Evaluation of Role of Trees in Atmospheric Carbon Storage, Case of planned city of Bhilai, India

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Abstract:

The present investigation was conducted to estimate the total carbon stored by trees in Urban Vacant Lands of planned city of Bhilai, (India). Identification of Urban vacant lands and its typologies was done prior to determination of the total tree biomass, total stored carbon, urban trees. These were determined by allometric model/volume equations and compared with different sectors of the planned city. Complete area and tree count was used for measurement of tree data. The identified typologies of urban vacant land were: Planned Vacant Land (4.935 km2), encompassing residual planning space and transport line buffers, and Geographical Vacant Land (1.297 km2) compromising of natural sites. It was observed that, carbon stored was highest in Cassia renegeria (20221.85Tonnes) , Pongammia pinnata (5539.64Tonnes) and Tectona grandis (4577.95 Tonnes), Acacia indica(1843.60 Tonnes) and Terminalia arjuna(1803.76Tonnes).Also, Mean Carbon stored Tonnes of C per tree was maximum in Ficus religiosa 4.21 Tc/ tree, Cassia renegeria 3.72TC/tree and Syzgium cumini 2.82 TC/ tree in Bhilai Planned city. The investigation data will be helpful to evaluate the role of urban trees in reducing atmospheric carbon dioxide. The study will also be useful in assessment of carbon storage potential of regions affected by air pollution.

Keywords:

Urban vacant lands; tree biomass; allometric model; carbon sequestration; carbon storage; volume equations.