



Tropentag, September 14-16, 2010, Zurich

“World Food System —
A Contribution from Europe”

How REDDy is African Agriculture? Supplying Robust Carbon Estimates for Agricultural Landscape Mosaics in Western Kenya

SHEM KUYAH^{1,2}, JOHANNES DIETZ²

¹*Jomo Kenyatta University for Science and Technology (JKUAT), Kenya*

²*World Agroforestry Centre (ICRAF), Eastern Africa, Kenya*

Abstract

The international debate on climate change mitigation has shifted from its traditional focus on forest activities as REDD+ actions to recognising the significance and hence including agriculture and other land use (AFOLU). This creates new opportunities to couple mitigation with adaptation actions and for rural farms in the tropics to participate. Agricultural land in many regions of sub-Saharan Africa harbors a considerable amount of trees (87% have tree cover >10%), hence the contribution to stabilise or even increase carbon sequestered in agriculturally dominated landscapes can be key to a holistic biomass carbon assessment, while simultaneously reducing risks of leakage in terms of REDD+ and address issues of food security.

In this context, robust and viable methods are needed to assess biomass carbon in agro-landscapes. While species specific ways of estimating carbon in trees through allometries are available, the tree cover in agro-landscapes is commonly not monospecific. Hence, this project on carbon benefits (CBP) aims at

(i) developing a generic allometry covering the biodiversity of the western Kenyan landscape mosaics through empirical, destructive measurements on a randomised layout within three 100 km² benchmark sites,

(ii) improve the knowledge base on root:shoot ratios by harvesting of below-ground biomass

(iii) explore correlations of the empirical data with non-destructive methods for estimating wood volume and biomass such as the fractal branching approach (FBA).

We present the advantages and constraints of this approach and present the first results for above and below-ground carbon stocks in western Kenyan agro-landscapes and their implications and relevance for non-destructive biomass assessments. The impacts of this research for carbon projects as well as local stakeholders in terms of readiness for tapping into carbon benefits will also be discussed.

Keywords: Allometry, carbon, climate change, fractal branching, Kenya, REDD, sub-Saharan Africa