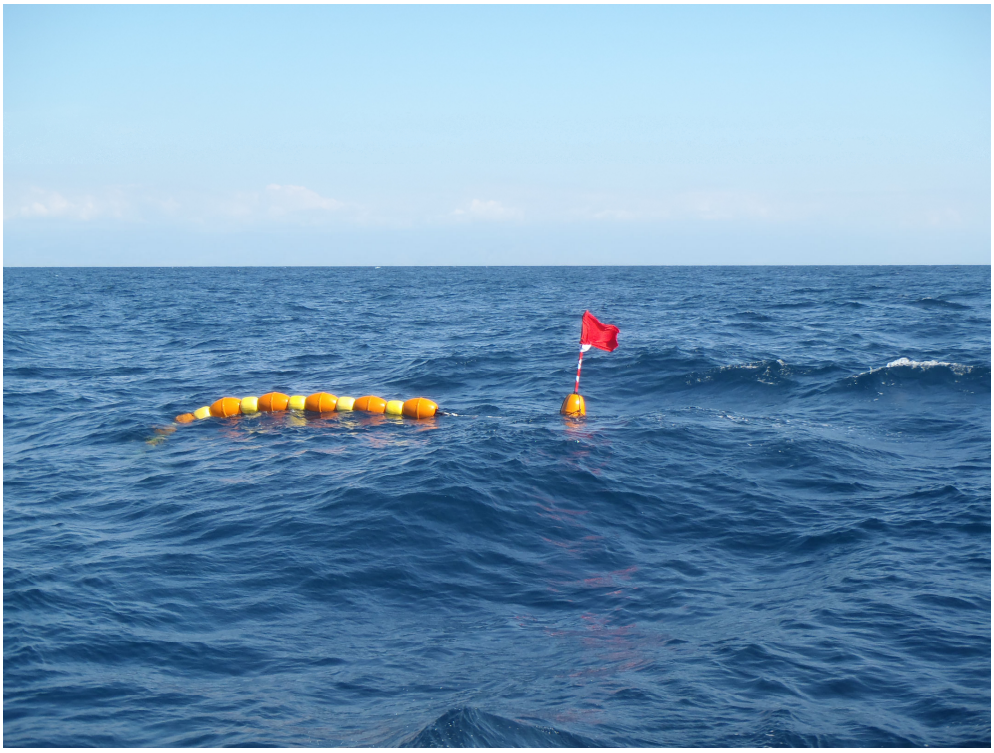
Project Activity Completion Report



Timor Leste artisanal FAD development
Atauro Island

17-29 July 2013

Jonathan Manieva, SPC DevFish2

Steve Beverly, Fisheries Consultant

Contents

1 Background

A. EU-funded DevFish2 Project

DEVFISH2 is a European-funded regional project that encourages sustainable development of tuna fisheries to alleviate poverty, create local jobs and bring other economic benefits to the Pacific–ACP countries and Timor Leste (TL). DEVFISH2 undertakes a range of activities to make it easier for the local fishing industry to grow and profit from the sustainable development of their tuna fisheries.
The project is implemented by the Secretariat of the Pacific Community (SPC) and the Pacific Islands Forum Fisheries Agency (FFA).

Small scale tuna fisheries (SSTF)
One focus area of DEVFISH2 is supporting artisanal tuna fishing operations. Programme activities under this focus area involve working with small-scale fishers associations or cooperatives and providing training and services to artisanal tuna fishers and small scale processors supplying local markets.

These small-scale tuna fisheries development activities include enhancing methods for small-scale artisanal tuna fishing through the wider deployment of near shore fish aggregating devices (FADs) and trialling of alternatives to trolling such as hand line. Project aims to provide technical and operational support to fishing trials and FAD deployment strategies. Activities undertaken in this component will be designed to promote fishing effort transfer and will not result in increased overall catches.

B. Timor Leste National Directorate of Fisheries and Aquaculture (NDFA) priorities

Two broad priorities emphasised by NDFA were the importance of fish for food security and the need for capacity building in the directorate.

Engagement in the fisheries sector
There has been little development assistance in the fisheries sector. Apart from a JICA project providing assistance to artisanal fishers, the FAO Regional Fisheries Livelihoods Program for South and Southeast Asia (RFLP) is the only significant donor input in this sector. RFLP focused on improving the livelihoods of artisanal fishers. It had several components, including co-management, safety at sea, and a micro-credit scheme. The programme has now ceased. It was financed by Spain and the European economic situation affected its funding.

The DevFish2 project team made a scoping mission in June 2012 to Dili and met with officers of NDFA and other relevant partners. During this consultation, possible areas of assistance within the mandates of DevFish2 were discussed.

RFLP also assisted in identifying potential gaps and new areas for possible DevFish2 intervention. A list of possible projects was compiled. The list is attached as Annex F.

From ensuing discussions and feasibility analysis, it was agreed that there was little scope for industrial tuna industry development in Timor Leste. Fisheries are likely to remain predominantly small-scale for the short to medium term.

From the list of possible country priorities, FFA/DevFish2 initiated some input into monitoring, control and surveillance (MCS) areas. SPC/DevFish2 commenced its initial country input by selecting SPC publications and information materials, having them translated into the local language (Tetum) and distributing them to NDFA.

SPC/DevFish2 also prioritised a FAD project as the most relevant input in the initial engagement for the country.

2. Project deliverables

Artisanal nearshore FADs are used to improve catches of fishers who fish primarily to feed their families or sell in small amounts at local markets, as well as fishers who fish as a hobby. They are anchored within range of small motor boats and canoes and they are an important tool for food security and domestic fisheries development. The fishing methods used, such as handline and trolling, select only the species that the fishermen want, and only a small proportion of the fish around the FAD are caught. Inshore FADs also take fishing pressure away from overfished lagoons and reefs.

This DevFish2 project is designed to promote fishing effort transfer and will not result in increased overall catches. Whilst the project promotes artisanal FAD assistance as technology for alternative livelihood for the target local beneficiary communities, it also seeks to build the local capacity of the NDFA and local community in FAD development and management skills.

Other broader cross-cutting objectives this project will achieve and or enhance include:

- food security – increased catch rate and improved access to tuna and other pelagic fish;
- vessel efficiency – increased catch rate and reduced cost of fishing operation;
- climate change adaptation – FADs provide an alternative to community subsistence and artisanal fisheries, so coral reef ecosystems can become more resilient;
- tourism – FADs provide opportunities for sport fishing development; and
- safety at sea – improved through defined fishing zones around FADs and shortened search and rescue efforts when problems occur.

3. Planning, coordination and mobilisation

A. Collaboration partnership

The WorldFish Center is in the process of establishing a project focusing on livelihoods in coastal communities, related to both fisheries and agriculture. One of the strong focuses of this project is reducing reliance on reef resources. Part of this looks at the role FADs can play.

Noting that SPC/DevFish2 have prioritised a FAD project in Timor Leste, it was considered a potentially useful synergy opportunity.

WorldFish has had previous projects in Timor Leste, has strong network links with NDFA and has identified productive/engaged people to work as counterparts. In the initial phase, WorldFish took

the lead in awareness and 'sensitising' NDFA, identified local stakeholders in some of the physical, fishery and social issues involved in FAD programmes, and discussed a coordinated programme. WorldFish also provided bathymetric survey equipment.

The understanding is that, after the completion of this SPC/DevFish2-supported FAD project, the WorldFish project will start their programme and continue with either expansion or complementary input. In this initial phase, WorldFish personnel used the lead-time to engage with communities and design the coordinated programme.

WorldFish has already undertaken some preliminary work in Timor Leste in relation to marine protection area implementation. One of these is Atauro Island, which has a local marine management area (MMA) programme, initially supported by RFLP and a local eco-resort (Barry's Place). This was said to have been well implemented, focussing on traditional governance systems *(tara bandu)* and with potential chances of success. Further, the MMA will be greatly enhanced with an adjacent FAD programme.

Atauro Island
In general, subsistence fisheries are a significant element in food security at the local level and hence it is important that they be correctly managed.

Most fishermen use small, double outrigger canoes (dug-out canoes paddled or with small motors) equipped with gillnets, traps, hooks and lines and spears, fishing within 800 metres of the shore. Shellfish and other sea foods are harvested from the reef flats by women. Beach seines are also used. There is little information about the local marine environmental conditions but the general feeling amongst the locals is that the reef areas are over-fished.

Picture: *Rumpon under construction at Beloi*

According to anecdotal sources from 2005, the only FADs constructed in the waters around the island were two simple artisanal FADs (rumpon) built using bamboo. One was placed at the north-eastern end (Biqueli village) and the other further down the eastern side of the island (Beloi village). The Beloi FAD was a very productive one compared to the one at Biqueli. These two rumpons were destroyed by a storm in 2006.

The DevFish2 team saw a nearly completed rumpon near the village market in Beloi village. The fisherman making it said that he would deploy it at a depth of 160 m using a concrete block anchor. A map and some background information about Atauro Island is in Annex G.

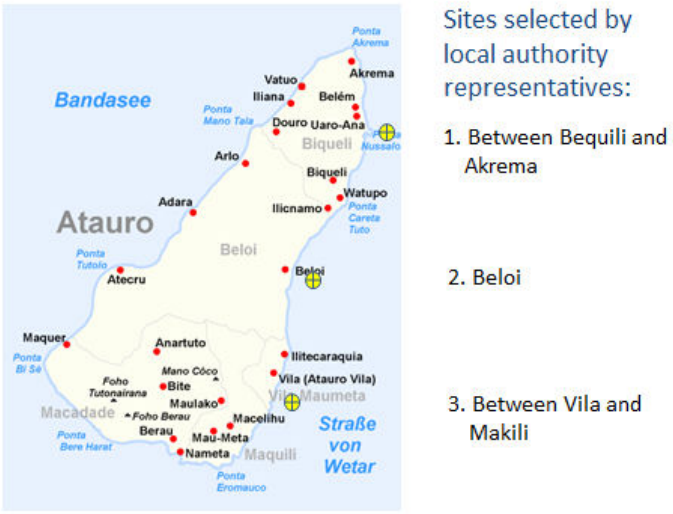
B. Scoping mission– May 2013

Initial planning consultations and preliminary awareness meetings were held in May 2013, organised by representatives of SPC, WorldFish and NDFA staff, both in Dili and on Atauro Island. These meetings laid the foundation for the FAD training and deployment project that took place in July 2013 on Atauro Island. During the planning and consultation meetings, the DevFish2 team:

- met all the interested parties (NDFA, Worldfish, RFLP, Roman Luan – a local NGO group);
- made preliminary presentations on the project to interested parties on Atauro and at NDFA in Dili;
- became familiar with situations on Dili and Atauro with regard to logistics and the workshop venue;
- liaised with commercial enterprises, such as hardware stores and storage facilities;
- consulted with local boat owners to find a suitable transport, survey, and deployment vessel; and
- conducted a preliminary FAD site survey.

Selecting suitable FAD sites

A community consultation with all interested parties present was held in a government building in Vila, Atauro Island, during the initial scoping visit in May. Possible FAD sites were discussed and guidance was provided by local representatives regarding possibilities. Three zones were identified, all on the east coast of Atauro. This was the fishers' wish list and was subject to actual conditions that would be discovered during the training phase of this project.



Picture: *Proposed FAD sites chosen by local authorities during scoping mission*

Number of FADs

It was agreed that there would be three sites to target as noted above. It was decided that materials would be sourced for six FADs units, three surface and three subsurface FADs. The plan was to have three or four units deployed and two or three stored as reserves during the training phase of the project.

Pricing FAD materials

SPC ordered materials from Sea Master in Taiwan. They included ropes, chains, shackles, swivels, buoys, pressure floats, plastic tubing, whipping twine, aggregator material, and some tools. The total cost in Dili was USD 8,119. This was considered cheaper than other regular SPC suppliers. Further, it

seemed sensible to order from Taiwan for a more convenient shipping route. The invoice of items ordered is in Annex B. The anchor materials were bought in Dili.

Budget and funding
The cost of the materials ordered and shipped from Taiwan to Dili was paid by SPC/Nearshore Fisheries Development Section (USD 8,119).
All other costs were paid by DevFish2. These included;

- anchor materials purchased in Dili and other necessary local logistics and costs (USD 7,828);
- FAD contractor (USD 8,000).

WorldFish provided the GPS/echo sounder (USD 890).

SPC often seeks counterpart contribution for in-country assistance from the national fisheries agency or its partners. However, for this project, all costs of the project delivery were met by SPC. No funding contribution came from NDFA.

C. Briefing – NDFA

The project team in the second implementation visit was made up of:

- Steve Beverly (SPC FAD contractor);
- Jonathan Manieva (SPC/DevFish2); and
- David Mills (WorldFish).

The team met with Joni Freitas, Director of the Fisheries Technology Division of NDFA and several of his staff at the NDFA headquarters in Dili. NDFA Director, Ausgusto Fernandes, and other senior officers were engaged in meetings and unavailable for this session. A general outline of the week's work schedule was provided.

Joni confirmed the names of the NDFA staff as local counterparts/trainees. Per diems for these trainees were paid as per request from NDFA.

The team informed Joni that they would debrief NDFA after the FADs were deployed and before the team left Dili.

D. Mobilisation and transportation of materials – Dili to Atauro

Picture : *Loading FAD materials on M/V Atauro on the beach at Dili*

In Dili, the team visited a local hardware store, Victoria Ltd, and bought anchor materials. The hardware shop cut the pipes and rebars into appropriate lengths. However,the rebars were a little too big in size and strength, and after an unsuccessful attempt to bend the rebars in half to fit through the pipes with the appropriate end sticking out, the team brought the rebars to a local workshop and had them bent.

The container of FAD materials (which was stored at a yard) was cleared and all the materials were transported to the loading site (the beach in front of the Maritime Police Unit), where they were loaded onto MV Atauro (Glen Cleland's ex-pole and line boat) and ferried to Atauro.

At Atauro, all the materials were unloaded and taken to Glen Cleland's yard. Glen's yard was a better yard than Roman Luan's yard in Vila. It was the perfect FAD building site, as it was large, had workshop facilities and vehicle access, and was closer to the area for loading the completed FADs back onto the boat for deployment. In addition, Glen provided a truck to transport materials and his staff for unloading, etc.

3. Implementation

A. Community meetings – July 2013

Picture : *Community awareness meeting at Beloi*

Community awareness meetings were held in the villages close to the selected FAD sites: Beloi, Vila and Biqueli. Common social implications usually associated with FAD programmes were discussed with local fishermen. They included:

- ownership of the FADs deployed;
- customary fishing rights to fishing grounds;
- equal access for canoe and motorised crafts and other fishermen from other villages;

- understanding for sports fishing access; and
- community oversight committee.

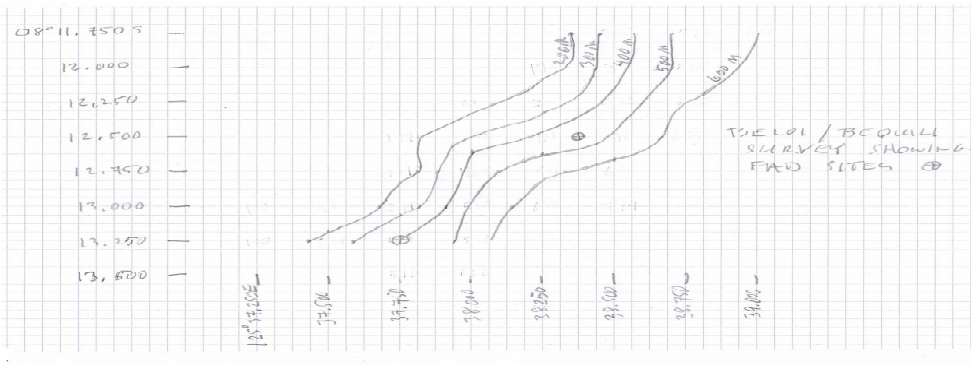
Details of the guiding checklist on the above aspects are shown in Annex D.

To overcome language problems, Roman Luan (a local NGO based in Atauro and partner to WorldFish project) assisted in calling these meetings and helped facilitate the discussions. Two local FAO officers from Dili also assisted in the discussion and clarification of concerns at these meetings. The meetings were chaired by local chiefs.
Prior to these community awareness meetings, the SPC DevFish officer and the FAD contractor had a briefing session with officers of Roman Luan on questions frequently asked about FADs and also any questions they had. The DevFish2 project provided printed copies of the FAD brochure and large FAD posters, which were translated into Tetum, for use in these awareness raising sessions. Examples of the publications are in Annex E.

B. Sites re-surveyed
Glen's boat was used for surveying the sites. A suitable deep-water echo sounder and a GPS were fitted on the boat. The echo sounder had a range of 1000 metres. The transducer for the echo sounder was rigged on a 1.5 metre piece of timber, mounted securely on the side of the boat, and it worked well. The display monitor was mounted onto the boat's dashboard. The FAD contractor provided an additional GPS, also mounted on the boat's dashboard. The operator could then steer using just the GPS while the FAD contractor took position and depth data every 0.25 nm along survey transects. Glen proved to be very adept at steering astraight line transects using just the GPS.

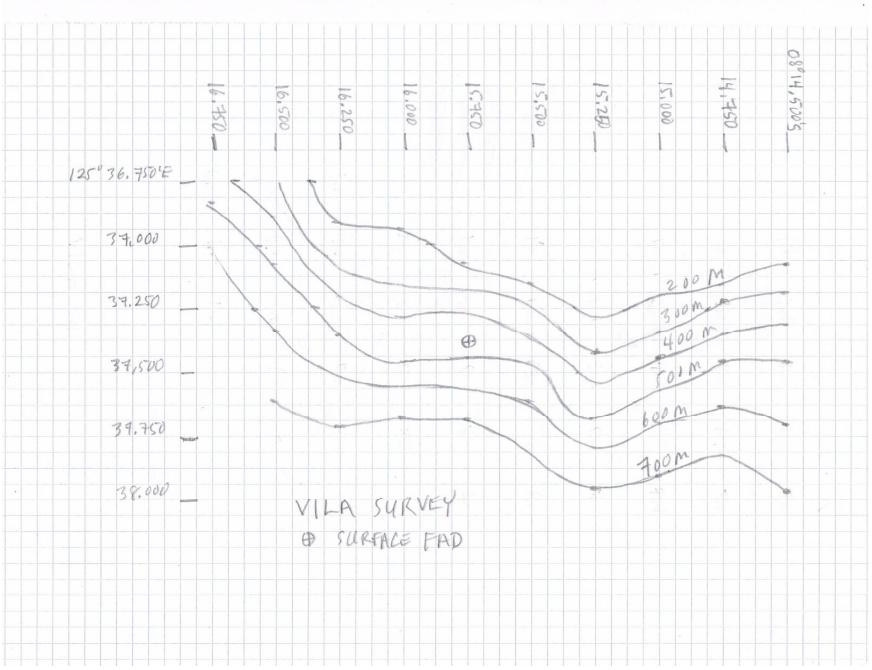
Picture : *Survey transects on GPS plotter*

Two areas on the east coast of the island were surveyed doing transects going west/east from the reef slope until the drop off was reached, and then reversing on the following transect. The first area surveyed was off Beloi village going north toward Bequila village; the second was off Vila village. Areas of approximately 2 nm by 1.5 nm were surveyed in each case, in transects 0.25 nm apart. The photo below shows what the survey tract looked like on the GPS plotter.



Picture : *Beloi/Biqueli survey, depth contours and two FAD sites*

The data showed that the north eastern end of the island was characterised by a narrow fringing reef, dropping off sharply into deep water. There were promising sites between Beloi village and Bequila village, however, with workable slopes and depths of less than 600 m but still within a narrow range. The distance from the shore seemed suitable for small boat fishers – about 1.0 nm. Figure 2 shows the depth contours and the two FAD sites from the Beloi/Biqueli survey. The upper site is the surface FAD, the lower site is the subsurface FAD.



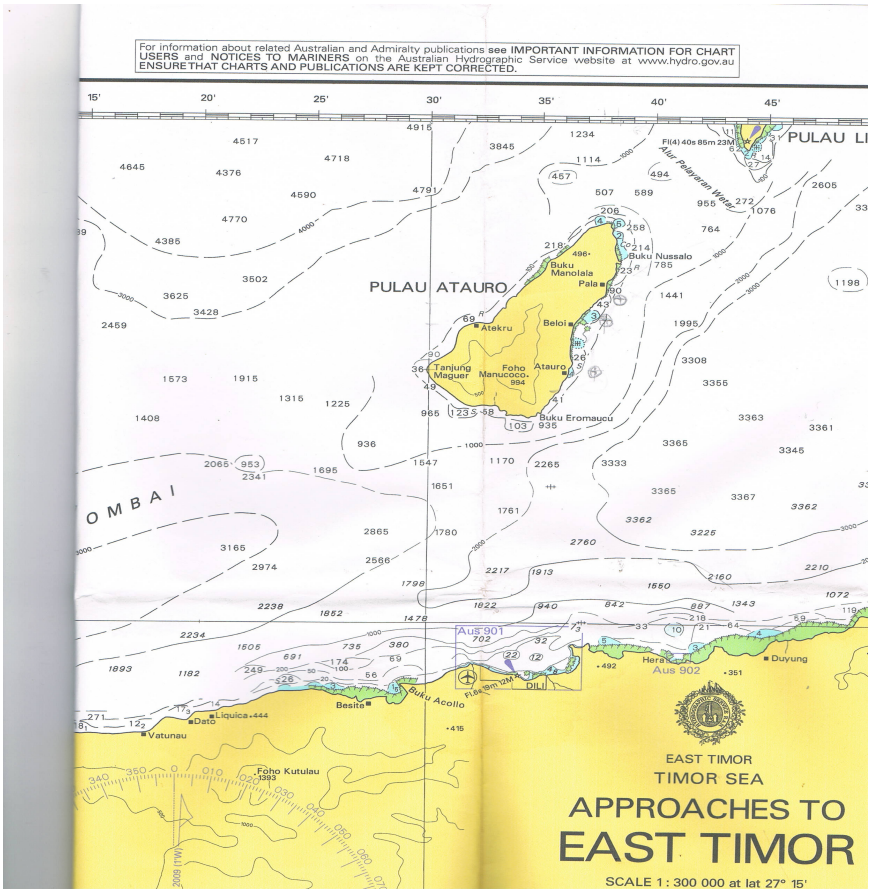
Picture: *Vila survey, depth contours and FAD site*
Note – the figure has been turned sideways to fit the page so north is facing right.}

The survey of the south-eastern side of the island (adjacent to Vila village) indicated that the southern tip has a short reef and a sudden drop off to 800 metres. One promising site adjacent to Vila village was identified. Figure 3 shows the depth contours and the FAD site.

Assessment of the survey data for the whole east coast area revealed a limited number of sites to deploy FADs. Three sites were selected, two for surface FADs and one for a subsurface FAD. The

unused materials were kept as backup materials. The three sites are indicated in Figure 4 by circles with crosses in pencil (and on the surveys above). Going from top to bottom on the chart:

- the first FAD site is a surface FAD off Beloi and Biqueli villages at a depth of 500 m at 08°12.250'S, 125°38.375'E, approximately 0.8 nm from shore. This FAD was deployed on 25 July;
- the second FAD site is a subsurface FAD off Beloi village at a depth of 420 m at 08°13.250'S, 125°37.750, approximately 1.0 nm from shore. This FAD was deployed on 27 July; and
- the third FAD site is a surface FAD off Vila village at a depth of 500 m at 08°15.750'S, 125°37.375'E, approximately 1.0 nm from shore. This FAD was deployed on 26 July.



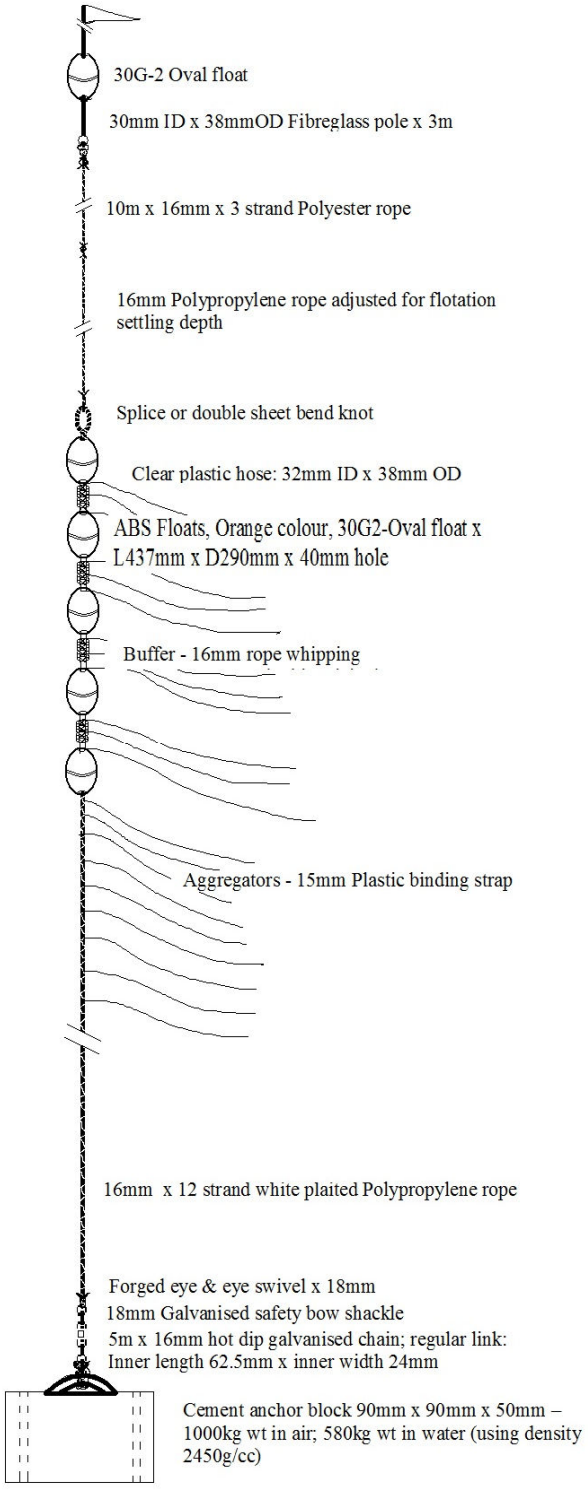
Picture: *Atauro Island chart showing FAD positions-marked X*

C. Gear rigging

Below are SPC generic diagrams of a surface Indian Ocean FAD and a subsurface FAD. Neither are exactly what was deployed in Atauro (notably, grapnel anchors were used in Atauro, not concrete block anchors) but the basics are similar.

Diagram1: Surface Indian Ocean FAD

Diagram 2: Surface Indian Ocean FAD



Grapnel anchors

The grapnel anchors used for the Atauro FADs were constructed with 1.5 m lengths of 4 inch I.D. galvanized pipe with two 12 m lengths of 1 inch rebars bent in half and pushed through the pipe and bent out at the other end to form anchor flukes. Estimated weight was about 100 kg. Below is a finished anchor.

Picture : *a grapnel anchor completed at Glen's yard*

Surface FADs

The surface FADs consisted of alternating hard plastic pressure floats and soft purse-seine floats strung on the upper mooring through a PVC hose for protection against chafing. Below is a surface FAD under construction.

Picture : *Surface FAD under construction*

Subsurface FADs

The subsurface FADs consisted of six hard plastic pressure floats strung on the mooring rope through a PVC hose for protection against chafing. The floats were secured to the mooring using ¼ inch polypropylene whipping between floats. Below is a subsurface float with aggregators attached.

Picture : *Completed subsurface FAD*

The components of the three FADs were as follows:

Surface FAD Beloi/Bequila

- 200 m 24 strand 16 mm braided polyester (upper mooring, sinking portion)
- 400 m 12 strand 16 mm braided polypropylene (lower mooring, floating portion). Total mooring length was 600 m for a site depth of 500 m.
- 10 m 16 mm galvanized chain
- two 16 mm eye-to-jaw swivels
- three 18 mm galvanised safety shackles
- seven hard plastic pressure floats
- six purse-seine floats
- 15 m PVC sheathing
- two grapnel anchors
- plastic strapping aggregator

Surface FAD Vila

- 200 m 24 strand 16 mm braided polyester (upper mooring, sinking portion)
- 400 m 12 strand 16 mm braided polypropylene (lower mooring, floating portion). Total mooring length was 600 m for a site depth of 500 m.
- 10 m 16 mm galvanised chain
- two 16 mm eye-to-jaw swivels
- three 18 mm galvanised safety shackles
- eleven hard plastic pressure floats
- ten purse-seine floats
- 15 m PVC sheathing

- two grapnel anchors
- plastic strapping aggregator
- flag buoy

Subsurface FAD Beloi

- 400 m 12 strand 16 mm polypropylene for a site depth of 420 m
- 5 m 16 mm galvanised chain
- one eye-to-jaw 16 mm swivel
- three 18 mm galvanised safety shackles
- two grapnel anchors
- plastic strapping aggregator
- 60 m 12 strand 16 mm polypropylene marker buoy line
- marker flag buoy

D. Deployment

All three deployments were float first, anchor last and the moorings were paid out using the straight line method heading into the sea. The deployments went smoothly, especially considering it was the first time for everyone except the FAD contractor.

There were, however, problems with all three FADs soon after deployment. Strong tidal currents (associated with the full moon) pulled the Beloi/Biqueli FAD under soon after it settled – see photo sequence. It did not reappear until the following day.

Picture : *Beloi/Biquili surface FAD ten minutes after deployment*

Picture : *Beloi/Biqueli surface FAD twenty minutes after deployment – only one buoy visible*

The coordinates and information about these FADs were communicated to the regular water taxis that ferry between Dili and Atauro and also sent to the habour master in Dili. The local representatives updated other local boats of the locations.

E. Monitoring and maintenance of the deployed FADs

Backup FAD materials
It was considered that the most practical location to hold the spare FAD materials is at Glen Cleland's workshop. He was glad to assist in this. A list of material left at Glen's place is in Annex C.

FAD monitoring
The need for a FAD monitoring programme was stressed to the local contacts, Glen Cleland, and the local NDFA officers. There was a general understanding that Glen, who has the capacity of fishing these FADs, would work closely with the local NDFA officers and regularly monitor their status.

Glen will also regularly check the status of the deployed FADs and assist in their maintenance as and when required. Besides Glen Cleland having a suitable FAD survey/deployment boat, he is capable of replacing FADs when needed.

Local fisheries officers were advised to work with Glen when maintenance is required and WorldFish will work with Glen for additional and follow up FAD work when their project comes on line.

The Director of the Fisheries Technology Division, NDFA, is advised by way of this report of this arrangement (noting that the debriefing meeting did not eventuate as planned).

Subsequent follow-up actions
The WorldFish project, when operational, will focus on information collection including catch and marketing data for the small scale community fisheries. Simple templates of logbook systems (from RFPL or SPC) can be looked at. The WorldFish project will be undertaking a survey of fish landings and building a registry for a fishers' database.

FAD catches can be incorporated so the economic performance (cost-benefit analysis) can be assessed. Also socio-economic studies of the community to assess impact will be explored.

A shipment of FAD brochures and posters, translated into Tetum, have been shipped to NDFA and these should be useful for future awareness-rasing about artisanal FAD programmes.

Further, SPC/DevFish2 is undertaking the translation of the SPC FAD Manual into Tetum. When completed, this will be printed and sent to NDFA as value-added back-up resource material for their use.

F. Training of locals

NDFA counterparts
The Fisheries Directorate nominated four staff (extension officers) to be attached to the Atauro project. Two were from headquarters in Dili and the other two were local fisheries officers from the island. Dili extension officers were Joao (John) Pereira and Patricio Dos Remedios. Atauro extension officers were Elias Morato and Jose Gereiro.

Generally, the team was pleased with the working attitude and interest shown by the NDFA extension officers and consider that they are now fully capable of rigging and deploying FADs. If this eventuates, then Patricio should be their team leader. What they lack is training in basic navigation and use of marine electronics for FAD surveys.

The team recommends Glen Cleland as very capable and could be used as a resource person in future work with FADs in Atauro or around Dili.

In general, local counterpart training (one of the objectives of this project) was very successful. Glen, if equipped with the proper electronics, is capable of FAD site survey work and is capable of conducting FAD deployments, and the NDFA extension officers are capable of FAD rigging and deployment.

G. Project total cost summary-SPC/DevFish2

Cost Item	**Amount (USD)**	**Funder**
FAD Materials & Shipment-Taiwan	8,119	SPC/NDFS
FAD Materials & Local costs	7,828	SPC/DevFish2
FAD contractor	8,400	SPC/DevFish2
Survey Equipment	(890)	WorldFish
Travel Cost-Scoping (Steve B) May 2013	5,922	SPC/DevFish2
Travel Cost-Implementation (Steve B & Jonathan M) July 2013	11,844	SPC/DevFish2
Total	**42, 113**	

4. Concluding remarks

A. Debriefing – NDFA

Unfortunately, the planned debriefing meeting with NDFA did not eventuate as officers were busy and unavailable. However, an email summary as an update was sent to Joni Freitas (Director, Fisheries Technology Division, NDFA) before the team's departure.

This project completion report will be translated and provided to NDFA for their records and future reference.

Generally, the team is pleased with how the project went and consider it successfully implemented.

B. Challenges

Language /Communication barrier
While a few staff spoke fluent English, most senior officials are more comfortable speaking Portuguese. Many also speak Bahasa Indonesian. Tetum, however, is the most widely spoken indigenous language.

For SPC/DevFish2, initially the RFLP was a reliable point of contact to initiate contact and communication with NDFA (in view of language difficulties and unreliability of email/IT connection) but RFLP is now finished. Enrique Alonso was contracted for a short time to be a liaison person, which greatly facilitated implementation of the project.

The team used capable persons as much as possible. Mario Ramos was of great assistance in translating during the technical construction and deployment activities, and so were Barry Hinton, officers of Roman Luan, and FAO staff during the community awareness meetings.

The FAD contractor led the surveys, rigging and deployments and had some grasp of Bahasa Indonesian to help him in communicating instructions and explanations on this aspect of the project to the assigned counterparts, the NDFA extension officers.

C. Potential areas for future DevFish2 assistance

Options for future collaboration with the WorldFish project include:

- a FAD-associated fishing techniques workshop; and
- small-scale processing to supply local markets, including sanitary requirements, i.e. small fishing operation (SFO) training.

D. Future potential contact point/collaboration

When WorldFish project comes on line, they would make a suitable point of contact to replace RFLP in this regards. WorldFish project will establish a desk within the NDFA.

5. Further information

For further Information on this project please contact:
Jonathan Manieva, SPC/DevFish2 project, JonathanM@spc.int

ANNEXURE LISTS

A. CONTACT LIST

B. FAD MATERIAL INVOICE/ ITEM LIST

C. LIST OF REMAINING MATERIAL IN ATAURO

D. CHECKLIST-SOCIAL IMPLICATIONS

E. EXAMPLE OF FAD PUBLICATIONS USED DURING COMMUNITY AWARENESS

F. DEVFISH2-LIST OF POSSIBLE PROJECT ACTIVITIES IN TIMOR LESTE –June 2012

G. MAP-TIMOR LESTE /ATAURO Is

H. PHOTOS RECORDS

Annex A: Contact list

Name	Organisation	Contact address
Steve Beverly	Free Lance Fisheries Consultant (FAD Constructor)	Ph: (687) 877966 Email: stevebeverly@hotmail.fr
Dave Mills	WorldFish	Email: D.Mills@CGIAR.ORG
Enrique Alonso	Ex RFLP (now FAO consultant based in TL)	Email: quiquealonso@gmail.com
Pedro Rodrigues	RFLP	
Mario da Costa Pereira	RFLP	
Augusto Fernandes	Director , NDFA	
Alberto Viegas	SPC/ ACP contact, NDFA	
Joni Freitas	NDFA , Director Technology Development and Extension	Email: freitasjoni09@gmail.com
Patricio Dos Remedios. .	NDFA Trainee	
Joao (John) Pereira	NDFA Trainee	
Elias Morato	NDFA Trainee Atauro extension officer	
Jose Gereiro.	NDFA Trainee Atauro extension officer	
Fernando Avelino, Roman Luan	Roman Luan (Atauro-based NGO)	
Marcelo Soares, Roman Luan	Roman Luan (Atauro-based NGO)	
Robert Crean,	compass Charters	
Glen Cleland	Atauro villas, (boat charter)	Email: ataurovillas@hotmail.com
Ruy Miguel Lopes,	EDS Construction, General Manager	
William Belo Sing,	Victory de Timor (hardware)	
Sukiono,	Victoria Ltd (hardware)	
Barry Hinton	Owner- Barry's Place Resort Boat charter	Ph: + 670 723 6084
Inacio da Silva Fonseca aka'Nico"	Translator for publictaions	Ph: (670) 77259016 Email: nico_live_it_up@yahoo.com

Annex B: FAD material invoice/ item list

SEA MASTER BRAND

P.O. BOX 36-68,
21F-7, NO.2, CHUNGSHAN 2nd ROAD,
KAOHSIUNG 806, TAIWAN, R.O.C.
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FAX: 886-7-5367966

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WEBSITE: http://www.seamaster.com.tw
E-MAIL: fishgear@ms5.hinet.net

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電話:(07)5 3 7 0 5 6 7
5 3 7 0 5 1 2
傳真:(07)5 3 6 7 9 6 6

PROFORMA INVOICE NO.SM-130321-R

TO MESSRS. FISHERIES DEVELOPMENT OFFICER
SPC- SECRETARIAT OF THE PACIFIC COMMUNITY
B.P. D5-98848 NOUMEA CEDEX - NEW CALEDONIA
TEL:687-26.20.00 FAX:687-26.38.18
ATTN: MR. MICHEL BLANC

DATE:APR. 8, 2013.

VALIDITY: APR. 10, 2013.
SHIPMENT: FROM KAOHSIUNG.
DELIVERY: WITHIN 30 DAYS AFTER RECEIVING YOUR PAYMENT.
PAYMENT: BY T/T WITH ORDERR.
PACKING: EXOPRT STANDARD PACKING.

DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
COMMERCIAL FISHING GEARS		**F.O.B. KAOHSIUNG**	
****SUBSURFACE FAD X 3****			
1) ABS FLOATS, ORANGE COLOR.			
#30G-2(L:437mm x 290mm dia. x 40mm hole)	18 PCS	US$ 15.45	US$ 278.10
2) FORGED EYE SWIVEL, (EYE & JAW)#G-403			
SIZE: 18MM	6 "	15.85	95.10
3) POLYPROPYLENE PLAITED ROPE			
12 STRAND, WHITE COLOR.			
#16MM x 200MTRS/COIL,	9 COILS	116.95	1,052.55
4) CLEAR PLASTIC HOSE			
32MM INSIDE DIA. x 38MM OUTSIDE DIA. x 100MTRS/COIL	1 COIL	143.20	143.20
5) GALVANIZE SHACKLE, #G2130			
SIZE: 18MM	6 PCS	4.25	25.50
6) HOT DIP GALV. CHAIN, REGULAR LINK			
#16MM x 5MTRS/PC	3 "	94.00	282.00
7) BLUE PLASTIC BINDING STRAP			
#15MM x 10KGS/COIL(1000M)	1 COIL	23.50	23.50
8) WAXED WHIPPING TWINE			
#210D/24(1MM) x 1KG/SPOOL, BLACK	1 SPOOL	8.50	8.50
9) FIBERGLASS POLES FOR FLAG MARKERS			
#28MM INNER DIA. x 32MM OUTER DIA. x 1.85MTRS/PC	6 PCS	4.50	27.00
10) POLYPROPYLENE MUSSELL ROPE - 3 STRANDS			
#8MM x 200MTRS/COIL, BLACK COLOR	1 COIL	25.60	25.60
11) MAGIRI KNIFE AND LEATHER CASE			
#E552 KNIFE + E562-2 CASE/SET	2 SETS	15.50	31.00
12) S.S. MONO SCISSORS, #S168(190MM)	2 PCS	16.50	33.00
13) POLYESTER ROPE - BLACK & TARRED.			
4MM x 250MTRS/COIL, @4.0KG/COIL	1 COIL	29.00	29.00
14) S.S. SWEDISH FID SPIKES, #300MM	4 PCS	17.80	71.20
****SURFACE FAD X 3****			
1) ABS FLOATS, ORANGE COLOR.			
#30G-2(L:437mm x 290mm dia. x 40mm hole)	21 PCS	15.45	324.45
2) EVA FLOAT, YELLOW COLOR			
#BL-18 (L:255mm x 225mm dia. x 45mm hole), 9kg buoyancy	18 "	15.35	276.30

----- TO BE CONTINUED -----

William Sokimi 09/04/2013

SEA MASTER BRAND

P.O. BOX 36-68,
21F-7, NO.2, CHUNGSHAN 2nd ROAD,
KAOHSIUNG 806, TAIWAN R.O.C.
TEL: 886-7-5370567
FAX: 886-7-5367966

世駿企業有限公司
SEA MASTER ENTERPRISE CO., LTD.
WEBSITE: http://www.seamaster.com.tw
E-MAIL: fishgear@ms5.hinet.net

高雄市郵政信箱 36 - 68號
高雄市前鎮區中山二路2號21F-7
電話:(07)5 3 7 0 5 6 7
5 3 7 0 5 1 2
傳真:(07)5 3 6 7 9 6 6

DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
----- CONTINUED -----			
3) POLYESTER BRAIDED ROPE - N. WHITE COLOR.			
24 STRAND, N. WHITE COLOR.			
#16MM x 200MTRS/COIL, @42KGS/COIL	3 COILS	US$ 190.00	US$ 570.00
4) POLYPROPYLENE PLAITED ROPE			
12 STRAND, WHITE COLOR.			
#16MM x 200MTRS/COIL,	9 "	116.95	1,052.55
5) FORGED EYE SWIVEL, (EYE & JAW)#G-403			
SIZE: 18MM	6 PCS	15.85	95.10
6) GALVANIZE SHACKLE, #G2130			
SIZE: 18MM	6 "	4.25	25.50
7) HOT DIP GALV. CHAIN, REGULAR LINK			
#16MM x 10MTRS/PC	3 "	172.50	517.50
8) BLUE PLASTIC BINDING STRAP			
#15MM x 10KGS/COIL(1000M)	1 COIL	23.50	23.50
9) WAXED WHIPPING TWINE			
#210D/24(1MM) x 1KG/SPOOL, BLACK	1 SPOOL	8.50	8.50
10) FIBERGLASS POLES FOR FLAG MARKERS			
#28MM INNER DIA. x 32MM OUTER DIA. x 1.85MTRS/PC	6 PCS	4.50	27.00
11) POLYPROPYLENE MUSSELL ROPE - 3 STRANDS			
#8MM x 200MTRS/COIL, BLACK COLOR	1 COIL	25.60	25.60
12) POLYESTER ROPE - BLACK & TARRED.			
4MM x 250MTRS/COIL, @4.0KG/COIL	1 "	29.00	29.00
13) ABS FLOATS, ORANGE COLOR.			
#5M-12(150MM DIA. x 11MM HOLE)	6 PCS	3.18	19.08
TOTAL:	105 PCS, 28 COILS, 2 SPOOLS & 2 SETS		US$ 5,119.33
ADD: SEA FREIGHT CHARGE FROM KAOHSIUNG TO DILI.....			3,000.00
GRAND TOTAL: C.& F. DILI VIA SEA FREIGHT SHIPMENT.			US$ 8,119.33

REMARK:
OUR BANK NAME AND ACCOUNT NUMBER DETAILS ARE AS FOLLOWS:
ACCOUNT OF BENEFICIARY'S BANK: AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED,
TAIPEI BRANCH.(SWIFT:ANZB TWTP)
CORRESPONDENT BANK: JP MORGAN CHASE BANK, NEW YORK, UNITED STATES .
(SWIFT: CHASUS33)
ACCOUNT NO.:000002183889
ACCOUNT NAME: SEA MASTER ENTERPRISE CO., LTD.

SEA MASTER ENTERPRISE CO., LTD.

William Sokimi 09/04/2013

S.F.HSU PRESIDENT

Annex C: List of remaining material in Atauro

An inventory of materials on hand at Glen's workshop {*List, plus associated comments relating to the original material order list*}

1. One subsurface FAD mooring - 400 m polypropylene and floats plus 60 m line for marker buoy
2. One surface FAD mooring - 400 m poly pro and 140 m 24 strand polyester, no floats
3. Three flag buoys - need sinkers and flags
4. Seven 200 m coils of 12 strand polypro
5. Approximately 80 m piece of 12 strand polypro
6. One 60 m piece of 24 strand polyester (why the surface FAD mooring above is short - the 200 m coil of line came in two pieces. I have never seen that from SPC's other suppliers)
7. Eight ABS hard plastic oval floats
8. Six eye-to-jaw 16 mm swivels (these should be replaced with eye to eye swivels)
9. Three galvanised 16 mm safety shackles (three were need for each FAD so we used 9 of 12 ordered for three FADs - this was a mistake on our part)
10. One 10 m 16 mm galv chain
11. Two 5 m 16 mm galv chain
12. Material for six grapnel anchors (two hours fabrication time needed)
13. One coil of 4 mm green three-strand polypro rope (Sea Master invoice erroneously calls this black tarred polyester)
14. One coil of 8 mm black three-strand polypro (Sea Master erroneously calls this mussel rope)
15. Two spools of very thin whipping twine (Sea Master invoice erroneously calls this 1 mm waxed twine)
16. Three steel marlin spikes - I took one to show William and Michel (Sea Master invoice erroneously calls these Swedish fids)
17. Two pairs mono scissors
18. Two knives of dubious quality
19. A small amount of strapping material for aggregator (one FAD)
20. Three fiberglass poles for flag buoys
21. Approximately 50 m of clear plastic hose for sheathing

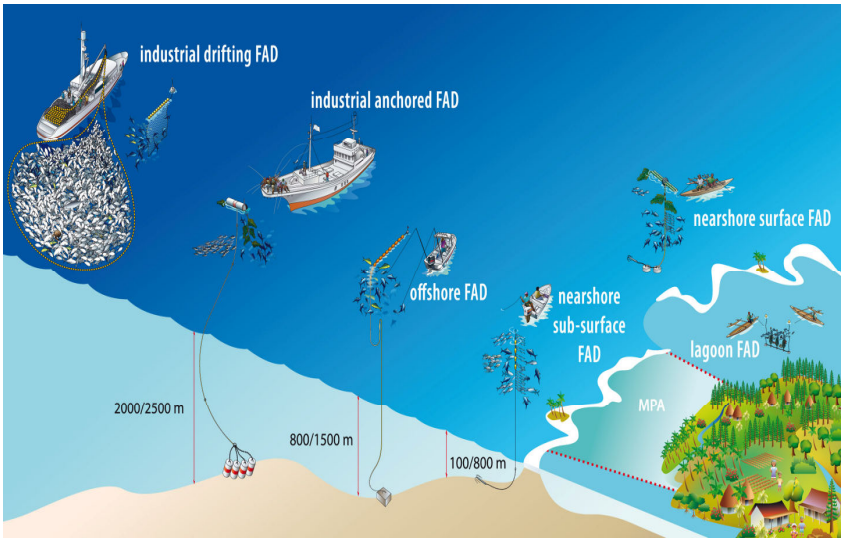
Annex D. Checklist – social implications

Discussion of social implications with local partners involved in the community awareness meetings

Issue	Social implications or concerns
Deploying FADs offshore (more than 1 km off the coast)	• Canoe fishermen cannot fish offshore FADs as they are too far out to paddle to — safety issues. • Canoe fishermen feel the FADs are stopping the fish from coming closer to the reef where they can catch them — causing conflict. • Canoe fishermen are jealous of the catches taken by boat fishermen from the offshore FADs.
Deploying FADs inshore (within 1 km of the coast)	• Both canoe and boat fishermen can fish these, although boats generally troll and canoes generally fish mid-water — potential for conflict. • Boats make waves when trolling which make it uncomfortable for canoe fishermen, plus they feel the boats scare the fish away — potential for conflict. • Canoe fishermen have traditional 'tuna holes' they fish — should the FAD be placed in these areas or well away from them? • Concerns by villagers that FADs are attracting fish from the reef which affects people fishing on the reef. • Concerns by villagers if a FAD is deployed close to one village and not to others — causes jealousy. • Concerns by villagers that FADs attract sharks that will come close to the reef.
Deploying both inshore and offshore FADs	• FADs for both canoe and boat fishermen — however, boat fishermen can still fish inshore FADs while canoe fishermen cannot fish the offshore ones — causes jealousy. • Fish caught on offshore FADs (boats) and not inshore ones (canoes), with canoe fishermen not able to get to offshore FADs to catch fish — causes jealousy.
Customary fishing rights	• Is there any traditional management system in place? If so, does it cover fishing grounds or locations outside the reef? Will there be conflict if a FAD is deployed in such an area?
Ownership and vandalism	• Some fishermen feel the FADs are theirs, even though they have not paid for them, and do not like others fishing around them. • Fishermen may vandalise FADs and cut them free to stop others from fishing around them. • Potential conflict between subsistence, artisanal, commercial and recreational fishermen, especially on weekends when FADs may become crowded.

Annex E: Examples of FAD materials used during community awareness

(i) Poster – FADs in the Pacific (The text is translated into Tetum)



(ii) FAD brochure – only the cover page is shown here.

{*Complete brochure can be obtained from SPC/DevFish2 webpage* http://www.spc.int/fame/images/stories/fame/images_devfish2/06.2013/web_fao_fadsbrochureintetun.pdf }

Nota ba Konsulta nian

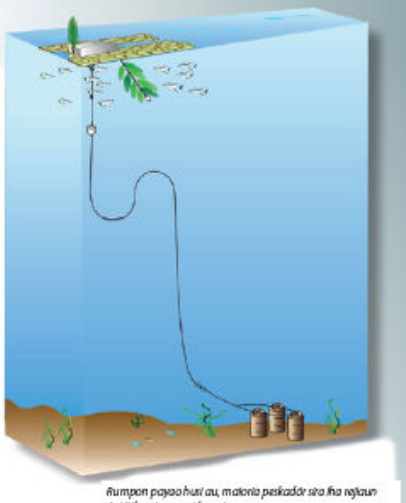
Ekipamentu Ankor atu Halibur Ikan (FADS) ba peska artezenál

Nota konsulta ida ne'e hakerek ho intensaun atu prepara orientasaun ba jestór peskadór no peskadór sira kona-ba importansia halo planu ne'ebé propriu liu no implementasaun artezanál Ekipamentu Halibur Ikan (FADS) ne'ebé programa ne'e uza ankor FADs hodi sustenta ka buka moris, no seguransa alimentár.

Saida mak FADs?

FADs mak ankor ne'ebé namlele ka rede ne'ebé atrai (dada) no halibur ikan, nune'e fasil liu atu hetan no fasil atu kaer. Peskadór sira kleur ona hatene katak ikan halibur malu hodi la'o haleu objeitu naturál ne'ebé namlele hela hanesan ai ka ikan valeia ne'ebé mate ona, no ho efeitu ikan ne'ebé halibur malu peskadór sira bele halo exploitasaun. FADs la aumenta abundanse ikan, maibé redistribui de'it ikan sira iha área ida ne'ebé klik. Ida ne'e mós sai hanesan nota importante ida katak FADs ne'ebé namlele no ankor FAD iha diferensia ultuan iha nia utilizasaun, impaktu no hamosu preokupasaun ba nia jestaun.

Ba dadaun ne'e FODs rihun-resin mak uza ona iha mundu tomak ba industria handline, cerco, pólo no peska linia. Ankor FADs iha nia modellu báziku tolu – bóia spar no FAD Oseanu Índiku, hanesan mós artezanál FODs ne'ebé jeralmente iha ona, ne'ebé halo husi materiál lokál hanesan aú no nú nia tahan.



Rumpon payao husi au, malonia peskadór sira iha rejiaun Asiatiku nian uza ida-ne'e

Annex F: DevFish2 – list of possible project activities in Timor Leste

Possible DevFish II project activities in Timor Leste

1. **Timor Leste and Pacific Island Forum Fisheries Agency Cooperation:** Given the significant areas of commonality between Timor Leste and FFA member countries, particularly in respect of Fisheries MCS, it was suggested that the parties should explore the option of having Timor Leste supported as a permanent observer at key FFA meetings, such as the MCS Working Group. It was also suggested that this could potentially extend to having Timor Leste participate in FFA regional MCS operations and also having operations cover Timor Leste waters. These matters are to be discussed with FFA Directorate.

2. **Cooperation with Timor Leste NPOA IUU:** ANCORS has been contracted to assist in the development of a national NPOA IUU. It was suggested that this process could be enhanced through the provision of technical assistance from DevFish. Subsequent to the meetings in Timor, ANCORS was contracted and it was agreed that DevFish could be included in the NPOA study. It was also noted that the NPOA would provide a more detailed framework for identifying and prioritising MCS needs, such as the MCS interagency coordination unit framework and observer training.

3. **Assistance to ACP Fish 2 Fisheries Strategic Plan:** The EU-funded ACP Fish 2 project is planning to provide technical assistance to Timor Leste in the development of a fisheries strategic plan. It was suggested that DevFish could provide additional technical input into the strategic planning process and it was agreed that this matter should be discussed with the ACP Fish 2 Secretariat.

4. **IUU and the south coast strategy:** It was noted that Timor Leste has a significant IUU challenge on the south coast and does not currently have the capacity to conduct operations. It was noted that the development of a strategy to enable effective monitoring and deterrence was required. While this is likely to be developed as an outcome of the NPOA, it was suggested that Timor Leste participation in FFA regional operations (as suggested above) would be a good capacity building opportunity. It was further noted that the possibility of having FFA regional operations cover areas of Timor Leste waters should be explored.

5. **Quantification of IUU levels:** It was noted that, as part of a south coast strategy, it would be useful to attempt a coordinated action to quantify IUU levels.

6. **Legislative review:** It was noted that, while Timor Leste had adopted fisheries law, there would be benefit in conducting a review of such to take account of international obligations, such as the FAO Port State Agreement, and input to policy brief to higher level.

7. **Tuna management plan draft:** A tuna management plan for Timor Leste was drafted in 2004 but has not been formally adopted. There is potential to revise this plan to take account of the changed international and regional environment of the past eight years and then propose the plan for formal adoption.

8. **Economics of development options:** As a part of the review of the tuna management plan, there is an opportunity to undertake an analysis of the economics of development options for Timor Leste tuna fisheries.

9. **Institutional strengthening project planning:** With the increase in staffing within the National Directorate of Fisheries and Aquaculture and the recent completion of a human resource development plan, there appears to be an opportunity for the development of a plan for an overall fisheries institutional strengthening project. It may be that DevFish can provide technical assistance to the Directorate to support the ISP design phase and assist in the identification of possible funding support for the wider ISP project.

10. **Inshore (and offshore) FADs (fish aggregating devices), FAD fishing and safety:** SPC has a number of existing safety promotion campaigns, posters and publishing material. This could be translated into Tetum with co-branding and be relatively easily provided to Timor Leste. This includes a stick-on safety checklist and immediate actions to ensure safety at sea. A FAD programme could include: a standardised design for FADs to help with the purchase of bulk/appropriate material, train-the-trainer programmes in the community, site selection, and the best techniques for fishing optimally around FADs. Inshore FADs have the potential to overcome food security issues in terms of ease of access for local fishermen. These activities could be supported under the SPC-managed small scale fisheries DevFish activity area.

11. **Food safety competent authority:** While the development of an EU competent authority had been identified as a potential activity area, it was agreed that this would best be addressed as a downstream outcome of the fisheries strategy. It was noted that, as a first step, adoption of USFDA HACCP standards and associated training could be considered. This could be initiated via an initial HACCP training for Fisheries staff.

12. **Follow on from FAO project activities:** The FAO project will finish in mid-2013 and there may be opportunities to provide some ongoing assistance, e.g. in relation to the SPOT tracking and reporting system being utilised in the artisanal fishery.

13. **Assistance to Maritime Police operations:** The Maritime Police have a fleet of 11 inshore patrol vessels. This includes two larger vessels recently acquired from the Navy. The Maritime Police currently have 53 officers but there has been very limited exposure to vessel maintenance. The Police have a very close working relationship with the Fisheries MCS division, both in patrols and in SAR operations. The Superintendant of the Maritime Police requested assistance to establish a small operational workshop and to conduct training in vessel maintenance. It was agreed that maintaining the operational performance of their vessels was an important priority and that establishing the workshop would be a very important step in moving forward.

Annex G: MAP – Timor Leste /Atauro Island

Atauro Island is 22 nautical miles north of Dili. It is 25 km long with a mountainous spine and narrow coastal plains. The population is 10,000, mostly fishermen and farmers. Five districts spread over the island. The main centres (villages) are Maquili, Vil, Beloi and Biqueli along the east coast.
Fishing is essentially for subsistence, using the reef at low tide, canoes or stone traps.

In general, subsistence fishery is an important element in food security at the local level and must be correctly managed. The inshore fishing sector is focused on providing fresh fish (there is some drying and salting of fish appearing in the weekly local market in Beloi) with some opportunities for shipping fish to Dili on the weekly ferry.

Most fishermen use small boats (dug-out canoes, some motorised) equipped with gillnets, traps, hooks and lines and dive spears, fishing within 800 metres of the shore. Shellfish and other sea foods are harvested from the reef flats by women. Beach seines are also used. There is little information about the local marine environmental conditions but the general feeling amongst the locals is that the reef areas are over-fished.

The lack of infrastructure and reliable utilities (electricity and water supply) handicaps potential for landing and processing fish for marketing. The island market for fish thus remains rather underdeveloped.

Anecdotal information indicates that on Atauro, fishing remains a supplementary income and food generating activity, with agricultural products being more important to the local economy than fish or other aquatic products.

Annex H: Photo gallery

MV Atauro, the boat used to ferry materials from Dili to Atauro Island

Loading of materials onto MV Atauro in Dili

Unloading materials at Beloi village beach, Atauro Island

Loading all FAD materials onto Glen’s truck to take to the rigging site (Glen's workshop)

Making spur anchors

Rigging FAD floats

Making aggregators with twine

One of the community consultations on the project in Beloi village

NDFA trainees tying joint knots

Fixing the transounder onto a pole to rig on the side of MV Atauro for bathymetric data survey

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