WHY A VILLAGE FISHERIES PROJECT?

1. There are basically two different ways of catching fish in the South Pacific. The "big way" with joint ventures and foreign companies catching impressive quantities of tuna for export, but employing a rather limited number of locals. Some few fortunate countries with a large resource of livebait have been able to increase their export earnings considerably this way.

2. However many countries are up against a major obstacle due to lack of a livebait resource to support a commercial fishery. They are constrained to catch fish the "small way", a village based fishery with canoes and handlines, often very little changed over the last fifty years except for outboard motors replacing sails. It is a picture of stagnation if not regression with increasing dependency on imported tinned fish. Many countries seem to have accepted this state of affairs. Fisheries Officers have been accustomed to "thinking big", and even the village people themselves gradually have begun to believe that there is nothing between a dugout canoe and a tuna clipper.

3. Western Samoa having very limited resource of livebait, was forced to take a closer look at what could be done about the village fishery. Three years ago there were altogether 70 boats with outboard motors fishing outside the reef. Together with what was caught on the reef, the landed tonnage was around 900 tons while 2,500 tons of tinned fish was imported. More than US$ 1 million spent on importing fish to an island surrounded by the sea.
4. A project was prepared for a substantial increase of the village fishery and was forwarded to DANIDA (Danish Aid) through FAO. A total of US$408,000 was approved for financing starting January 1976. During the last two years this project has:

- established a boatyard with 17 workers;
- built more than 100 boats, of 28 ft;
- trained 400 fishermen;
- improved repair facilities for outboard engines;
- established a Fish Market in Apia and a Fish Marketing scheme for Upolu, where 70% of the population lives.

5. The "FAO/DANIDA Village Fisheries Development Project" will terminate in June 1978 but with the boatyard turning out 50-60 boats per year and the finance secured through the Revolving Fund there is not yet any sign of lack of interest from the fishermen.

6. Although conditions certainly vary from one country to another certain features of this project might be of interest:

SELECTING THE RIGHT PACKAGE

7. Analysis of the past performance of village fisheries in Western Samoa revealed a need for proposing a fishing unit that would have advantages from a catching, comfort and safety point of view without being too expensive or complicated to operate.

8. The traditional catamaran, consisting of two dugout canoes bolted together was heavy, with low free board and had a tendency of acting like a submarine in a choppy sea. After experiments with different monohulls and catamarans, two types of fishing units were developed:

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost Jan. 1978 (US$)</th>
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<tbody>
<tr>
<td>28 ft catamaran (Alia)</td>
<td>1,560</td>
</tr>
<tr>
<td>25 hp outboard motor</td>
<td>613</td>
</tr>
<tr>
<td>5 hp spare outboard motor</td>
<td>275</td>
</tr>
<tr>
<td>Complete fishing gear for</td>
<td></td>
</tr>
<tr>
<td>bottom fishing and trolling</td>
<td>225</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>US$ 2,673</strong></td>
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<tbody>
<tr>
<td>28 ft single hull boat</td>
<td>2,375</td>
</tr>
<tr>
<td>20 hp diesel engine</td>
<td>1,500</td>
</tr>
<tr>
<td>Echosounder</td>
<td>375</td>
</tr>
<tr>
<td>Fishing gear as above</td>
<td>225</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>US$ 4,475</strong></td>
</tr>
</tbody>
</table>
9. By the end of 1977 the boatyard had delivered 82 of the catamarans and 10 of the diesel boat. This reflects the general response by the fishermen to the two alternatives. Many Fisheries Officers seem to be rather dogmatic and discard the outboard engine as delicate and unsuitable for use in a village fishery, forgetting that the diesel engine also has some drawbacks. The main problem in Western Samoa is shallow reef passages from the villages to the sea and the need to pull the boat out during rough weather which rules out the diesel engine in most cases. The speed is of importance when trolling for tuna and the diesel boat doing maximum 9 knots versus the catamaran 13 knots is also a loser here. Safety and reliability has been one of the arguments for a diesel engine but with a spare outboard engine always on board, this can also be achieved using outboards. Carrying a spare engine necessitates a place to keep it out of spray and rain and the deckhouse on the catamaran achieves this besides giving the crew a shelter.

10. The village fisheries in Western Samoa is based on a combination of trolling and handlining and the boats above are a compromise to satisfy the conflicting requirements for these two types of fishing methods. If only trolling or only handlining were carried out, a different boat type could probably better satisfy the particular needs.

11. The fishing methods and gear utilised in the village fishery in Western Samoa are described in the Working Paper No. 25 "Outer Reef Fishery in Western Samoa" presented at the SPC Ninth Regional Technical Meeting on Fisheries in 1977. The boats are delivered fully equipped with all required fishing gear, anchors, raincoats, grease and anticorrosion spray for the engines. Often an expensive boat fails due to lack of some inexpensive but unavailable gear. The package approach means that the boat can be taken straight from the Fisheries Division's Headquarters in Apia and out fishing.

BOATBUILDING

12. At the start of the project there were no boat building yards in existence. The establishment of a boatyard became possible with the arrival of the FAO Naval Architect in June 1975. Boats were first built in a shed at the Fisheries Division's Headquarters in Apia utilising local timber both for frames and planking. In spite of covering the bottom with dynel cloth and epoxy resin it became however after a while clear that the local timber had too high shrinkage and swelling to make it suitable for planking. A change was made to pressure-treated marine plywood from Papua New Guinea and no serious leaking problem has been encountered since then. The bottom is still covered with dynel cloth and epoxy resin and as extra protection against the inevitable knocking against coral heads, a sheathing of 19 mm planking is added underneath. In the boatyard much use is made of power tools to cut down the labour cost and a catamaran now takes 280 man hours to complete. The boatyard is now organised into a co-operative called "BOATCRAFT" with 17 members and is fully responsible for the ordering of materials. We believe that the boatyard is best run as an independent business enterprise and not as a part of the Government.

\[\text{\underline{\text{definitely yes.}}}\]
13. In August 1976, the boatyard moved to its new shed at Vaitele near Apia. This 36m x 30m building gives adequate space for constructing four catamarans simultaneously besides giving possibilities for constructing boats up to 45 ft in the future.

14. The boatyard now produces five new boats a month and is also engaged in repairs and other work connected with the project such as the manufacture of more than 50 insulated iceboxes.

15. The main problem in running a boatyard in Western Samoa is the long delivery time for supplies and materials. This makes it necessary to keep a stock worth US$25,000 sufficient for six months operation.

16. All the new boats are now financed from the Revolving Fund and the FAO assistance limited to technical assistance in the operation for the boatyard and in preparation for building a prototype catamaran in aluminium.

17. The boatyard has been able to offer practical training for two boat-builders from Yap, one from Tonga and one from the New Hebrides. One catamaran has been exported to the Cook Islands and we heard about plans of building a larger series of boats in Fiji.

SUPPLY OF ENGINES AND FISHING GEAR

18. As with the boatbuilding, a delivery programme of 60-70 boats per year requires careful selection of each item that is included in the package. In addition, FAO rules require quotation from at least three suppliers before a decision is made. This means long delays in ordering and consequently the need for planning well ahead. Altogether 38 different items, mostly from Japan, are supplied with the boats. Danish Aid has no strings attached which is very different from most Bilateral Donors operating in the Pacific. It means that we are able to supply the fisherman with the cheapest and best equipment available on the world market. A complete list of the fishing gear and equipment is given in the previously mentioned Working Paper No. 25.

SELECTING THE RIGHT FISHERMAN

19. The best boat and equipment are wasted if the man cannot use it or does not have the necessary drive as a fisherman. Experience with a previous aid scheme directed towards creating "Village Fishermen's Associations" had shown that the village as a group is not suited to operating a fishing boat. The responsibility is split between too many people, everybody is there when the fish is landed, but not when the engine needs repair. We therefore insisted on family ownership. In Western Samoa the individual in a village operates, not independently but as a member of a family. However within this family, the responsibilities are clearly defined.
20. Before paying his deposit of US$250 the applicant is screened by a staff member of the Fisheries Division. If he is not well known as a fisherman, he is taken out fishing to see how he behaves. After having deposited the money in the Development Bank, his name is put on the waiting list for a boat. When his boat is ready he is called to the Fisheries Division for training together with his crew.

21. It is not however possible to screen out all unsuitable applicants. There are cases when the man is good in fishing but poor in paying. Therefore it is essential to have a further screening and repossession after the boats are delivered, based on the rate of repayment.

THE HIRE-PURCHASE SCHEME

22. The selection of the right financial assistance is crucial to the development of a project such as this. If the requirements of deposits and guarantor are too severe, the expansion of the fishery will be very slow. Too easy terms will however entice the not so serious fisherman and result in a wastage of expensive capital equipment. In order to strike a balance it was decided to introduce the Hire-Purchase Scheme for the boats with the following criteria:

- A deposit of US$250 (10% of the total value of boats, engine and equipment).
- No guarantor required, the boat being sufficient guarantee.
- Fisheries Division to remain the owner of the boat until fully repaid.
- Monthly repayments to be kept lower than US$125 over 21 months for the catamaran and 36 months for the diesel boat.
- Repossession of the boat will take place when the Buyer is three months behind in payments.
- A rebate of US$400 is given if the catamaran is paid within 10 months.
- No interest is charged.
- No insurance coverage since the cost would be high and the possibilities of fraud ever present. (If a boat is lost the fisherman is not given a new boat but also not asked to pay the outstanding payments which in practice would be impossible.)
23. The Hire-Purchase Scheme has on the whole worked well. There have been ample orders for boats and the repayments generally satisfactory varying between 2 to 12% behind schedule, depending on weather, fishing and major feasts. Total repayments now are US$90,000 of which US$45,000 have been used to construct new boats. The repayments coming in are sufficient to finance 30 new, fully equipped catamarans per year.

24. Repossession of boats is an unpleasant, but necessary part of the scheme. If, after several warnings the Buyer still does not pay up, the boat is repossessed without a final warning. A team from the Fisheries Division headed by a diplomatic Fisheries Officer and bringing their own engine and petrol, takes over the boats and as much equipment as possible and runs the boat back to the Headquarters. Often the Buyer turns up the next day with money, if not, a new group is selected to take over. Second hand boats are fairly popular because there is no waiting time (compared with 4-5 months for a new boat) and the price is lower by the amount paid by the previous Buyer. If the outboard engine is more than one year old, a new engine is added on to the loan. So far 14 out of 100 boats have been repossessed. On the other hand 13 Buyers have paid off their boats within 10 months.

TRAINING OF FISHERMEN

25. The group of usually 3 men coming to take over a new boat is given a 4-7 days practical course in operating the boat and the engine. A Leading Fisherman from the Fisheries Division is in charge of each group. After passing an examination headed by a Fisheries Assistant the group takes the new boat back to their village accompanied by the Leading Fisherman who fishes together with them for one to two weeks mainly with emphasis on bottom handlining at 80-120 fathoms depth which many Samoan fishermen are not familiar with.

26. The training course in Apia is limited to learning some few basic things:

- Rigging of fishing gear
- Tying a hook to a line
- Tying two lines together
- Making terminal tackle for bottom fishing
- Rigging a trolling lure
- Making a fishing anchor

- Rope work
  - Tying a bowline
  - Tying a splicing on a thimble
  - Splicing two ropes together
ENGINE REPAIR

27. Introducing mechanical gadgets without assuring repair facilities and spareparts is worse than doing nothing. The engine dealers in developing countries are interested in selling new engines, but a large sparepart stock is dead capital and a mechanic is an extra drain on the budget. Even though a Fisheries Division should normally have nothing to do with engine repair and spareparts, it becomes a necessity if one wants to avoid seeing a development project bogged down. The rule is of course standardisation of engine to facilitate sparepart supply, but this is easier said than done. In Western Samoa we started off with importing 200 outboard engines of one make. When the manufacturer thought he had the market to himself - up went the price and forced us over to another make of which we have now imported 150. The first manufacturer and several competitors are now fighting to get back into the market by dumping the prices. It looks as if standardization under these circumstances is impossible and that competition is essential to keep the prices down. After having worked with many makes of engines one realizes that they have all their strong and weak points - no engine is vastly superior to the other in spite of the publicity claims. In general the outboard engine with a CD ignition system is a much tougher piece of equipment than many people believe. However they require workshop-attention on an average of once every 3-4 months. The Fisheries Division's workshop in Apia with a mechanic, two assistant mechanics and three casuals keeps the 300 outboard engines in Upolu running as long as spareparts are available and the workshop in Savaii with one mechanic and one casual worker covers the 60 engines there. In the Apia workshop an average of 3-4 engines are repaired per day. The fishermen bring them in with the bus and pay a nominal service charge of US$1.25 plus the cost of the spareparts.
FISH MARKETING

28. The almost quadrupled increase in number of motorized fishing boats over the last three years has meant a much better supply of fresh fish to the villages and to Apia. With good fishing and good weather there is an over-supply with a need for long-term storage. A Fish Market has been established in Apia with a 28 m³ freezer and two flake ice machines of 1 ton/24 hours output. The Fish Market started operating in July 1977 and during the first six months operation handled 34 tons of fish valued at US$40,000. Three times a week, a truck with insulated boxes visits outlying districts, buys fish generally at US$0.83 per kg (US$0.38 per lb) and sells flake ice at US$3.30 per 100 kg (US$1.50 per 100 lb). This scheme has provided village fishermen with US$30,000 in extra cash for fish they might otherwise find difficult to sell. An additional benefit is that consumers in Apia now can buy fresh or frozen local fish at any time.

29. In February 1978, a new step will be taken in the marketing of surplus fish. Nine freezer units each of 5.6 m³ are installed in selected fishing centres and will be operated by independent traders, with the buying and selling price controlled by the Fisheries Division. These freezer units together with a freezer truck are supplied by Japanese Aid. In the initial stages of the Village Fisheries Development Project the major emphasis was on increased production while now more attention has to be paid to the marketing.

FUTURE DEVELOPMENT

30. The rapid expansion of the fishing fleet cannot continue indefinitely. The main constraint will be available demersal fish stock around the Samoa Islands. At present 40-50% of the catch are groupers and snappers while skipjack tuna provides most of the balance. With the large variations in abundance of skipjack tuna from month to month and from year to year, it is important to maintain a stable secondary fishery for demersal fish. It is impossible to predict the total sustainable yield of bottom fish around the Samoa Islands. This can only be done by keeping records of catch per trip and average weight of fish caught over a 4-5 year period during the development of the fishery. With a too rapid expansion of the fleet, the danger lies in over-capitalization in boats before it is realized that the point of overfishing has been reached. With the present large interest in fishing and 65% grants now becoming available through an EEC finance scheme, it is necessary to apply the brakes and aim at a modest increase of 20 new units per year after the fleet has passed 300 boats. The construction of boats will however have to be maintained at around 50 boats per year since most of them replace older craft.