

ABSTRACT

ANALYSIS OF THE CARBON DIOXIDE SEQUESTRATION POTENTIAL OF SOME OF THE BIGGEST URBAN GREEN SPACES IN QUEZON CITY

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More than half or equivalent to about 54.5 % of the world's population is now living in urban areas as of 2016 and this percentage is still projected to increase to approximately 64 % in year 2050 especially in developing countries. Cities consume as much as 80 percent of energy production worldwide and account for a roughly equal share of global greenhouse gas emissions. In fact, 75% of the global CO₂ emissions originate in urban areas. Consequently, anthropogenic carbon dioxide emissions are expected to significantly increase along with urbanization. This global transition to urbanization continues to pose a challenge in achieving environmental sustainability due to environmental impacts associated with urban development such as climate change. Urban greenery or urban green spaces (UGS) in cities such as open parks, forests, and grasslands, have been increasingly recognized as key components of urban planning and as a climate change adaptation/mitigation measure through carbon sequestration which is the process of capturing and storing atmospheric carbon dioxide in plants that use sunlight to turn CO₂ into biomass and oxygen. Hence, this study wants to analyze the potential role of some of the biggest urban green spaces found in Quezon City which are Quezon Memorial Circle, UP Arboretum, and Ninoy Aquino Parks and Wildlife Center in offsetting anthropogenic CO₂ emissions through carbon storage and sequestration. Aboveground biomass of the trees and understory/herbaceous layer will be

calculated using published allometric equations from tree measurements and destructive sampling, while belowground biomass will be determined through soil organic carbon analysis. An emissions inventory will also be conducted specifically in District 4, Quezon City which will describe and account the carbon dioxide-equivalent emissions from the transportation sector using activity data and emission factors. Finally, the extent on how CO₂-equivalent emissions generated from Quezon City can be offset through carbon storage and sequestration by city's urban green spaces will be determined.

Keywords: *Carbon sequestration. Carbon dioxide. Biomass estimation. Greenhouse gases. Climate change.*