



Tropentag, September 14-16, 2010, Zurich

“World Food System —
A Contribution from Europe”

Highlighting Threats of War on Biomass and Carbon Stocks using Remote Sensing : Case Study of Darfur Crises

MAHGOUB SULIMAN MOHAMEDAIN¹, ELMAR CSAPLOVIC²

¹*Sudan University of Science and Technology, Dept. of Forestry, Sudan*

²*Technische Universität Dresden, Institute of Photogrammetry and Remote Sensing, Germany*

Abstract

There is a growing concern about the environmental impact of Darfur's conflict upon limited forest resources. The conflict led to a death of more than 100 000 people and displacement about 2.7 million. The national and international efforts are intending to resettle the displaced people to their home places. Most displaced people were from rural areas where houses are constructed from wood, straw and grasses. As the forest resources are limited, some measures are needed to be taken in advance to the resettlement. Therefore, the study attempted to highlight the threats of expected resettlement upon biomass and carbon stocks of Darfur area using remote sensing, field survey and reports.

Stratified random sampling based on remote sensing data was used to estimate above-ground biomass for selected areas. Diameters and heights of trees inside plots were measured. Models and equations were developed to estimate the number of stems and wood volume. ERDAS Imagine, ENVI ArcGIS, SPSS and CarbonFix Standard were used for data analysis and carbon estimate.

Results showed that Darfur has a total area of 81.3 million ha, of which 22 million ha consists of a woody resource. The total number of displaced households is 308 571. Each household needs about 0.5 m³ of wood and 0.45 tons of grass in order to build their house. The study concludes that the total amount of wood expected to be removed is estimated at 155 000 m³ and this would release 100 000 tons of CO₂. In addition to that about 138 000 tones of grass would be needed which equalate about 638 000 tons of CO₂. Thus, it can be stated that there is an expected threat for Darfur's environment in terms of biomass needed for the resettlement of the displaced population. Hence more research and environmental measures are needed before the resettlement should take place.

Keywords: Biomass, CO₂, resettlement, war