



Canada 

# Seaweeds Value Chain in Iloilo

**TYPHOON YOLANDA (Haiyan)  
Reconstruction Assistance  
in the Philippines**

# BACKGROUND

The Typhoon Haiyan (Yolanda) Reconstruction Assistance in the Philippines (THRA) project is a four-year initiative implemented by CARE with funding from the Government of Canada through the Global Affairs Canada (GAC).

The project supports the economic recovery of people affected by Typhoon Yolanda which struck the Visayas Region in November 2013. The THRA project aims to address the root causes preventing women and men's access to knowledge, skills, products and services, with a particular focus on strengthening women entrepreneurs. CARE's interventions intend to improve the economic well-being of women and men living in the region.

CARE, in partnership with Taytay sa Kauswagan Inc. (TSKI), is providing financial, capacity building and technical support to a number of community-based organizations (CBOs) engaged in seaweed production and post-harvest processing in Northern Iloilo.





## About **Seaweeds**

Seaweeds are plant-like organisms that generally live attached to rock or other hard substrata in lagoons and coastal areas. They are one of the most important aquaculture commodities in the Philippines. The country is one of the few in the world which pioneered the farming of these plants in substantial quantities.

### ***Key facts:***

- ▶ Good source of colloidal materials which are used as gelling agents, emulsifiers, stabilizers, in pharmaceutical, cosmetic and food products. They also constitute an important food item, fertilizer and animal feed.
- ▶ There are about 800 known seaweeds in the Philippines. About 60 species fit for consumption.

# Uses of Seaweeds

Seaweeds are exported either in raw form (fresh or dried seaweeds) or processed form (carrageenan and kelp powder). The major products derived from the utilization of seaweeds are agar, algin or sodium alginate, and carrageenan. Carrageenan is a natural gum used as additive, binder, and emulsifier on food, pharmaceutical, beverage, and cosmetic industries.



Carrageenan is now currently used in the following applications: milk stabiliser in dairy products like ice cream; prevents whey separation and ice crystal formation; binder and foam stabilizer in toothpaste, gels, cosmetics and shampoo; aid in beer production and keeping quality; stabilizes ham, sausages, patties and other meat products, sauces and gelatin; production of medicine capsules, microbicides; as an ingredient for shoe polish, fire extinguisher, air freshener, soap, fertiliser and in biodegradable, digestible films.





# Seaweed Industry in the Philippines

The Philippines has abundant aquatic resources that makes it a major player in the seaweed and carrageenan industry. According to the value chain analysis of Department of Agriculture's Philippine Rural Development project, seaweed production in the country accounts for 60% of total aquaculture production, producing 1.8 million MT of seaweeds valued at over USD 212 million each year. Ninety one percent of seaweeds cultivated are of the *Eucheuma* variety. *Eucheuma cottonii* is the most popular among seaweed growers, accounting for 80% of all seaweed production, because it is easy to cultivate and has a high market price. *Eucheuma spinosum*, contributes 11% of the entire seaweed production in the country, but is seen to increase because of the strong demand for this specific variety from China and South Korea.

Seaweed farmers usually enjoy a good harvest from January to June, which are considered peak months for seaweed farming.

Sixty-five percent (65%) of the total production are processed into semi-refined chips/carrageenan, (22%) are processed into refined carrageenan and the remaining (13%) are exported raw (dried).

According to the Bureau of Agricultural Statistics, seaweed is the top aquaculture commodity, followed by milkfish (bangus) and tilapia. In 2015, seaweed production reached 1.57 million metric tons valued at P8.32 million. The Bureau of Fisheries and Aquatic Resources estimates that around 12,000 farmers are involved in seaweed farming.

Based on data from the Department of Trade and Industry, revenue from seaweed products amounted to \$52.7 million.



# Seaweed Value Chain in San Dionisio, Iloilo

San Dionisio is a fourth-class municipality located in Northern Iloilo. Based on 2015 census, it is inhabited by 38,775 people. This coastal municipality is subdivided into 29 barangays and was heavily affected by Typhoon Yolanda in 2013.

The seaweeds value chain in San Dionisio, Iloilo started as early as 1986 in the Barangays of Sua and Tiabas. The Bureau of Fisheries and Aquatic Resources (BFAR), as

the lead agency in fisheries and through the local government of San Dionisio, has been leading the provision of technical assistance and material inputs for the seaweed-farming communities in San Dionisio. The government has been providing seedlings, ropes and ties for seaweed planters since the early years of seaweed production. Seaweed varieties being grown commercially in San Dionisio are *Eucheuma cottonii* and *Eucheuma spinosum*.



## Input Supply

The basic materials needed by a seaweed planter to start a seaweed farm include polyethylene (PE) ropes, soft ties, floaters, monofilament nylon and seedlings. Depending on type of culture method, they also need wooden or bamboo stakes (off-bottom method), and concrete anchors or bamboo posts (floating method). Optionally, they need a basket or “kaing” as seedling container and for use to collect mature seaweeds during harvest, and a small boat and raft for day to day maintenance.

Materials and seedlings were sourced by farmers from fishing supply stores in Iloilo City or these were provided by BFAR, CARE and other organizations.

The common seaweed production practice is to re-use materials for succeeding culture periods since these materials (ropes, soft ties, floaters) are made of plastic and are understandably durable. Farmers also usually set aside a portion of their harvest to be used as seedlings for the next culture period or they provide seedlings to other farmers.

## Production

Seaweed production is done by both women and men, and tasks are shared equally in the coastal communities of San Dionisio. The most common method used by seaweed farmers is the “fixed-off bottom,” which is used by most planters as it can be done in shallow areas that are more accessible for women planters. Through this method, wooden stakes are driven into the sea bottom 20 to 25 cm apart from each other in straight rows. The “floating monoline method” is used by a few, such as in Barangay Odiongan, and more by men since it is done in deeper waters. In the floating method, seaweed is attached to some device that keeps the seaweed floating; rising and falling, with the tidal changes. The floating device can be a simple frame made of bamboos, mangrove wood, or bush timber durable in seawater.



CARE and SEAFDEC have also conducted trainings on integrated farming of seaweed and abalone. The training on integrated farming of seaweed and abalone is one of the recommended actions to provide alternative livelihood to seaweed farmers in areas affected by strong currents in certain months of the year.

## Post-Harvest



To harvest seaweeds, culture lines are collected from the farm, brought on land and then seaweeds are detached from the plastic straw. The seaweeds are then cleaned from algae, mud or sand and laid out on drying platforms for 2-3 days of sun drying. Commonly, drying platforms are made of bamboo laid over with plastic nets.



## Processing or Value-Addition for Seaweeds

Seaweed processing in San Dionisio is focused on value-addition and production of seaweed-based products. CARE has provided capacity building trainings on seaweed processing to community-based organizations. These organizations have started producing seaweed kropeck, pickles, chips, cookies and noodles. In collaboration with the Department of Trade and Industry, they were also assisted in designing presentable packaging for these products.



## Trading

Fresh seaweeds are bought by households for family consumption, as well as bought by local traders and herb processors to be supplied to wet markets, hotels and restaurants. Fresh seaweeds are also bought to be processed as personal care and food products with community-based associations engaged in seaweed processing.





CARE has supported the establishment of San Dionisio Multi-Sectoral Integrated Association (SDMSIA) for the consolidation of harvested seaweeds from different seaweed producing communities in San Dionisio and other nearby municipalities. Also with CARE’s assistance, the San Dionisio Multi-Sectoral Agriculture Cooperative was established for seaweed trading. Several community associations have been directly supplying dried seaweeds to other seaweed traders in the area.

**SEAWEED VALUE CHAIN (NORTHERN ILOILO)**

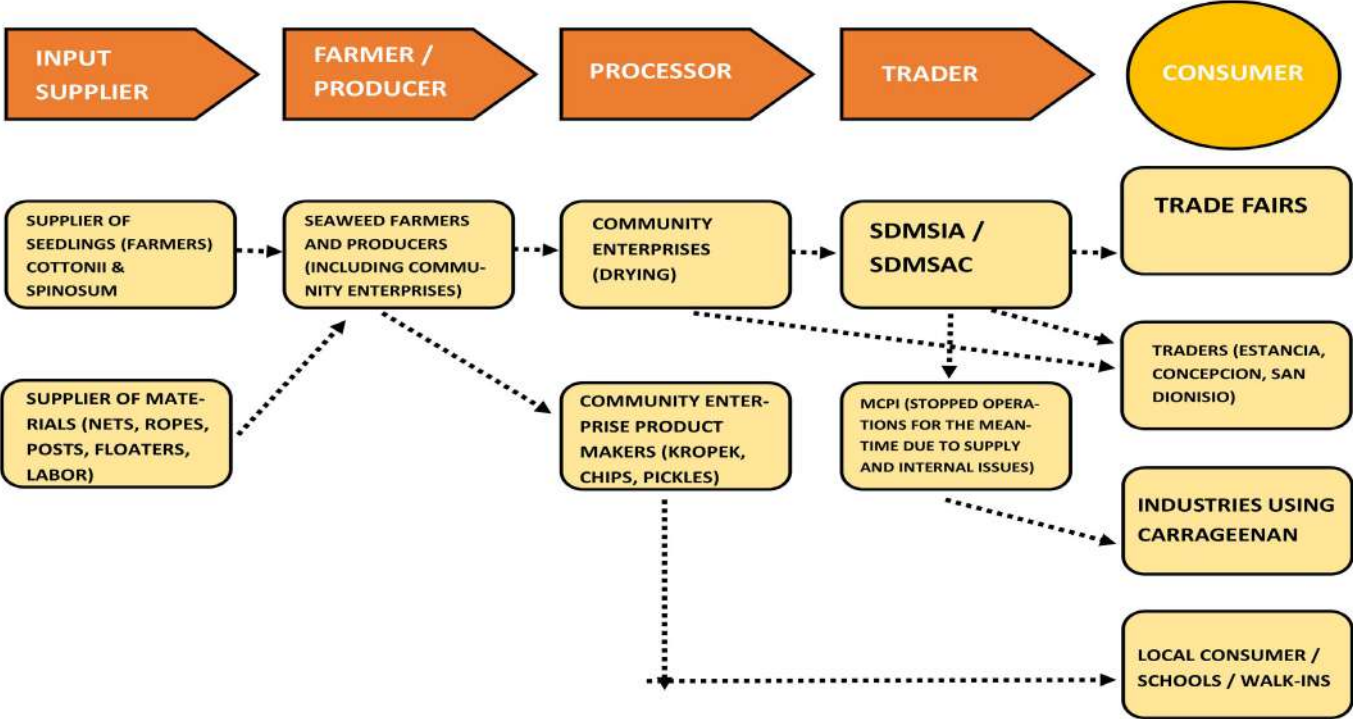


Image: Seaweeds Value Chain in San Dionisio

# Opportunities and Challenges

The Philippines used to be the top supplier of raw dried seaweeds in the world, providing 70% of global supply of raw dried seaweed (RDS). Now, the Philippines only contributes 40% of global RDS supply. But the country remains to be the top supplier of carrageenan in the world, serving 65% to 70% of worldwide demand. The Philippines is only growing seaweeds in 60,000 of the 200,000 hectares, or 30% of the areas suitable for seaweed growing. Because of the lack of growth in the seaweed production segment, capacity utilization of seaweed processors has dropped, and importation of RDS into the country has increased.



# CARE's Typhoon Haiyan Reconstruction Assistance

Through the THRA project, CARE employs a strategy on improving access to resources required in rebuilding agricultural, livestock, fisheries and commerce-related livelihoods aimed at optimizing income and providing diversified and resilient livelihood opportunities for most disaster-affected households.

As such, CARE has provided financial, capacity building and technical support to 12 community-based organizations in San Dionisio, Iloilo engaged in seaweed production, processing and trading. These communities were heavily devastated by typhoon Yolanda.

CARE has partnered with Taytay sa Kauswagan Inc. (TSKI) and previously with Business Fair Trade Consulting to support over 2,800 small-holder farmers (73% are women) and fisherfolks in San Dionisio. The project aims to contribute to the economic recovery of Yolanda-affected farmers and promote seaweed production and processing as alternative sources of income.



Various trainings on financial literacy, community-based enterprise development, good agricultural practices, values formation, gender and development, and environmental management and disaster resilience were provided by CARE in partnership with different government agencies and institutions. CARE, in partnership with Maximum Commitment to Pilipino Interest Corporation (MCPI), also conducted cross-learning activities where seaweed producers from San Dionisio were brought to seaweed farms in Bohol to learn practical farming techniques and best practices.

CARE's program approach goes beyond addressing the needs of one group, and applies the "Value Chain Framework" to gain a deeper understanding of market dynamics, demand, supply and inter-firm relationships. Through this approach, CARE-assisted associations are involved in various phases of seaweed value chain – from inputs to production to processing to trading.

Following a community-led approach to development, CARE has also trained and engaged Community-based Development Facilitators (CBDFs) from assisted local communities to become training facilitators. CARE believes that community trainings are best delivered by the local CBDFs as they have a strong sense of identification and relationship with the local people and authorities, and first-hand knowledge of the socio-economic conditions in the area making them more effective in conveying and connecting entrepreneurial possibilities.



## Gender Roles and Issues



CARE's project has been supporting community fisherfolk associations and other actors in Northern Iloilo involved in seaweed cultivation, processing and trading. Seaweeds production is done by both women and men and tasks shared equally in the coastal communities of Northern Iloilo. The most common method used by seaweed farmers is the "fixed-off bottom method" which is used by most planters as it can be done in shallow areas which are more accessible for women planters. The "floating monoline method" is used by a few women and more by men since it is done in deeper waters.

However, women and men now equally share traditional roles and responsibilities that reinforces the stereotyping within the household and the enterprise. Fisherfolks or seaweed farmers depend on each other's knowledge and skills. Male seaweed farmers assist each other and women during the planting preparation. Both men and women actively participate in community decision-making, particularly those organized by the village captain. Women feel that they are not discriminated at the working area except when women are replaced by husbands during their monthly menstrual period.



## Environmental Management and Resilience

Seaweed farms are located along the seashore of communities. Seaweeds are prone to damage during typhoon season when huge waves and storm surges normally cause destruction of seaweed plantations. Also, the recent El Nino --which was reported as the strongest on record— heavily affected the seaweed fisherfolks and brought “ice-ice” disease. This particular disease condition occurs when changes in salinity, ocean temperature and light intensity give stress to seaweeds attracting bacteria in the water. This leads to decrease in production and quality as seaweeds die or become brittle. Recent typhoons and have also affected plantations as the strong waves dislodged seaweed lines severely affecting production and livelihood.

To address this challenge, CARE and BFAR supported the seaweed fisherfolks on the appropriate use of nets as a perimeter fence on their farms to protect seaweeds from strong waves. Nylone nets were installed around a culture area and were expected to keep the seaweeds inside for the planter to collect in case these were dislodged from the monoline.

Seaweed producers who were affected by big waves and had parts of their plantations destroyed have learned proper timing of planting, selection of suitable varieties based on water salinity and selection of location. To protect from losses, farmers enroll in Philippine Crop Insurance Company (PCIC)'s crop insurance.

Seaweed growing is also known to benefit the marine ecosystem. It attracts other marine species to thrive in the area by providing food, shelter and breeding grounds. Seaweed growing also promotes ecological stability and sustained productivity in the reef. Like what happened in Danajon Reef in Bohol, it reduced destructive fishing practices by providing an alternative livelihood for fishing households.

CARE helped facilitate technical consultations between the affected community organizations and the Bureau of Fisheries and Aquatic Resources. Also, CARE provided these organizations necessary materials to protect seaweeds from strong waves and extreme heat such as floaters and perimeter fences.

CARE has also conducted an Environmental Safeguards Study of the Seaweeds Value Chain in San Dionisio to properly assess the environmental impacts of activities being conducted by actors in the value chain.

The study results were presented to the Municipal Government, seaweed growing associations, and the regional office of the BFAR for comments and suggestions. Recommendations, particularly on the drafting of policies, have seen support from the MLGU and the seaweed growing associations.

The seaweed processing and value-addition activities are not seen to have adverse environmental impact so far as it does not use chemicals or uses resources, such as water, in vast quantities. Yet, while the activities have no environmental impact, environmental challenges that affect seaweed production can have an impact on its activities. When seaweed production in the farms are environmentally affected by typhoons, droughts, flooding and others, this will affect or lessen the supply of fresh seaweed used for their processing activities, which in turn may cause for loss of income for the processors.





Founded in 1945, CARE is a global leader within a worldwide movement dedicated to ending poverty. We are known everywhere for our unshakeable commitment to the dignity of people. CARE has worked in the Philippines since 1949, providing emergency relief when disaster strikes, helping communities prepare for disasters, and implementing sustainable livelihood projects.

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