

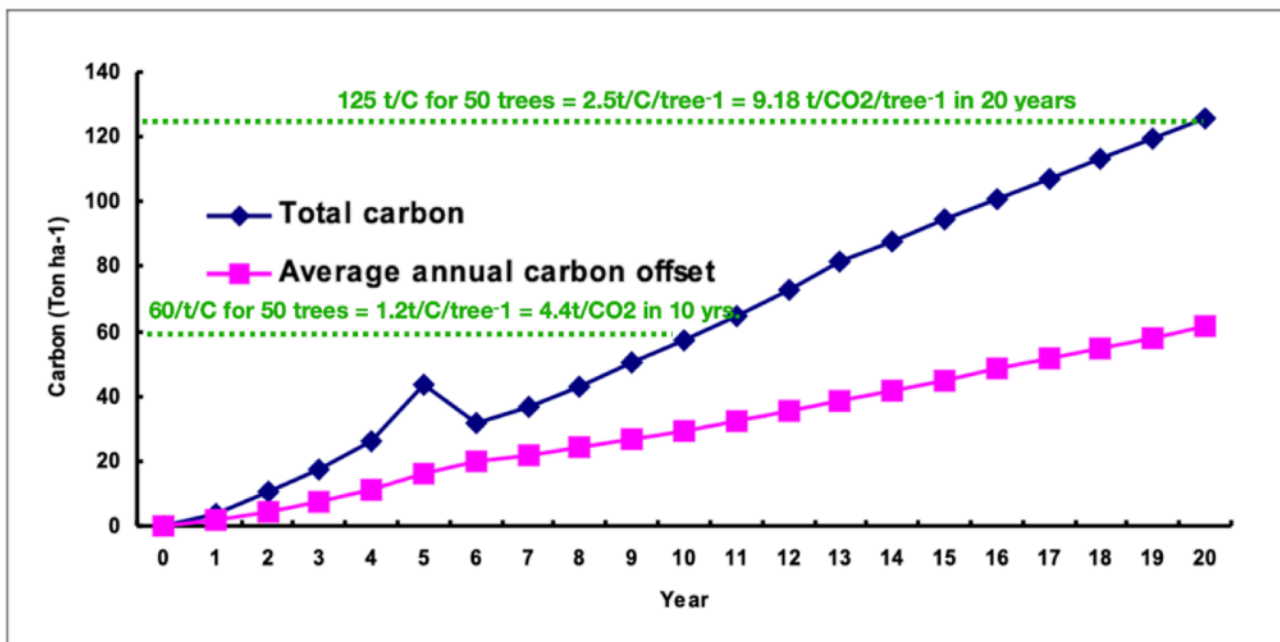
Calculations for Tonnes CO2 Capture for Annual £18 donation
(For 36 trees of 3 tropical hardwood species)

TREE SPECIES	No. of TREES planted	Minimum yrs. before harvesting	CO2/t capture at 10 yrs.	CO2/t capture at 20 yrs.	CO2/t capture at 60 yrs.	CO/t TOTAL capture
<i>Milicia excelsa</i> (Mvule/Iroko)	12	60	48	120	360	360
<i>Terminalia superba</i> (Limba)	a. 6	a. 10	44	---	---	44
	b. 6	b. 20	44	88	---	88
<i>Maesopsis eminii</i> (Musizi)	a. 4	a. 6-10 \bar{x} = 8 yrs.	14	---	---	14
	b. 4	b. 11-15 \bar{x} = 13yrs.	18	23	---	23
	c. 4	c. 16-20 \bar{x} = 18yrs.	18	32	---	32
Sub-totals	36		186	263	360	561
Estimated tree mortality < 10yrs. = c.10%; 11-20yrs. =c.5%; 21-60yrs.= <2.0%.* (* from low volume timber harvesting after 60yrs.)			-19	-13	-7	-39
Estimated tonnes CO2 sequestration/capture for 36 trees at a minimum harvest period, after deductions for mortality rates.			167	250	353	522

Notes:

- Calculations of carbon capture rates are based on surveys and scientific reports on *M. excelsa*; *T. superba* and *M. eminii* species. For further details visit: www.unaeastbourne.org/carbon-offset/ and click on 'Scientific Evidence'.
- The CO2 carbon capture rates do not include carbon in the fine root biomass (e.g., 2-4% of total tree biomass) nor the significant soil organic and invaluable inorganic carbon (associated with *Milicia excelsa*) sequestered through the trees functioning in the rhizosphere.
- Important to understand that each tree species has different general lifespans (short, medium and, long-term rotations) determined by their natural physiology, economic and cultural uses.
- Species rotations:
 - M. excelsa* (Mvule/Iroko): has the longest rotation, generally 60-80yrs., as it is legally protected in most countries from early harvesting. An average Mvule can capture 40 tonnes CO2 in 80yrs. With a significant proportion as a long-term inorganic carbon sink. Mvule may grow for hundreds of years exceeding 3m in diameter without stem hollowing. Main uses: timber, agroforestry, medicine and cultural reverence.
 - Terminalia superba* (Limba): provides in the short-term fuelwood from natural self-pruning in early years. A general lifetime of 20 yrs. (medium-term rotation) is typical before harvesting for quality timber. However, 10-year-old timber of lower quality can be harvested for income needs.
 - Maesopsis eminii* (Musizi): harvested for fuelwood (short-medium term rotation). From 16-20 yrs. timber can be harvested for income. At 20 years an average Musizi can capture >9 tonnes CO2, excluding the CO2 captured in the branches harvested early for fuelwood (see chart below).

CARBON ACCUMULATION RATES FOR MAESOPSIS EMINII (MUSIZI)



Source: Buchholz, T, et al (2004) Fig.2 "Carbon accumulation under sole *M. eminii* woodland.

The above chart shows carbon capture rates for 50 trees from the research of T. Buchholz, a world expert on *M. eminii*. The green lines & text have been added to convert the carbon data into CO2 data (using conversion factor of 3.67).

Note: The carbon rate of capture is converted into CO2 capture rate by multiplying by 3.67. The green lines with text have been added to the chart to support the calculations in the table of CO2 capture rates by 36 trees of three species. Capture rates for *Milicia excelsa* are derived from survey data and analysis from Uganda in 2020 ([Click here for details](#)).

