Abstract

Deforestation, land degradation, fossil fuel combustion, and other anthropogenic activities have been the major reason in increasing carbon emissions, which contribute to global warming. Forests and woodlands are considered as one of the most vital habitat forms on the earth because they contribute to the sustainability of ecosystems. Planting the forests through seeding or planting trees as part of reforestation and afforestation practices have been promoted to address the problems associated with combating climate change. This study was designed to map and value selected regulatory and cultural services provided by Hiran Minar Archaeological site, District Sheikhupura, Punjab. A field survey was done and 10 plots (100 m^2) were taken for the estimation of tree carbon (*Prosopis juliflora*), and carbon stored in soil and dead fractions. The valuation of tree carbon stock was done through i-Tree Eco tool based on allometric equations. A semi-structured questionnaire was administered to 100 respondents (visitors) of the Hiran Minar archaeological site to assess cultural ecosystem services provided by the site. The results showed that the total tree carbon stock for mesquite specie of the Hiran Minar plantation was 40.14 Mg/ha. The total soil organic carbon stock is 39.9 Mg/ha. The findings of the present study showed that around 20.66 Mg/yr of oxygen was produced by the selected forest. The total monetary benefit value for carbon storage and carbon sequestration was reported as 2.61 billion Rs/ yr, and 1.19 million /yr. The respondents marked clean air and climate mitigation as the most prominent ecosystem services, along with religious and spiritual services. The study can be helpful for decision-makers and policymakers for sustainable management and monitoring for long-term site management and policy making.