
- Fire regimes are important to maintain the ecosystem.
- Warmer and drier climates and human growth are imposing changes in fire regimes.



Fire is part of Miombo ecology



Grass fuels in the
understory burn
every 3-4 years



Cold fires

Tall miombo



Shrub miombo



Hot fires



Timber species and exploitation



Pterocarpus angolensis
Guibourtia coleosperma
Afzelia quanzensis
Dalbergia melanoxylon
Erythrophleum africanum
Khaya anthoteka
Baikiaea plurijuga
Baphia kirkii etc

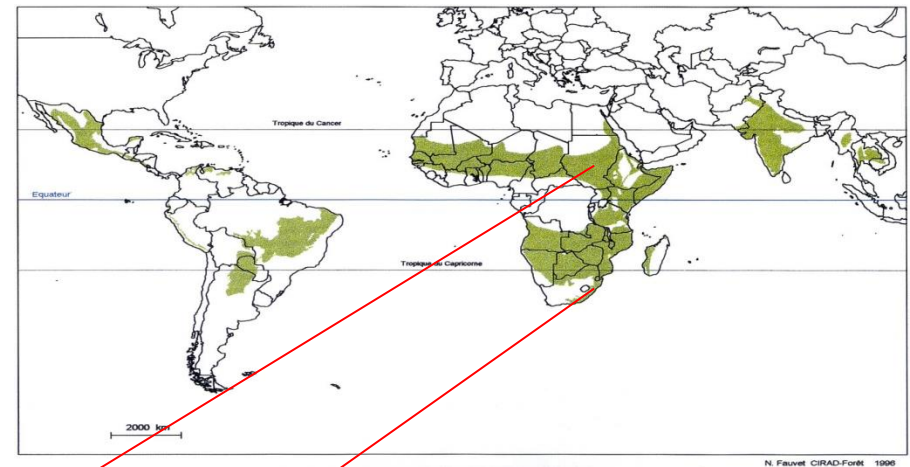
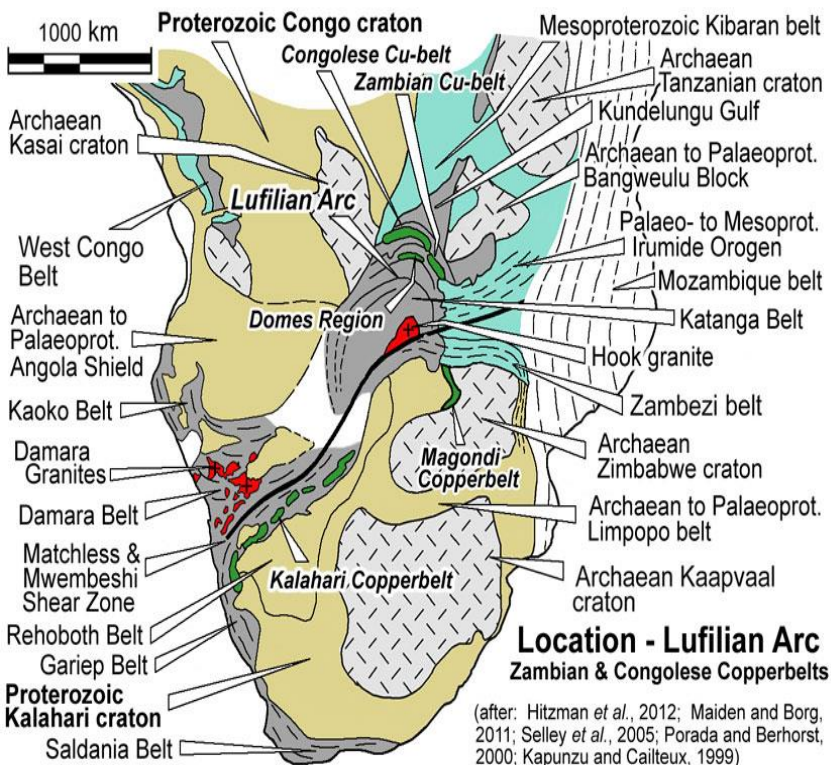


- Mainly for export
- Sustaining livelihoods & small enterprises
- Building materials locally

Other anthropogenic disturbances

- Shifting cultivation
- Charcoal production





- The region is rich in minerals
- Has long history of mining (of over 400 years)
- The world's largest and highest-grade sedimentary copper province (Central African Copperbelt (CACB) (Hitzman *et al.*, 2012)
- The world's largest natural reserves of gold, platinum-group metals, chrome ore, and manganese ore (USGS, 2013).

Mining and miombo environment

i) **Massive infrastructure** ii) **More employment/jobs** iii) **more money**



Mining and miombo environment

Mineral processing



Waste generation



Mining and ecological foot print

- Mining generated wastelands:
 - An environmental problem & wastage of land
 - For example, copperbelt alone
 - 9,125 ha of wasteland
 - contains 791 million tons of tailings
 - and 20,146 ha
 - Contain 1,899 million tons of overburden materials



Mining wastelands: unrevegetated for many years



Conclusion

- Mining greatly impacts on the miombo environment
- The extent of this impact is likely to increase
- Therefore restoration of mining generated wastelands should be included in the miombo restoration agenda

Thank you!