

# First Annual Conference on Climate Change and Development in Africa (CCDA-I)

United Nations Conference Centre, Addis Ababa, Ethiopia, 17-19 October 2011

## ESTIMATION OF ABOVEGROUND AND BELOWGROUND CARBON SEQUESTRATION OF *CUPRESSUS LUSITANICA*, *PINUS PATULA* AND *EUCALYPTUS SALIGNA* PLANTATION SPECIES IN KENYA.

Oeba Vincent Onguso<sup>1</sup>, Otor C.J<sup>2</sup>, Samuel, Kung'u B. James<sup>2</sup> and Shisanya C<sup>2\*</sup>.

<sup>1</sup>Kenya Forestry Research Institute; [voeba@kefri.org](mailto:voeba@kefri.org); [voeba@yahoo.co.uk](mailto:voeba@yahoo.co.uk); +254-720-475053

<sup>2</sup>Kenyatta University, School of Environmental Studies, Department of environmental Sciences

<sup>2\*</sup>Kenyatta University, School of Humanities and Social Sciences, Department of Geography

### INTRODUCTION

❖ Carbon sequestration has become a crucial service forests provide.

❖ In Kenya, *Cupressus lusitanica*, *Pinus patula* and *Eucalyptus saligna* are among common exotic plantation species.

❖ They grow fast, a characteristic that makes them remove more CO<sub>2</sub> from the atmosphere than they would release.

❖ Little has been done in estimating carbon aboveground and belowground of these species

### Objective

❖ To estimate carbon sequestered by commonly grown plantation species across different ages and sites in Kenya.

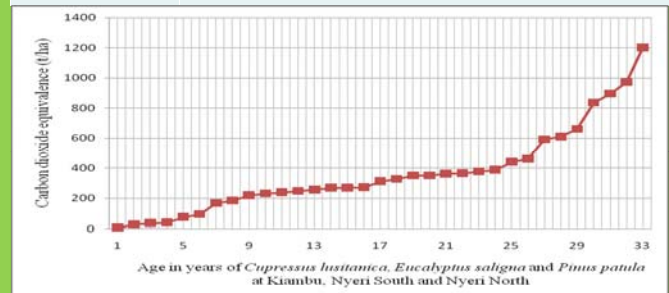
### MATERIALS AND METHODS

- ❖ Plots measuring 20 by 50 m were established in forest plantation of the selected species of different ages
- ❖ Data collection: DBH, height and crown
- ❖ CO<sub>2</sub>FIX V3.1 modelling framework as outlined by Masera et al. (2003) was used for quantifying carbon.
- ❖ BEF of 1.3 was used

### RESULTS AND POLICY IMPLICATIONS

❖ Significant differences (p<0.01) among species & across sites on carbon sequestered.

Tree species	Mean carbon (MgC ha <sup>-1</sup> )		
	Kiambu	Nyeri North	Nyeri South
<i>Cupressus lusitanica</i>	98.4	62.5	91.8
<i>Eucalyptus saligna</i>	79.9	55.5	247.9
<i>Pinus patula</i>	87.2	145.6	72.7
s.e.d.		44.4	



Indicates a significant potential in reduction of GHG that need factored carbon policy & NAMAs

### KEY CONCLUSIONS/ KEY MESSAGES

- ❖ Carbon quantification should be species specific to strengthen REDD+ and MRV as well as National carbon accounting systems (NCAS).
- ❖ Need to develop local biomass allometric equations that are species specific with suitable BECF for MRV.
- ❖ Consider the aspect of tree species in climate change adaptation policy

### ACKNOWLEDGEMENT

KEFRI Board of management for provision of funds  
CCDA for sponsorship to participate and attend conference