Possible Effects of Climate Change Driven Sea Level Rise on Small Islet Complex of Negombo Lagoon Sea Entrance with Respect to Mangrove Floral Community and Fisheries

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The climate change driven long term sea level rise by global warming will be a potential threat to the islet system of Negombo lagoon sea entrance which is a unique Eco geographic feature of the Sri Lankan coastline. The study was carried out to identify both ecological and socioeconomic impacts by long term sea level rise on this islet system of Negombo lagoon as a fisheries hub and ecologically important mangrove forests to the country. Three possible sea level rise scenarios by year 2100 were developed based on Intergovernmental Panel on Climate Change (IPCC) forecasts of sea level rise through Representative Concentrative Pathways (RCPs'). Inundation patterns due to sea level rise for the islet complex was projected. As ecological impacts, pneumatophore heights of *Sonneratia* spp. and *Avicennia* spp. for its distribution and inundation percentage along the Siriwardene mangrove forest due to sea level rise by 2100 were calculated. A timeline analysis for Munnakkarai islet was conducted to understand the socioeconomic significance for two selected shorelines at Munnakkarai islet with an emphasis to fisheries activities. Results have expressed that percentage land loss of Munnakkarai islet due to sea level rise scenarios I, II and III are respectively 18.21% 27.54% and 42.20% by year 2100 and projected loss of pneumatophore distribution for the scenarios I, II and III were respectively 79.7% , 99.2 % and 100%. There is a possibility of displacement, effect on fisheries and species loss in this islet complex by year 2100 due to the loss of pressure on mangrove outskirts of the island where they are possible nursery grounds of economically important fish and shellfish. In conclusion, current study has predicted negative ecological and economic impact for the islet complex due to climate change driven sea level rise by year 2100, emphasizing immediate requirement to overcome global warming nationally and internationally.

Keywords: Global climate change, Sea level rise, Lagoons, Fisheries, Mangroves