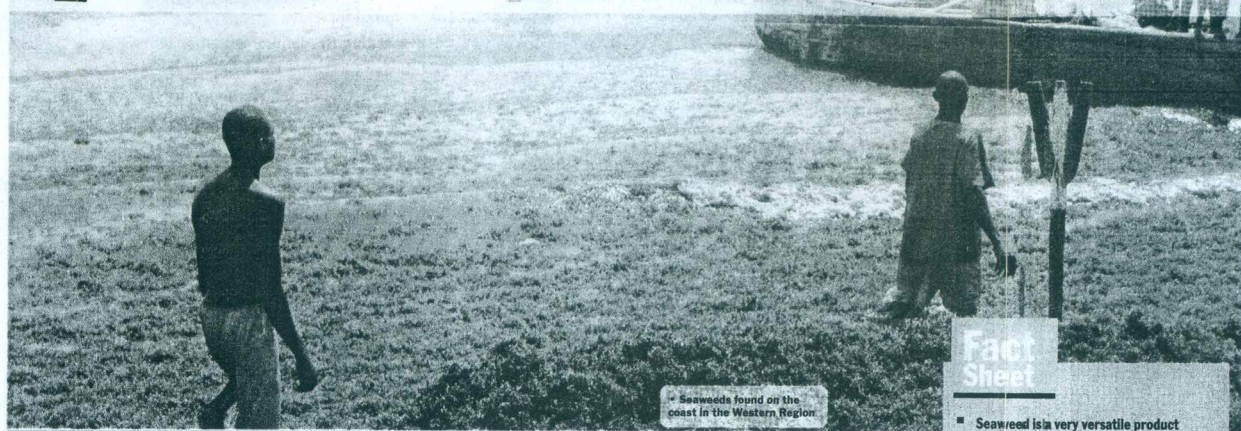


Special Feature



Seaweeds found on the coast in the Western Region.

Fact Sheet

- Seaweed is a very versatile product widely used for food in direct human consumption but is also an important ingredient for the global food and cosmetics industries.
- It is used as fertiliser and as an animal feed additive.

Seaweed farming: An alternative livelihood for coastal communities

By Dr Gloria Naa Dzama Addico & Mr Kwaku Amoako Atta deGraft-Johnson

WHEN one economic activity is on the decline, there is always the natural urge to look for alternatives. That is the situation confronting the coastal communities in the country where fishing and its ancillary activities have been their mainstay.

Over the past few decades, the dwindling fortunes of these fisher folks and their families as a result of the numerous problems confronting the fishing industry have reached alarming

proportions which call for a concerted effort and strategy to explore viable alternatives.

Marine fisheries

According to that report, marine fisheries accounted for nearly 80 per cent of the fisheries sector. It serves as a major source of employment, livelihood and a way of life for the population in the coastal communities. It has both forward and backward linkages to other economic activities with a plough back from the sector going in to finance other commerce.

The industry in Ghana, the report stated, had the industrialised, semi-industrialised and artisanal or canoe fishers. The artisanal sector provides over 70 per cent of the total fish

requirements and consequently the bulk of the country's protein requirements.

Available information indicates that the sector offers employment to an estimated 10 per cent of the country's population. It also employs over 60 per cent women and links with other sectors in providing raw materials especially the food processing companies and the hospitality industry while employing the services and products of other sectors to operate.

From a contribution of six per cent to GDP in 1993, the fortunes of the sector had declined to 3.9 per cent in 2008, according to the Ghana Living Standard Survey. This situation has come about as a result of several factors including depleting stocks, unfair competition and higher costs of

doing business. These have conspired to virtually push local fishermen out of business.

The decline in the volume of fish caught (almost halved over the past three decades from 800,000 to less than 500,000 metric tons) does not only affect the market price and for that matter the consumption pattern of Ghanaians, but more seriously translates into a sharp drop in the economic wellbeing of the coastal communities that largely depend on the industry for survival.

The social impact and economic consequences of this state of affairs are quite obvious. Not only are lifestyles negatively affected. School drop-outs, child prostitution and teenage pregnancy are highly prevalent in most of these coastal fishing communities (ranked amongst the poorest in the country).

Seaweed cultivation

While the government may take steps for the long-term revamping of the fishery sector, there is the need to try short and medium terms to do something for alternative livelihoods for the

coastal communities. That was how the SeaBioGh Project was conceived.

It is a five-year project sponsored by the Danish Government in partnership with the Technical University of Denmark, the Council for Scientific and Industrial Research (CSIR)-Water Research Institute and the Chemical Engineering Department of the Kwame Nkrumah University of Science and Technology (KNUST).

The objectives of the project include: making seaweed cultivation a business in the fishing communities, especially in the Central and Western regions; to establish relevant technology for seaweed processing and develop local know-how for seaweed farming; develop selective enzymatic technologies to extract valuable hydrocolloids like carrageenan, alginate and fucoïdan from seaweed.

It is also to advance the processing of seaweed for the production of biofuels (biodiesel and ethanol), including bioelectricity; and finally to establish demonstration farms for capacity building for seaweed farming and technology transfer and produce guidelines/manual for sustainable seaweed cultivation and processing in Ghana and the West African sub-region.

What are algae or seaweeds?

Algae are very diverse group of plants and could be found almost everywhere (e.g. Air, soil, fresh/brackish/saline waters, hot springs, ice, trees). They play an important role in many ecosystems, including providing the foundation for the aquatic food chains supporting all fisheries in the oceans and inland fresh and brackish waters, as well as producing about 70 per cent of all the air we breathe.

It can range from the microscopic (microalgae)

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Some types of seaweeds are used in the food industry

to large seaweeds (macro-algae) such as giant kelps of more than 100 feet in length. Micro and macro-algae are emerging to be one of the most promising long-term, sustainable sources of biomass and oils for fuel, food, feed and other co-products. What makes them so attractive are the large number and wide variety of benefits associated with how and where they grow.

Uses and benefits

Seaweed is a very versatile product widely used for food in direct human consumption but is also an important ingredient for the global food and cosmetics industries. It is used as fertiliser and as an animal feed additive. The FAO in 2003 reported that the total annual value of



seaweeds (Gigartina or Chondracanthus, Hydroponia and Hypnea species). While brown seaweeds are used to produce high quality alginates which form strong gels and give thick aqueous solutions, Carrageenans (iota, kappa, and lambda) are obtained from red sea weeds and their main applications are in the food industry especially dairy products (ice creams, cheese, and milk chocolates).

While algae are a promising and exciting source of bio-fuels and animal feeds, they can also be a sustainable source of a variety of higher-value products, from foods (meat products-ham, sausages, burgers) to specialty feeds to chemicals (air-freshener gels), toiletries (toothpaste, soaps, deodorants) and even cosmetics and pharmaceuticals.

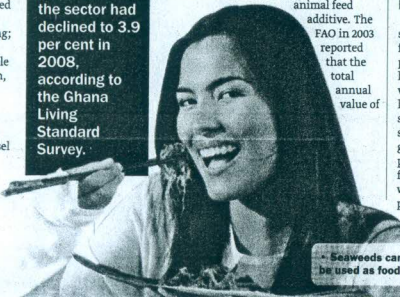
Local application

There is a long history of coastal people using seaweeds, especially large brown seaweeds, to fertilise nearby lands. Seaweed extracts have given positive results in many applications. In the horticultural industry when applied to fruit, vegetable and flower crops, some improvements have included higher yields, increased uptake of soil nutrients, increased resistance to some pests such as red spider mite and aphids, improved seed germination and more resistance to frost. The potential to produce alginates and carrageenans from locally cultivated brown and red seaweeds with their bio-products being used for bio-fuels production is very encouraging.

Why the SeaBioGh Project should be applauded

The market is big and inexhaustible, the returns very rewarding. That is why the seaweed cultivation initiative introduced by the SeaBioGh Project has the potential to change the economies and living standards of the coastal communities by providing them with alternative credible sources of living and wealth-creation. The success of this project will hopefully reduce in the long term, the pressure on the coastal fisheries sector and thus the fish catch and ultimate recovery.

The writers are with the Council for Scientific and Industrial Research (CSIR)-Water Research Institute and CSIR-Head Office respectfully.



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