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FIFTEENTH REGIONAL TECHNICAL MEETING ON FISHERIES  
(Noumea, New Caledonia, 1 - 5 August 1983)

COUNTRY STATEMENT - KINGDOM OF TONGA

SUMMARY

The Fisheries Development Programme contained within the Kingdom's Fourth Five Year Development Plan 1980-1985 aims at increasing fish production, in order to lessen dependency on importation of frozen mutton and tinned meat and fish, and establishing a fish export industry. The development expenditure planned for the programme period is some T\$11 million.

The programme is directed towards modernizing/enlarging the traditional small scale fishing industry, in order to exploit surface and bottom fish resources further off-shore, and developing a commercial deepsea tuna fishery.

Extensive aid inputs amounting to some T\$3 million from Japan, Australia, United Nations and Asian Development Bank have provided for inter-alia, Fisheries Development Extension Centres in the 3 main island groups of Tongatapu, Ha'apai and Vava'u. These centres will contain boatbuilding yards, marine engineering shops and ice production and cold storage facilities. Each Centre will provide technical advisory/extension services to meet development requirements and implement exploratory/experimental fishing surveys.

Within the plan it is intended to introduce a new fishing fleet comprising some 60 diesel engine/sail assisted wooden fishing craft in the 6 to 10 metre range. The craft will be provided to local suitably trained fishermen on a Grant/Loan basis and distributed through the main island groups. Credit and Grant inputs have been provided through the United Nations and Japan respectively.

Efforts to develop a National deepsea tuna fishery continue and the performance of the new Government long line vessel M.F.V. "LOFA", which was commissioned early 1982, continues to show a marked improvement on the past performance of previous vessels.

Development proposals also include the establishment of appropriate inter-island fish carrier/market services and the provision of a fishing harbour, with supporting shore facilities in Nuku'alofa, Tongatapu.

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SOUTH PACIFIC COMMISSIONFIFTEENTH REGIONAL TECHNICAL MEETING ON FISHERIES  
(Noumea, New Caledonia 1 - 5 August 1983)COUNTRY STATEMENT - KINGDOM OF TONGA1. ARTISANAL FISHERIES DEVELOPMENT

During the 1980 - 1985 Fourth Development Plan period greater emphasis is being placed on Artisanal Fisheries Development. The prime aim of this development is to introduce 60 or more, locally accepted, sail assisted motor fishing vessels in the 6 - 10 metre class during the period, twenty boats to be based in each of the three main Island groups of Tongatapu, Ha'apai and Vava'u. Complimentary to increasing the size and improving the technical scope of the Artisanal Fishing Fleet steps are being taken, to establish an appropriate fish marketing distribution system for the three main island groups to cater for the increased production. The system is intended to provide ice production and fish/ice cold storage and sales facilities at main centres and selected islands, and also fish collection/ice and supplies delivery vessels. It is essential that such a system should take into account consumer preference and buying power, and be economically favourable to both the primary and secondary sectors of the industry.

Fishing Boat Development and Production

During the past 3 years efforts have been directed towards developing suitable sail assisted/inboard diesel engine powered fishing craft in the 6 to 10 metre size range. These early efforts focussed on producing a variety of single hull semi-displacement "V" bottom craft, based on an original FAO design. Also a trimaran, 2 catamarans, and a round-bilge single hull craft were built and tested.

In general it was found that fishermen showed a preference for single hull craft and more particularly for round bilge craft which are traditionally common. Moreover it is now apparent that any local introduction of sail/engine power combinations should allow for full fishing mobility whatever the wind condition. Consequently the new designs to be introduced during the next few years are of round bilge construction and can be used with or without sail. The degree to which a fishermen utilizes the sailing capacity of his craft is considered a function of his own conviction that to do so is to his advantage. The Fisheries Division extension development services will be used to demonstrate the practical advantages of the use of sails as a complement to engine power.

In spite of the change over from the "V" bottom design boats, which were previously introduced and are still in use by the fishermen, to the new round bilge designs the fishing performance of the former boats during the past 3 years has been quite impressive. The majority of the earlier boats are based in Vava'u where they are employed, in the traditional pole and line/pearl lure skipjack fishery, and for bottom handline fishing. Average monthly catches per boat have ranged from 800 - 1000kgs per month. Given adequate market support, particularly during the skipjack tuna season, future annual catches of 12-15 tonnes per boat is a reasonable expectation. This average could be considerably higher with the introduction of a FAD network and the adoption of fishing techniques for exploiting the deepwater demersal species.

The boatbuilding component of the Artisanal Fisheries Development Programme comprises three project areas namely:-

Japanese Government Grant Aid - Artisanal Fisheries Development

The project will provide the grant element in the form of the engines, equipment and fishing gear for the new generation of artisanal fishing vessels constructed through U.N.C.D.F. Project TON/81/CO1 and F.A.O. Project TON/83/001. The engines, equipment and fishing gear when fitted/supplied to the vessels will constitute the Grant element, fishermen then being required to pay for the basic vessel either directly or through the Tonga Development Bank. Training, services and management back-up will be provided by the Fisheries Division through their centres in Tongatapu, Ha'apai and Vava'u. It is intended to introduce 20 vessels into each of the main island groups.

United Nations Capital Development Fund (U.N.C.D.F.) Project TON/81/CO1 - Artisanal Fisheries Development

The Project will provide;

- 1) Two fully equipped Boatyards including Engineering Repair shops at Ha'apai and Vava'u
- 2) Full construction costs for 40 vessels for Ha'apai and Vava'u
- 3) The cost of imported materials and components for these vessels.

The completed boats to be allocated to selected suitably qualified fishermen under a revolving fund arrangement managed by the Tonga Development Bank.

FAO/UNDP Project TON/83/001 "Fishing Vessel Construction Phase 11"

The project has been instrumental in selecting suitable sail assisted motor fishing vessels in the 6-10 metre range, and has trained a number of locals in Boatyard Management and building techniques. Its immediate objectives are:

- 1) To provide technical support in the execution of U.N.C.D.F. Project TON/81/CO1 in the form of;
  - a) 1 Master Boatbuilder/Team Leader
  - b) 2 Associate Expert Boatbuilders/Yard Managers (Hp & Vv)
  - c) 2 U.N. Volunteers to assist Boatbuilders (TT & Hp)
- 2) To provide continuing technical support to the third Government Boatyard located in Tongatapu, where the additional 20 boats are to be constructed.

The Boatyards on the outer islands are to follow the quasi-commercial procedures adopted by the Tongatapu boatyard since March 1981. From this date no recurrent Government funds have been paid into the Tongatapu Boatyard and all running costs have been covered from income. The Boatyard recurrent vote was thus transformed into a deposit account operating as a revolving fund during the construction of the vessels on behalf of M.A.F.F. The Boatyards as quasi-commercial entities will then request payment for producing the approved vessels. An adjunct to building the fishing craft is the establishment of an improved local boatbuilding industry. Finance for the vessels is to have three components;

- 1) a deposit from the fisherman
- 2) a loan from the Development Bank of Tonga
- 3) grant in kind from Japanese Overseas Aid.

Fishermen who wish to be considered for the scheme will be carefully vetted by a selection process which will consider all aspects of the candidate's past record and future prospects. A training programme is operating at present to enable some suitable candidates to be identified and in some cases to assist in the accumulation of the required deposit.

The first two vessels are now nearing completion at the Tongatapu Boatyard with a third hull nearing completion. Building of the two boatyards at Ha'apai and Vava'u is about to commence and the yards are scheduled for completion by October 1983. The Japanese Grant Aid equipment has been received in Tonga.

The sizes of the three fishing boat designs for introduction to the artisanal fishing fleet are 6.1 metres, 8.5 metres and 10.2 metres. All models are fitted with inboard diesel engines. The 6.1 metre craft is essentially an engine powered boat, which can be fitted with a set of auxilliary sails for some measure of complimentary power source but lacks the capacity to sail close to the wind. The design of the 8.5 metre craft is based on the traditional Tongan whale boat. The hull has been designed to maximize the use of sail and the craft can be fitted with retractable lee-boards to improve sailing capacity further. The design of the 10.2 metre craft has yet to be finalized but it is anticipated that the sailing characteristics will be similar to those of the 6.1 metre boat.

#### Fish Marketing and Distribution System

The tradition in Tonga is for fish to be landed at the most convenient point and sold by the fisherman direct to the consumer. Because of the unsatisfied demand, the fish sells rapidly and consequently in the past there has been little need for more modern organized marketing facilities. However, as the gap narrows between supply and demand there will be a need for an organized marketing distribution system, particularly when periodic short term gluts occur and there are surplus supplies available for export. A further important issue related to the need for such a system is the difference between the regional distribution of the fish resources and the human population. The under exploited fish resources are situated chiefly in the central and northern regions of the Kingdom while most of the people live in the southern Tongatapu Groups. Recognizing this need Tonga Cooperative Federation, in cooperation with the Fisheries Division, have set up a pilot fish marketing distribution system between Vava'u and Tongatapu. This operation is under the supervision of a Fish Marketing Officer attached to the Federation. The fishermen operating the new generation of boats are now regularly selling the major portion of their catches to the Federation, who also supply ice and fishing gear as part of their service. A new ice production/cold storage and marketing complex, provided through the Asian Development Bank is scheduled for completion late August 1983. The new complex will allow for more hygienic handling of the product and cater for the increased production associated with the fishing fleet expansion.

In the Ha'apai Island Group the Tonga Commodities Board have started collecting fish from a number of islands for subsequent sale in Tongatapu. This is a joint exercise with the Fisheries Division and the Division's 23 G.T. pole and line vessel M.F.V. "Takuo" is being used to facilitate this scheme. The possibility of providing additional appropriate facilities on selected islands in the Ha'apai Group, along with a suitably sized collection vessel, is also being considered.

In Tongatapu the fish sales section of the Government Fish and Meat Market is being re-organized and plans are in hand to install two x 2 $\frac{1}{2}$  tonne/day flake ice making machines. These are interim measures pending the scheduled completion of the new Nuku'alofa Fishing Harbour in late 1985. This project provides for more suitable fish handling/cold storage and marketing facilities.

## 2) DEEPSEA TUNA FISHERY DEVELOPMENT

The first years operation of the new Government Longliner M.F.V. "LOFA" commenced on 5 February 1982 and finished on 28 February 1983 when the vessel arrived in Nuku'alofa on completion of Voyage 6. During the 388 day period the vessel spent 268 days at sea, of which 201 were fishing days. Of the 67 non-fishing days 32 days was steaming time and 35 were Sunday rest days. The remaining 120 days, (with the exception of 6 days travel to PagoPago for annual slipping), were spent in port for landing fish, hull and Engineering maintenance, bad weather and public holidays.

MFV "LOFA" caught 311 tonnes, from this catch 177 tonnes of Tunas (i.e. 128 tonnes Albacore, 47 tonnes Yellowfin, 1 tonne Bigeye and 1 tonne Skipjack) was landed at the PAFCO Cannery in Levuka, Fiji. A further 134 tonnes of Miscellaneous Fish Species and Sharks was landed at Nuku'alofa for domestic consumption.

The value of the fish landed in Fiji amounted to T\$300 083 and the value of fish landed in Nuku'alofa was T\$139 111. The total value of landing was T\$439.194. In addition the crew earned a further estimated T\$7 000 from sale of shark-fins at Levuka.

Running expenses amounted to T\$215 300 (i.e. T\$168 907 in Fiji and T\$46 393 in Tonga) Total nett earnings was T\$223 894. In accordance with the Operation Conditions/Employment Contract Terms these earnings were shared 65% Government, T\$145 531 and 35% Crew Bonus, T\$78 363.

In addition to meeting the running expenses for the 7 Voyages an additional T\$63 058 was paid from the Government 65% portion of the earnings to meet the costs of annual insurance, slipping and crew basic salaries. These are considered an owners gross expense liability.

These results indicate that the operation of MFV "LOFA" has been on a marginal profit/break even basis during the trial period. However the depreciation of vessel and fishing gear, return on capital, loss of fishing gear and the cost of major spare replacements has not been taken into account. Similarly, the cost of providing full management, administration and engineering services in Tonga are not accounted for. In this sense the operation of MFV "LOFA" cannot be considered as being truly commercial although it should be realized that valuable research and development has been achieved at no cost to Government.

The principal constraints to achieving an operation which will be more truly commercial appear to be:

- insufficient number of fishing days per annum
- low catch rates of main target species and low annual landings of said species through the excessive number of non-fishing days.
- depressed and restricted markets for the main target species.

In order to improve the future prospects of achieving a viable commercial operation and overcoming some of the constraints the following course of action is being considered:-

- 1) The employment of 2 crews, each manning the vessels on alternate voyages.
- 2) Employ shore labour to unload catches and load provisions.

This course of action is aimed primarily at increasing the annual number of fishing days and consequently annual landings. It is anticipated that the adoption of these changes will increase net profits by 25% after deduction of additional costs. In addition it is hoped to increase catch rates by utilizing the electronic fishing aids more effectively. To this end a longline fishing expert has been provided through the Japanese Government Technical Assistance Programme for a period of 2 years.

A further requirement to improve prospects for a more commercially viable operation is the need for landed prices of Albacore and Yellow-Fin to climb back to early 1982 prices. The estimated loss of nett earnings due to depressed landed prices experience for voyages 4,5 and 6 amounted to some US\$45 000.

In view of the experience gained from the operations of M.F.V. "Lofa" it is considered that a close examination is required to properly identify whether or not a more profitable operation could be achieved by the development of more suitably designed and equipped vessels. Such vessels could be either smaller or larger than M.F.V. "Lofa" depending on whether they are to be used solely within the Kingdom's E.E.Z. or range further afield in those of other countries.

M.F.V. "Lofa" started her second year of fishing operations on 31 March 1983 and by July 28, a period of 119 days, had spent 95 days at sea of which 78 were fishing days. The catch for this period amounts to some 95 tonnes.

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