Supplementary Materials

Table S1: Model fit statistics of all tested structural equation models in exploring biodiversity-carbon relationship. Model with insignificant lower Chi value ($\chi 2$, P>0.05) square along with comparative fit index and Tucker-Lewis index close to one (CFI) and standardized root mean square residual close to zero (SRMR), indicates no deviation of model from observed dataset and thus indicates good fit.

Response variables	**Predictors**	**Fit indices**							**Remarks**
		R^2	χ^2	df	p-value	CFI	TLI	SRMR	
AGC	SR, VDBH, FC MCH, FC WD, FD MCH, FD WD, Soil nutrient	0.483	12.099	8	0.147	0.907	0.676	0.081	Rejected
	SR, VDBH, FC MCH, FD MCH, FD WD, Soil nutrient	0.484	10.442	5	0.064	0.869	0.45	0.083	Rejected
	SR, VDBH, FC MCH, FD WD, Soil nutrient	0.485	2.198	3	0.532	1	1	0.057	**Accepted**

AGC: Aboveground biomass carbon, SR: Species richness, VDBH: Structural diversity, FC: Functional Composition, FD: Functional Diversity, MCH: Maximum Canopy Height, WD: Wood Density, R^2: Coefficient of determination.

Table S2. Result of variance inflation factor test for checking multicollinearity using multiple linear regression among the covariates in the accepted structural equation model. Covariates with a value below 2 do not imply multicollinearity.

Steps	**Species richness**	**Functional composition maximum canopy height**	**Structural diversity**	**Functional diversity of wood density**	**Soil nutrient**
1	1.53	1.34	1.10	1.20	1.04