**Spatial planning for seaweed mariculture development in the coastal water of Bangladesh**

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**Abstract**

Seaweeds are marine autotrophic macroalgae found in the coastal waters, and have both ecological and economical values. Present study aimed to understand the drivers of commercially important seaweed species distribution and develop spatial plan for seaweed cultivation in the coastal area of Bangladesh. Generalized Additive Model was used to predict the potential habitats of seaweeds utilizing data on seaweed occurrence (presence and absence data), environmental conditions and bathymetry. Required data were compiled from *in-situ* measurements, satellite observations and model simulations. The model explained 78% variability in seaweed habitat distribution. Total suspended matter was found as the main predictor of seaweed habitat distribution followed by salinity, nitrate concentrations, depth, zonal and meridional components of current and sea surface temperature. The model predicted that about 11200 km2 areas had 20-100% occurrence probability for seaweed. About 4100km2 area had higher probability of seaweed occurrence (50-100%). Model predictions had a good agreement with *in-situ* observations (Area under curve = 0.83, R2 = 0.81). Since Bangladesh is focusing on the expansion of ocean based economic activities, this study will serve as a tool to start commercial mariculture of seaweed by providing information on site suitability for farm establishment.

**Theme**: MSP for Blue Economy