Seaweed as an alternative income generation activity for coastal communities of Bangladesh

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Abstract

Coastal communities are blessed with abundance of natural resources, yet they remain poor especially in developing countries. The present source of livelihood there, is primarily based on the available coastal resources and from tourism season which is not sufficient. The current study elucidates the potential of seaweed farming as an alternate income generation activity to improve the livelihood of the coastal community in Bangladesh.

Background

Bangladesh possesses one of the largest coasts (710 km long) in South Asia, including Cox's Bazar beach and St. Martin's Island in the vicinity of the Bay of Bengal. The livelihoods of the inhabitants of these areas are based on the coastal resources, primarily fish. Nevertheless, the community is underprivileged compared to the in landers in terms of education, employment and medical advances [1]. They lack proper economic growth due to increased population, loss of employment and income from only specific period of time, tourism season; this problem often worsens due to natural hazards that left the community with nearly no definite alternative source of income, and the locals also suggested for alternative livelihood with the present forms are essential for them [1]. What to do to improve their economy needs to be sought out and socio-economic assessments are required to ensure sustainable development and improvement of the community.

Rich biodiversity on the coast of Bangladesh have been reported with fish - 234 species, mollusks - 187 species, coral - 66 species, birds - 130 species, marine turtles - 4 species, sea snakes - 5 species, marine mammals - 9 species [2,3,4,5] and seaweeds - 202 species [6]. They later recorded 95 red, 47 greens and 60 brown algal species so far, mostly from St. Martin's Island [6]. These seaweeds are valued greatly for their diverse applications worldwide. The whole plant body may use as food, fodder, and fertilizer or as a source of commercially significant hydrocolloids (agar, alginate and carrageenan) used in processing of food, pharmaceutical and cosmetics industries (Table 1). Although the coastal community in Bangladesh knows the value of seaweed, they lack the understanding of how to harness it as an alternative source of income. Seaweed aquaculture already substantiated economically viable and commercially sustainable way to improve the livelihood of the coastal communities in several countries like, Philippines, Indonesia, India and Tanzania [7]. Despite all the potentiality of seaweed culture, there is no established seaweed farm in Bangladesh. Thus, this untapped resource requires exploration as it can be a sustainable income generation activity along with the regular income activities to raise the socio-economic status of the community which depends on future research in this field.

Figure 1. Natural seaweed flora on sublittoral zone.
Photo a. *Padina sp.*   b. *Padina* and *Hydroclathrus sp.*

Methodology

Underwater photo of seaweeds taken and samples collected from March- April, 2016 from St. Martin's Island.
Sample were selected via Snowball sampling method, [8] questionnaires had two focus, the first understanding the current economic conditions and second exploring if the respondents awareness of seaweed as a potential source of income generating activity.

Table 1 :Potential use of seaweeds naturally grown on the coasts of Bangladesh

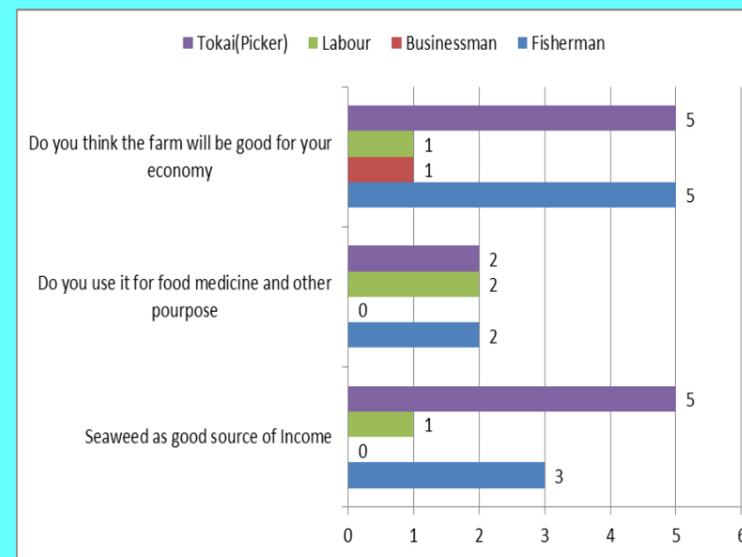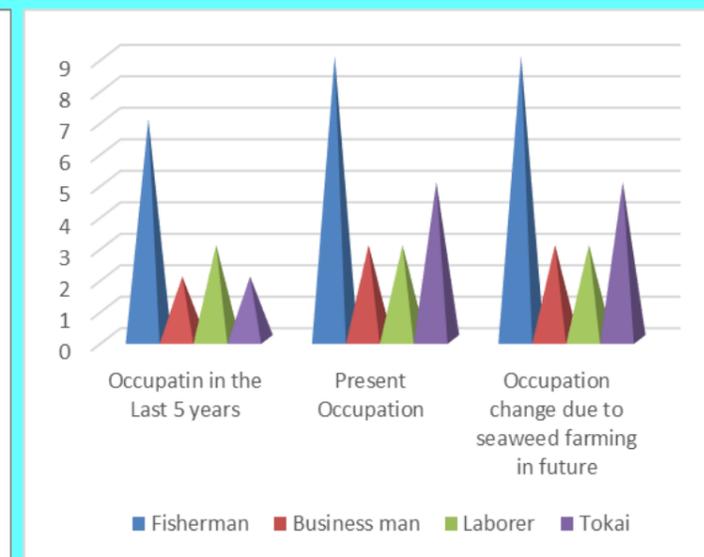|	
Edible	*Cladophora prolifera, Caulerpa sp., Codium geppei, Dictyota atomaria, Dictyopteris australis, Gracilaria sp., Hypnea musciformis, Hydroclathrus sp., Halymenia sp., Padina sp., Ulva lactuca*
Medicinal/pharmaceutical (anti-bacterial, anti-fungal, anti-tumor properties)	*Caulerpa taxifolia, Codium geppei, Dictyota atomaria, Dictyota atomaria, Hydroclathrus sp., Halimeda sp., Gracilaria sp., Padina sp., Sargassum sp., Ulva lactuca*
Industrial (agar, alginate)	*Gracilaria spinuligera, Sargassum sp.*
Agriculture (animal feed and fertilizer)	*Cladophora sp., Codium geppei, Dictyota atomaria, Gracilaria sp., Hydroclathrus sp., Hypnea sp., Halimeda sp., Halymenia sp, Padina spp, Sargassum sp., Ulva lactuca*

Chart 1: Seaweed and Income

Chart 2: Status of Occupation

Results

Alternative livelihood is essential for the Socio-Economic development of the community.
The potential of Seaweed farming is an addition as it is not an economic activity, unlike other countries where it is used for various purposes.
This open a gate for tapping in the resource not only for the local community but also as a wider economy of the country.

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