

Assessment of CO₂ Emission Load and Carbon Sequestration in Srinagar City (J & K)

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Abstract—Carbon is one the most vital components that helps to sustain life on Earth. Vegetation sequesters carbon dioxide from the atmosphere through photosynthesis and thus acts as sink in the forest lands and the green pockets in order to alleviate enhanced green house effect (global warming). In this context, present study was carried out during 2016 and 2017 in Srinagar city of Kashmir valley to assess the soil organic carbon and carbon sequestration for common dominant tree species (*Salix alba*, *Populus deltoides*, *Platinus orientalis* and *Aesculus indica*) growing along roadsides at three polluted (Pantha Chowk, Bemina, Dalgate) and control (Dara) sites. The mean range of soil organic carbon density in different strata of study area was 8.67-25.78 t ha⁻¹ in 0-30 cm depth for Srinagar city. Similarly, highest overall mean for soil CO₂ mitigation density was recorded at Dara followed by Dalgate and Bemina, whereas, lowest overall mean value was recorded at Pantha Chowk. Total ecosystem carbon stock was found to be 313.60 t ha⁻¹ from selected test species. Further, CO₂ load was also determined. Total vehicles registered in Jammu & Kashmir and Srinagar city from 2007-2017 were 10.16 lakh and 1.80 lakh vehicles, respectively. Mean annual emissions from vehicular fuel in Srinagar city were found to be 0.526 (million tonnes). The total area under urban forestry in Srinagar city was calculated which has till date resulted in sequestration of 0.815 (million tonnes) of CO₂. In order to sequester total mean annual emissions, additional area of was also calculated which is required to be brought under urban forestry.

Keywords: Carbon sequestration, Global warming, Urban forestry, Srinagar city.