

EVOLUTION OF PLANT COVER AND CARBON STOCK IN THE FUELWOOD SUPPLY BASIN OF KINSHASA (D. R of CONGO)

Gond V., Dubiez E., Boulogne M., Pennec A., Peltier R

Context: The European Makala project has map the trees and forests resources of the fuelwood supply basin of Kinshasa, in D. R. of Congo and predict its evolution. The analysis of past land cover change, used satellite imaging techniques to understand and document the spatial organization, mechanisms of forest degradation and the mechanisms for the recovery of forest stands.

Method: Through high resolution LANDSAT satellite imagery, we mapped the supply area of the city of Kinshasa, from 1984 to 2012. Subsequently we applied for each class obtained an estimate of biomass measured in the field and finally we have applied volume tables to obtain the potential energy wood.

Estimating aboveground biomass was conducted in 2012 as a result of forest inventories in the field. The 317 plots (4337 trees of 44 species) across the four types of plant cover were used to quantify the aboveground biomass. These measurements were performed over the area of Batéké plateau, in the valley of the river Lufimi. These initial data, combined with satellite data allowed the first comprehensive assessment of the aboveground biomass in the study area.

Results: The average volume of wood available per hectare between 2000 and 2012 fell by more than 50% in 10 years.

Through the combined use of field measurements and remote sensing, each finage of the supply basin can be analyzed individually. The Kinduala village, in Lower Congo, near Kisantu is under great anthropogenic pressure. The analysis shows a strong deforestation until 2005 to leave room in 2012 as an open landscape where juxtaposed agricultural parcels and savannah. The disappearance of woodland is responsible for the observed decrease in carbon stocks (less than 75% in 28 years).

Conclusion: We have available for the first time qualitative and quantitative estimates of the dynamics of ecosystem degradation (forest and non-forest) in the supply area of Kinshasa. Drastic reduction of forest cover, significant decline in fallow periods and savannah, declining stocks of biomass and carbon constitute particularly strong signals. However, these initial estimates are derived from a small sample was extrapolated to the entire supply basin. Should be in the months and years ahead increased sampling to approach fairer and concrete values.

Only a conscious policy and a sustainable community land management, with a very high dynamic of trees reintroduction in agricultural land, can reverse the curve.