CONDITIONS FOR SUCCESSFUL SEAWEED VALUE CHAIN DEVELOPMENT: LESSONS FROM INDONESIA

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Background

Coastal communities in low- and middle-income countries in Asia, Africa and Latin America rely heavily on fishing and agriculture (when land is accessible). To raise income and economic status many income generating activities have been introduced and piloted. This was often also a fisheries management strategy to reduce fishing pressure. One of these alternative livelihoods is the farming of seaweeds. Pilots aimed at testing the farming of *Eucheuma sp*., *Gracilaria sp*. and other seaweed species for the production of hydrocolloids (carrageenan, agar-agar and others) were started in the Philippines and Indonesia in the 1970's. Seaweed farming has since expanded and has become part of the livelihoods of 100,000 to 150,000 coastal households in the Philippines (Hurtado, 2013) and over 260,000 in Indonesia (R. Rofiq, pers.comm., 2019). Indonesia produced 9.78 million ton of fresh seaweeds in 2019. A part is processed locally, the rest is exported in dried form and processed internationally. Also in Malaysia, Vietnam, Tanzania and other countries thousands of coastal households have become seaweed farmers. It is one of the most successful new income-generating alternatives for tropical coastal communities that rely predominantly on artisanal capture fisheries.

Objectives

The goal of this study was to identify the conditions and factors that contributed to the extensive uptake of seaweed farming by coastal households in especially Indonesia. Identification of the factors and lessons learnt can contribute to policies and advice to all interested in sustainable livelihoods for tropical coastal communities.

Approach

Covid19 regulations limited the possibilities to travel to Indonesia. The study was done by means of literature review and interviews with seaweed traders, processing company representatives and other key resource persons in the Indonesian seaweed value chain.




Left to right: Seaweed farm: floaters with lines to which seaweed propagules are attached. Eucheuma seaweed attached to the lines. Indonesian seaweed farmer bringing his harvest to shore. Seaweed drying on the beach. Photos: P. van Oort and C3 Philippines.

Results & Discussion

The following factors and conditions for extensive uptake of seaweed farming by Indonesian coastal households were identified:

- Suitable ecological conditons (temperature, salinity);
- Continously growing demand from the seaweed processing industry;
- No need for land, fresh water or fertilizer. Seaweed farming is suitable in low-rainfall areas where agriculture potential is limited.
- Access to coastal waters is easy and informally arranged at village level, based on traditional use rights. No bureaucratic red-tape is involved.
- Low investments needed at start and relatively simple techniques. Often, capital for purchase of equipment to start (lines, sticks, floaters, propagules) is provided by traders on condition that harvest will be sold to them at prices they dictate.
- After purchase of propagules to start, farmers can derive planting material for subsequent culture cycles from the crop they have harvested.
- Short cultivation cycles: from start to harvest takes 30 to 60 days. This enables first income from sale already after a relatively short period. This allows frequent income, something to which fishers with often daily operations and sales are used. Six to eight cycles/year and fast return on investment is possible.
- Income from seaweed per household ranges between US$ 300 to over US$ 4000/year, depending on total length of lines in the farm, productivity and the price offered for dried seaweed. Productivity varies between farm and location and ranges between 0.3 to 1.7 kg dried seaweed/m line/year. Prices fluctuated between $ 0.50 and $ 1.20/ kg.
- Dried seaweed can be stored for longer periods. Unlike fish that spoils quickly. Therefore, farmers are not forced to sell seaweed shortly after harvest.
- Many activities that are part of seaweed cultivation and processing are done by women and children.
- Seaweed farming requires flexibility due to changing tides and seasons. The flexibility required makes seaweed production less suitable for large scale plantations with paid labourers. Small-scale farmers don't face much competition from such large-scale operators yet.

Conclusions

Alternative or complementary sources of income for coastal households relyling predominatly on capture fisheries and agriculture should:

- Have minimal and locally arranged legal permissions to start;
- Have low capital requirements and be simple and easy to learn;
- Should result in quick returns and frequent income over the year;
- Have continous demand for products to guarantee year-round sales and income;
- The distance between producers and processors or exporters should not pose logistical problems;
- To avoid monopolistic situations there should be several local buyers.

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