Miombo Woodlands : an endangered forest ecosystem in periurban areas of the southeastern cities of Democratic Republic of Congo

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Context :

In Democratic Republic of Congo (DRC), deforestation affects periurban areas. In the periurban area of Lubumbashi, forests occupying 85% of the territory in 1956 were reduced to less than 12% in 2009. In this context of deforestation / forests degradation, characterization of the last forests on the outskirts of the city is the **first step in ecological restoration**.

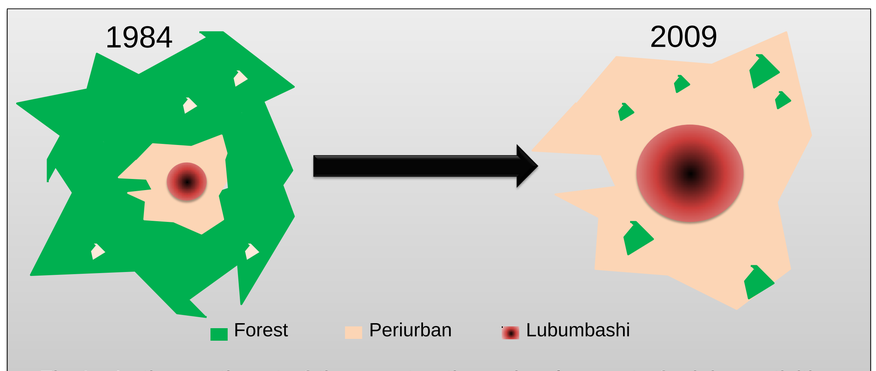


Fig 1 : In the southeast of the country, the redevelopment of mining activities caused exponential demographic development of the main mining towns. This population growth increased pressure on the Miombo Woodlands (wood energy, area of the city, subsistence farming).

Objective :

Characterization of Miombo Woodlands ecosystem in rural area around Lubumbashi

Method :

Study sites

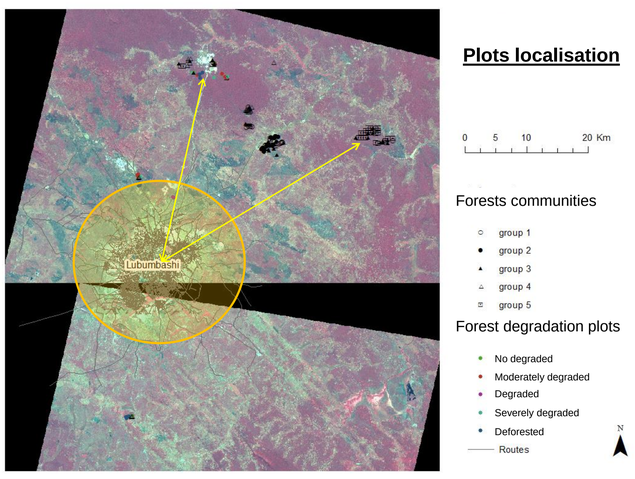
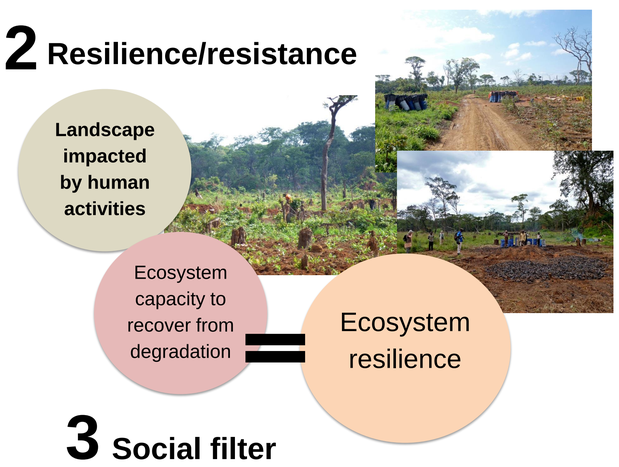


Fig 2 : Map of plots localisation

Scientific strategy

1 Reference ecosystem

2 Resilience/resistance



3 Social filter

Data collect

1
- Soil profile description
- Composite sample of soil for chemical analysis (C, N, pH, K, Ca, Na, Mg, Mn).

1&2
- Identification and counting of adult trees (diameter> 5 cm DBH)

3
- Interviews in villages and exploration in fields

Results

1 – Five forests communities around Lubumbashi and relationship with soil parameters

Fig 3 : (a) example of *B. boehmii* community and (b) example of *U. kirkiana* community

(1) - Julbernardia paniculata community

(2) - Brachystegia boehmii community

(3) - Julbernardia globiflora community

(4) - Baphia bequaertii - Brachystegia spiciformis – Marquesia macroura community

(5) - Uapaca kirkiana community

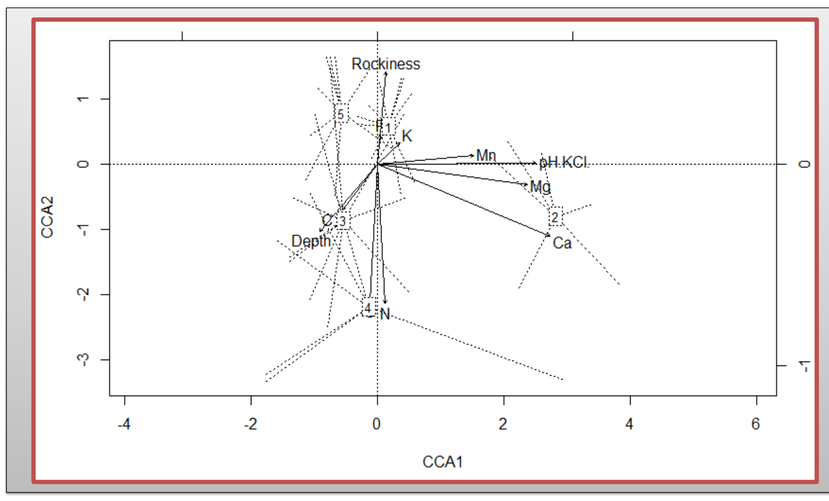


Fig 4 : Relationship between soil parameters ans forest communities around Lubumbashi

2 – Resilience / Resistance of Miombo Woodlands for (4) ***Baphia bequaertii - Brachystegia spiciformis – Marquesia macroura*** **community**

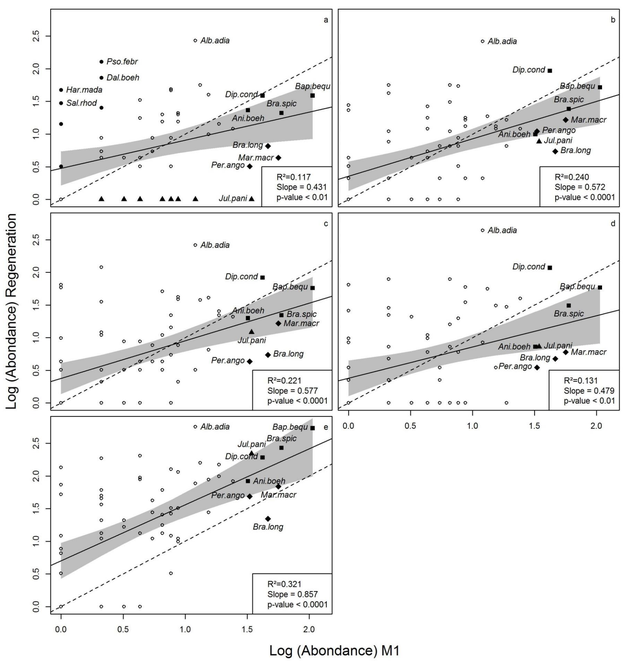


Fig 5 : Relationship between the average abundance of species per hectare in regeneration for each degree of forest degradation(a : no degraded forest, b : moderately degraded forest, c : degraded forest, d : severely degraded forest, e : deforested) and the average abundance of species per hectare in mature trees in no degraded forest (M1)

- Miombo ecosystem is resilient.
- The most abundant species of mature trees (M1) in no degraded forest (Fig 5a) are present in the regeneration for each degree of forest degradation.
- The most abundant species of mature trees in no degraded forest are :

Baphia bequaertii,
Brachystegia spiciformis,
Marquesia macroura,
Brachystegia longifolia,
Diplorrhynchus condylocarpon,
Julbernardia paniculata,
Anisophyllea boehmii,
Pericopsis angolensis.

3 – Social filter

- Few species cited by families.
- Only fruit species are known by more than 50% of the panel.
- Lose botanical knowledge ➔ filter to the restoration of woodland.
- Species not maintained in the agricultural system.

Conclusion

- 5 forests communities around Lubumbashi.
- Potentiality of natural regeneration.
- Social filter.