

Optimising our use and benefits from Fisheries

FRFSP
Fish for Life



Te Palani Tautua mo Me aola
i te Papa o Funafuti

Funafuti Reef Fisheries
Stewardship Plan



Fisheries Department
Ministry of Natural Resources
Government of Tuvalu



FRESF



Funafuti Reef Fisheries Stewardship Plan



Juvenile fishes during their pelagic phase, before they settle on the reef.

Opimising our use and benefits from fisheries

Fakaaogaga fakalei mo penefiti e maua mai I maumea i te tai

FRFSP

Contributors (alphabetical):

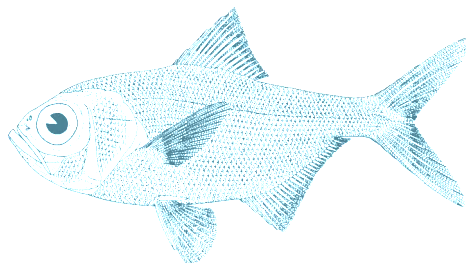
Tino ne fai tusaga (alofapeti):

Filipo Makolo
Hetoa Taula
Lale Petaia
Lotokufaki Paka
Maani Petaia
Manuao Taufilo
Matelina Stuart
Moeo Finauga
Paeniu Lopati
Pafini Fepuali
Semese Alefaio
Simeona Italeli
Ursula Kaly

Editors:

Etita:

Ursula Kaly
Garry Preston
Fulitua Tealei
Semese Alefaio



*Healthy reef fisheries for nutrition security
and resilient communities
Te avakaaga te ola lei o mea ola o te papa moo fenua*

Key words / Pati taua: Fisheries management; Stewardship; Resilience; Food security; Nutrition security; Ecosystems; Funafuti; Tuvalu

Please cite this publication as:

Fakamolemole ka fia tusi koe o fakaaoga te pepa tenei ko tusi penei:

Makolo, F., Taula, H., Petaia, L., Paka, L., Petaia, M., Taufilo, M., Stuart, M., Finauga, M., Lopati, P., Fepuali, P., Alefaio, S., Italeli, S. and Kaly, U. 2017. Funafuti Lagoon Reef Fisheries Management Plan: Optimising our use and benefits from fisheries. Department of Fisheries, Ministry of Natural Resources, Tuvalu, 35 pp.

The views expressed in this publication do not necessarily reflect those of the Tuvalu Government, New Zealand Ministry of Foreign Affairs & Trade (MFAT), the World Bank or other participating organisations. [A manatu fakaaasi I loto I te palani tenei e see ko ia ko te kilooga o te Malo o Tuvalu, Ministuli o fenua ki tua mo koloa o te Malo o Niusila\(MFAT\), te Page o te Lalolagi \(World Bank\) io me ko niisi fakapotopotoga.](#)

This publication has been made possible by funding from the Government of Tuvalu, New Zealand MFAT and the World Bank. [A te faiteega o te palani tenei ne fakatupegina ne te Maloo o Tuvalu, Minisituli o Fenua ki tua mo Koloa o te Malo o Niusila \(MFAT\) mo te Page o te Lalolagi \(World Bank\).](#)

Line drawings from SPC, Mike King and FAO.

Te Palani Tautua mo Mea ola i te Papa o Funafuti



Contents Fakasologa

Summary	Fakamatalaga Toetoe	1
Why do we need a Stewardship Plan?	Kaia e Manakogina ne Tatou se Palani Tautua?	4
Background	1.1 Fakamatalaga	4
The Situation Now	1.2 Te Tulaga i Aso Nei	6
Status of Coastal Resources: Results of Creel Survey	1.3 Tulaga o Maumea o te Papa: Maua Mai te Savea lau Ika mo te Fuaga o ika	7
Consultations: FMMC Meetings	1.4 Faigaa Fonotaga: Fono e autu tonu mo te fakasoasoaga o maumea o tou kogaa tai i tafa o fenua	8
Why do we need a Plan?	1.5 Kaia e tau i ei o isi se Palani?	9
What is the Funafuti Reef Fisheries Stewardship Plan?	1.6 Sea Te Palani Tautua mo Mea ola i te Papa o Funafuti (PTMPF)?	10
How does it fit in with our laws and development plans?	1.7 E Pefea te Sokoga o ia ki luga i tou Tulafono mo Palani Atiake?	11
Who will implement it?	1.8 Kooi ka Fakagalua ne ia te Palani?	10
Core Ideas	2 Manatu Taaua	15
Four Strategies to Better Fisheries	3 Auala e faa e tau atu ei kise kogaatai Maumea	18
Strategy 1: FCA Strengthened	3.1 Aofaga i te 1: Kogatapu o Funafuti ko Galue lei kae ko Malosi ana Fakanofonofoga	18
Strategy 2: Size Limits so Every Fish Can Breed at Least Once	3.2 Aofaga I te 2: Fakatapulaga o te lasi o ika: Ke fakapatonu te mafai o ika o fanau fakatasi aka loa koi tuai o taa	20
Strategy 3: Targeting Pelagic fish (tunas and others)	3.3 Aofaga i te 3: Taketi ke mafai o faaikagina a ika o te Moana Poko (takua, atu, kasi mo niisi ika aka i te moana poko)	23
Strategy 4: Information, People & Ecosystems	3.4 Aofaga i te 4: Fakamatalaga, Tino mo te Natula	28
Key Risks	4 Feitu Faigata	30
Goals and targets	5 Fakamoemoega mo Tapulaa	31
Management Framework & Decision-making	6 Fakanofoga ote Fakateleega mo Ikuga fai	32
Budget	7 Fakatauga-tupe	33
References	8 Fakamaoniga	34

Message from the Minister

It is with great pleasure that I present Tuvalu's first inshore multi-species inshore fisheries plan, the Funafuti Reef Fisheries Stewardship Plan. This is a new kind of cooperative arrangement between the Tuvalu Fisheries Department and the Funafuti Kaupule and will focus on improving the fisheries productivity of Funafuti Atoll.

In Tuvalu we are privileged to live on atolls with a wide range of marine resources, both inshore and offshore able to meet our needs for food and nutrition security. We need to care for these resources and use them wisely - especially the reef fisheries which are more fragile than oceanic ones - so that future generations will also be able to rely on them and benefit from their heritage.

The Funafuti Reef Fisheries Stewardship Plan (FRFSP) sets out four strategies for how the Funafuti Kaupule and Coastal Fisheries Section will reverse past damage to inshore resources caused by overfishing and environmental decline. These include actions to improve the Funafuti Conservation Area (FCA), introduce size limits in the rest of the lagoon so that all fish can breed, encourage more fishing of oceanic and other pelagic species and promote better awareness and participation by the community.

The FRFSP has been forged under the Marine Resources Act and the Falekaupule Act, both of which require a mechanism for sustainable use of resources. The FRFSP spells out the planned outcomes we want for our fisheries and outlines our general intentions for ensuring the safe use, recovery, protection and development of inshore fisheries in Funafuti. One central aspect of the FRFSP is that management will be adaptive - meaning that based on the results of scientific monitoring it will be adapted and

changed to meet needs, without locking us in to a rigid plan in a changing world.

This plan was developed over 2017 in partnership with stakeholders in Funafuti and funding agencies from overseas. In addition to the Fisheries Department and the Kaupule, these include the fishermen of Funafuti, Funafuti and outer island leaders, women and youth, members of the public and representative from government departments. Funding for developing the plan came from New Zealand and the World Bank.

May I congratulate all those who were involved with the consultations and preparation of this stewardship plan. I am confident that next year when this is implemented we will start to see great changes in the status of our resources, and within a few short years large increases in abundance and size of the reef fishes available for capture.

Special thanks to the Pule and members of the Funafuti Falekaupule and Kaupule for being willing to set a course in this new direction. Finally, a thank you is also extended to the communities for their

valued inputs and participation during the consultation process; and to the staff of the Fisheries Department for putting this together and ensuring its technical basis.

Fakafetai lasi
Hon. Puakena Boreham
Minister for Natural Resources

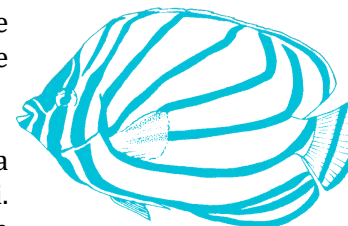


Foreword

Ko fialia lasi au o fai mo sui ote fenua o Funafuti kae maise o fakalagi atu ite agaga ote fakafetai mote fakamaloo kia tatou katoa kola ne tapulima tasi o tuku fakatasi te palani taua tenei.

I aso taumua koi foliki ei au, ne molimau ne au uke o ika mote gali ote namo o Funafuti. A tamaliki e koukou ite tai kae puke fua olotou meaota isose poti e oko mai ki uta ite tafatai. Ne fasua, ne kinase, ne maiava kae kiki ki utanu mo niu. Ko seiloa loa o fai ite uke o vaega figota ote tai. E faigofie kae maumea tena kogaa tai mo ana tino te fialia. Aso nei ko mafuli, ko kese te olaga mo te uke a mafulifuliga mo fakalavelave. Te fuainumela o tino iluga ite laumua e gasolosolo loa o fanaka ki luga, ko lasi te faigata ite fakamaua mai o ika kae maise te foliki mote seai o ika ko molimau katoa ne tatou. Ko uke foki tala ko logo atu tatou ki nisi fakalavelave ki luga ite tulaga o te muu o ika kola ko pokotia ei tou meakai.

Te palani tenei e fakamatea ei a manakoga taua ote fenua ko Funafuti ke fakalei a fakalavelave i mataupu valevale konei mote fakamoemoega ke mafai a tino katoa o fakataufesoasoani ite aofagaga o feitu taua kola e teke atu ei feitu pokotia o latou.

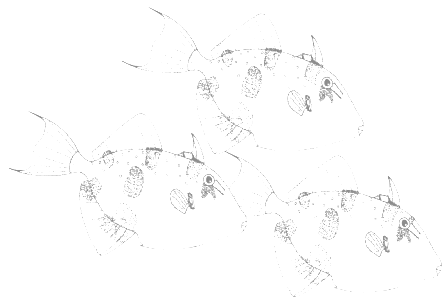


Te fakataunuga o manakoga konei mai lalo ote palani tenei, seai se mea faigofie ona ko mafulifuliga kesekese e fesagai mo tatou ite olaga masani. Nisi mafulifuliga konei ka aoga ki taumafaiga a tatou, nisi ka fakalavelavegina kite fakataunuga o nisi manakoga kola e fakatino mai lalo ote palani tenei.

Ko fai au mo sui ote fenua o tatou ko Funafuti o moli atu te fakamalo mo te fakafetai lasi ki te Matagaluega ate Kaufaika mote lagoon malo mai ote fakataunuga ote palani tenei. E taotao atu foki te fakafetai lasi ki fafine ote fenua mote tautua lasi ne fai ne latou i taimi katoa konei ne fai iei a fakatokatokaga konei ote palani tenei, malo fakafetai.

Te palani tenei ne mafai o fakataunu mai te kaufakatasi o tino valevale mo fenua fakatasi mo vasega, Kaupule, Falekaupule mo fakapotopoto kae maise ei ko tagata faika mai te FOFA. Moi seai lua manatu aoga se katoatoa te palani tenei. Ki tino katoa iluga itoku fenua pele ko Funafuti, te palani tenei mo koulua. Ke alofa te Atua o tautai tatou katoa mo aso fano ki mua.

Fakafetai lasi,
Siliga Atiake Kofe
Pule Fenua o Funafuti



Terms

ADB	Asian Development Bank	NAFICOT	National Fisheries Corporation of Tuvalu
BDM	Beche-de-mer, sea cucumber		
Creel	Irish term for fishermen's basket, used to denote surveys focused on fisher's catches	NAPA	National Adaptation Programme of Action (to climate change)
DoE	Department of Environment	PL	Pole and line fishing
DWFN	Distant water fishing nation	PROP	Pacific Regional Oceanscape Programme of the World Bank
EEZ	Exclusive economic zone	PS	Purse seine fishing
EPIRB	Emergency Position Indicating Radio Beacon	PTMTF	Palani Tautua o Mea ola i te Papa o Funafuti
FAD	Fish-aggregation device		
FAO	Food and Agriculture Organisation of the United Nations	PUI	Public Utilities & Infrastructure, Ministry of Ridge to Reef Project (GEF, UNDP)
FCA	Funafuti Conservation Area	R2R	
FFA	Forum Fisheries Agency	SPC	Secretariat of the Pacific Community
FL	Fork length of fish from snout to central tail fork or margin	SPREP	Secretariat of the Pacific Regional Environment Programme
FOFA	Fishermen on Funafuti Association / Fakapotopotoga Faaika o Funafuti	TC	Tropical cyclone
GDP	Gross domestic product	TFD	Tuvalu Fisheries Department
GIS	Geographic Information System	TFSP	Tuvalu Fisheries Support Programme (MFAT)
GIS	Geographic Information System	TKIII	Te Kakeega III: National Strategy for Sustainable Development 2015-2020
GoT	Government of Tuvalu		
GPS	Global Positioning System	TL	Total length (of fish from snout to tip of tail)
IUU	Illegal, unregulated and unreported fishing	UNDP	United Nations Development Programme
KKPF	Kogaakoga Puipuigina a Funafuti	UVC	Underwater visual census
LL	Longline fishing	VDS	Vessel Day Scheme
Lm	Length at maturity of a fish usually as total length	VMS	Vessel Monitoring System
MCS	Monitoring, control & surveillance	WB	World Bank
MNR	Ministry of Natural Resources	WCPFC	Western and Central Pacific Fisheries Commission
MOU	Memorandum of Understanding	KPI	Key performance indicator
MRA	Marine Resources Act	nm	Nautical mile = 1.852 km
N	Number of samples or observations		

Uiga o Pati

Adaptive Management is a structured, iterative process of decision making in the face of uncertainty, with the aim of reducing that uncertainty over time via system monitoring. Practices are continually improved through learning from doing. Learning from regular monitoring and review is fed back to management practices to increase effectiveness, and ultimately the health of the fishery and the humans who depend on it.

Ecosystem-based Management a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way over many generations. Ecosystem-based management is concerned with ensuring that patterns of development and natural resource use do not adversely affect ecosystem function and productivity.

Eutrophication is the process by which a body of water becomes too rich in dissolved nutrients, causing the growth of algae, the loss of corals and the depletion of dissolved oxygen in the water.

Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food.

Nutrition security means access by all people at all times to the adequate utilization and absorption of nutrients in food, in order to be able to live a healthy and active life.

Stewardship is the responsible use, including conservation, of natural resources in a way that takes a full and balanced account of the interests of society, future generations, and other species, as well as of private needs, and accepts significant answerability to society.



Aofaga fakaataata se faifaiga masani o ikuga e fakaaoga mafai ko falotolotoluagina te faiga o aofaga , I te manatu ke mafai o fakafoliki te fakalotolotoluaga tenei i taimi gasolo e mai luga I te faiga o iloiloga fakalei. Te iloa e fanaka mai luga I te tauloto pukelima. Te tauloto mai matematega mo te sukesukega se auala tela e fesoasoani ki te fakaleiga o aofaga fai ke fakalei ne ia tulaga o te lei saukatoa o figota mo tino kola e fakalagolago ki ei.

Atafaiga o te Natula mo Mea ola i ei se auala e fakaaoga ki te atafaiga o laukele, vai mo mea ola kola e avaka ne latou te puipuigiga mo te fakaaoga fakalei ise auala tela e tauga lei mo kautama gasolo. Atafaiga o te natula mo mea ola I ei e fakapatino I ei vaega atiakega mo te fakaaogaga o maumea totino, kae fakataua I ei ke seai se pokotiaga e oko ki te galuegaga o meaola mo tena natula.

Vai lailai kola e tafe atu mai uta i te fenua e fakauiga ki te tulaga o te vai maafai ko too lailai I te uke o vailakau lailai kola e fesoasoani ki te fakaola o limu, te mate o kamu mo te fakafoliki o okisene I loto I te vai.

Fakatumauga o te lava mo te lei o meatau meakai e maua fua maafai, e maua avanoaga valevale i tulaga o te malosiiiga faka-te-foitino, fakapotopotoga mo alagaa sene kolaa e mafai I ei o fakatumau te lava, te lei, mo te lasi o te niutiliisini I meakai maua mo tausii I ei te ola lei o tino katoa.

Fakatumauga o te niutiliisini i loto i meakai ko tena uiga ko te mafai o tino o tumau te kai mo te fakaaoga o meakai kolaa e lasi te niutiliisini I ei, ko te mea ke tumau te ola lei mo te malosii.

Tautua ko te tiute fai, e aofia ei ko te puipuiga o mea ola ise auala tela e paleni mo te olaga o fenua, kautama gasolo, pela foki mo meaola valevale mo oloutou manakoga kola e mafai o fautua atu ki tautua atu kia tatou.

Summary Fakamatalaga Toetoe

The Funafuti Reef Fisheries Stewardship Plan (FRFSP) is not simply a fisheries management plan focused on ensuring sustainable use of fished resources, but embodies a whole-atoll approach which recognises the role of people and healthy ecosystems in fisheries and adaptively responds to change. Focusing on smart use of the already established Funafuti Conservation Area (FCA), avoiding the introduction of too many complex rules and seeking to preserve and enhance livelihoods and food and nutrition security for Tuvaluans living in Funafuti, the FRFSP has been designed to ensure reef fisheries recover to more productive levels. The most difficult aspect of the plan to understand is that a **reduction** in fishing pressure will within a short time (a few years) lead to **greater** productivity with **less** future fishing effort.

As part of its work, the Coastal Fisheries Section of the Tuvalu Fisheries Department has been carrying out resource assessments and monitoring to provide the information needed for management. Creel surveys (of fisher's landed catches) provide information on the fishers, the resources being caught and the effort required in a way that can be used to assess the health of the fishery. As part of the creel survey, data on fish lengths were compared with known values of size at maturity for 22 species to provide an indicator to assess whether the resources were overfished. Fishes were considered overfished if 50% or more of the animals landed were smaller than the size at maturity. The results of the first Creel Report in September 2016 showed that coastal fisheries in Funafuti are overfished. Of the species that were assessed 60% of species had 50% or more of the catch below the size at maturity. This means that the fishes are being caught and removed from the population **before** they could reproduce. The main fishes showing strong signs of overfishing in Funafuti included acanthurids (pone), carangids (ulua, kamai), serranids (gatala), lethrinids (noto) and lutjanids (taea).

Without management of the fisheries and the ecosystems that support them, Funafuti will become increasingly barren and fish stocks will decline further, driving people to more imported foods, loss of food sovereignty (control of the food supply) and greater problems with non-communicable diseases. A plan for better stewardship could put a stop to this decline and set a path to healthier and more productive fisheries. In response to this clear need to

A te Palani Tautua moo mea ola valevale o te papa o Funafuti (PTMPF) e see ko te Palani o te aofaaga o maumea totino o tai tela e fakataua te faaika fakalei o maumea I tou kogaa tai, kae aofia I loto i te palani tenei sose galuega tela e lavea i ei te tausi o te tagata ki te lei o te natula maise I feitu tau faaika e pena foki mo te agai atu ki mafulifuliga I ona aso nei. Te mafaufauga taua ke faite se palani penei ko te maumea o kogaatai o tatou ke mafai o toe fakafoki mai kise tulaga tela e lavea atu me fanaka te maumea o ia. E auala mai luga i te fakaoga fakalei te koga puipugina a Funafuti kae ke mafai o onono fakalei ki ne tulafono kola e tai faigofie te fakateletele ki ei te koga puipui kae fakataua mai i ei ko te tausiga mo te fakaleiga o olaga mo mea tausi i ei tou ola faka te foitino pena foki mo te niutilisini o tino Tuvalu. Te fakamatakuga o te palani tenei mafai se malamalama a tino i ei ko te feitu ke mafai tino katoa o tasi te mainaga o latou mei te **fakafoliki** o te faaika mo se fia o tausaga e mafua mai i ei te **lasi** o te maumea ka maua i te tai pena foki mo te **foliki** o taimi ka fakamaumau mo faaika ona me ko uke te ika.

Te sekiseni tela e onono ki galuega I kogaa tai pili ki uta o te fenua mai lalo o te Matagaluega a te Kaufaaika e fakatele ne latou a savea mo mea ola I te tai ke mafai i ei o faite mai ne aofaga lei mo te fakasoasoaga o te maumea o tou kogaa tai. Te savea masani ko te Creel io me ko te savea lauika, e maua mai i ei vaegaa fakamatalaga ki luga i te tagata faaika, ana ika/sose mea ola i te tai ne maua mo te taimi fakamaumau o te tino o faaika ke mafai i ei o iloa me pefea te tulaga ki te maumea I tou kogaatai. Tasi o vaega o te savea tenei ko te fakamaumauga te loa o ika ke mafai i ei o fakaataatagina te saisi o te ika telaa ko lasi lei ki te puke aka ne tagata faaika o fakaoga mafai e fakapau mo saisi o ika kola ko oti foki ne suksesuegina ne tagata poto I tausaga ko teka. Mai konei, ko mafai foki i ei o iloa tonu te saisi tau ka mafai o taa i ei te ika maise mo kaigaa ika o te papa e 22 konei e masani o maua I lipoti e mafai i ei o fakaasi mai me ko pefea nei te lasi o te faaika ne tatou te maumea o tou kogaatai. Te mafai o iloa ne tatou me ko pefea te lasi o faaika ne tatou a ika, e iloa fua mafai te aofaki ko oti ne faaikagina ne tatou ko silia atu mo te 50 pasene o ika kola ne puke aka mai te tai kae ko saisi o latou e mai lalo katoa o te saisi 'tau o faaikagina. Ne lavea aka mai I lipooti o te iloilogaa o te savea mo fakamatalaga ne maua te lipooti ne faite





address overfishing in Funafuti's reef fisheries, the Fisheries Department began consulting with fishers, leaders and the community to develop a management plan capable of reversing the declines and restoring the fisheries to a more productive state.

This stewardship plan arose out of those consultations and provides the structure to enable people to understand and monitor threats to the resources and identify solutions. This sets up a framework to enable all groups to work together to ensure that Funafuti's reef fisheries become healthy and productive, that the human population can thrive, and the atoll is a beautiful and safe place to live.

The **Funafuti Reef Fisheries Stewardship Plan (FRFSP)** aims to reverse these problems and increase the supply of fished resources through protecting breeding populations of fishes and reversing at least some of the ecosystem damage. It also seeks to involve all stakeholders in a meaningful way and will work on adaptive management principles allowing for adjustments to the plan based on evidence from careful monitoring of the

ia Setema 2016 mei te maumea o kogaa papa o Funafuti ko tuu kise tulaga fakamatakui te lasi o te ika ne faaikagina. Mai ika kola ne maua, e 60 pasene o vaegaa ika valevale ne maua atui te savea e nofo katoa ki te 50 pasene ki luga o te aofaki o latou ne faaikagina kae mai lalo o te saisi tela e 'tau o puke aka nete tagata faaika. Ko tena uiga a ika konei ko lasi ne 'ta, ko oti ne puke aka ne tagata faaika **kae seki oko ki taimi** o latou o fanafanau ke mafai i ei o faopoopo te aofaki o ika ke fanaka tena fuainumela. Ika kola ko lavea atu te lasi o te faaikagina I Funafuti e aofia i ei ko pone, ulua, gatala, noto mo taea.

Te se fakasoasoa fakalei o tou maumea I kogaa tai mo te tausiga fakalei o te natula e nofo i ei latou e ala mai i ei te seai mo te fanaifo o te aofaki o tou maumea i te tai tela kafai neia a tino ke kai maloski ki meakai palagi, ka lasi i ei te fanaka o meakai e aumai ki loto i te o i te atufenua mai niisi fenua ko te lasi foki o te fanaka o te fuainumela o vaegaa masaki se pisi. Ke faite se palani e 'taki atu i ei tatou keatea mo fakalavelave konei ka mafai o fakagata neia te faitu vaivai tenei kae ke fakatonu te kiloga ki faitu kola e atiaka i ei te ola lei mo te fanaka te maumea o tou kogaa tai. Ke mafai o agai atu tatou ki te manakoga taua tenei e mafai i ei o fakagata tulaga o pokotiaga konei ko oko tatou k i ei , ei o te Matagaluega a te Kaufaaika ko oti ne gasue o sautala mo tagata faaika, takitaki o fakapotopotoga fenua fakatasi i ei mo te fenua katoa o Funafuti o faite se palani tela e mafai i ei o toe fakafoliki a pokotiaga ko lavea atu ki lugai te maumea I tou kogaa tai ke oko foki ki te toe mafai o fakafoki mai te uke mo te lava o te maumeai te tai.

Te palani tenei ne mafua mai I fonotaga sautala ne fai mo te fenua o Funafuti tena ne mafai i ei o maua se ata saukatoa ke lausa atu ki tino katoa ke malamalama latou kae ke mafai foki o suksesuekina a pokotiaga fakamataku ki luga I te maumea o tou kogaa tai fakatasi mo auala kola e mafai i ei o agai atu ne tatou a faitu fakamataku konei ko pokotia i ei tatou. Ka mafai foki i ei tou tino o ola fiafia I luga ise laukele tela e gali kae 'ma.

Te **Palani Tautua mo Mea ola i te Papa o Funafuti (PTMPF)** e fakamoemoe ke mafai o fakalei aka neia tulaga o fakalavelave kae faopoopo te aofaki o ika mafai e puipui fakalei ne tatou a ika moaa e 'ta I taimi kola ko fanafanau i ei latou ke oko foki ki te toe fakaleiakaga o koga e nofo i ei mea ola kola ko oti ne fakamaseigina. E manakogina foki ke mafai o aofia katoa sose tino tela e 'tau o fai Tusaga mo te palani tenei o galue ki ne auala kola e kilo tatou ko tau o tai fakalei atu mai luga I suksesuekina o savea konei e fakatele ne te matagaluega te Kaufaaika e penei mo galuega ka fakaaofiai te palani tenei. Ko auala taua e aofia i ei :

state of the resources as actions are put in place. The main strategies are:

1. Strengthening the Funafuti Conservations Area so that its potential benefits become a reality protecting spawning adults, allowing juveniles to grow and promoting spill over of fishes into other parts of the lagoon, increasing resilience of the fisheries;
2. Limiting the size of fishes that can be taken by fishing to ensure that every fish can breed at least once in all other parts of the atoll;
3. Targeting pelagic and offshore fisheries more to reduce some of the pressure on reef fishes; and
4. Improving information, involvement by the community and state of the ecosystems on which the fisheries depend.

The FRFSP will primarily involve the Tuvalu Fisheries Department, the Funafuti Kaupule and the Fishermen of Funafuti (including those from outer islands living here). Implementation of the plan will use funds from government and a range of other source. It is envisaged that similar though more simplified plans will be developed for the outer islands in the future.



1. Ke toe fakamalosi aka te tulaga o te koga puipuigina o Funafuti ko te mea ke mafai o foliga pela me se kogaakoga tela e puipui i ei a ika lasi ke mafai o fanafanau, fakasaosao i ei ika foliki ke mafai o olo aka o lasi kae ke mafai foki o toe lausa te uke o te ika ki niisi kogaakoga aka o te namo mafai ko lasi kii te fuainumela o te ika I loto i te o i te koga puipui e lavea i ei me ko foki te tulaga o te koga puipuigina ki tena nofoga mua.
2. Ke fakatapulaagina te saisi o ika ka faaikagina kae ke fakailoa ki tino ko te mea ke tuku se avanoaga ki te ika ke mafai i ei neia o fanau koi tuai o taa nete tagata faaika I sose koga o te fenua.
3. Ke mafai o lasi te faaika ki ika o te moana poko e mafai i ei o fakafoliki te pokotiaga ki ika o te papa.
4. Ke tai fakamalosi aka tulaga ki te fakaokooko atu ki tino a mea kola e tau o iloa ne latou, te galue fakatasi o te fenua katoa ke oko foki ki te tai fakaleiakaga o koga e nofo i ei sose mea ola maise ko mea olai te tai tela e fakanaa k i ei te feitu tau faaika.

Te PTMPF ka fakagaluegina nete Matagaluega a te Kaufaika, Kaupule o Funafuti mo te fakapotopotoga tagata faaika I Funafuti. Te fakatelega o galuega i te palani ka fakatupegina ne te Malo Tuvalu fakatasi mo nisi alagaatupe mai tua. Te fakamoemoega me ka mafai o faite ne vaegaa palani penei mo fenua mai tua o Funafuti I Tuvalu.

1. Why do we need a Stewardship Plan?

1. Kaia e Manakogina ne Tatou se Palani Tautua?

1.1 Background

Funafuti is the capital of Tuvalu, located in the south-central part of the country which comprises 9 atolls and islands spanning 630 km along a north-west to south-eastern axis and encompassing a total exclusive economic zone (EEZ) area of nearly a million square kilometres. The population on Funafuti in 2012 was 6,152 people, a 37% increase since 2002.

Funafuti atoll has a large central lagoon 25km long and 18km across at its widest with its long axis aligned north-south. The lagoon reaches a depth of 55m and its rim is cut by several navigable passes to the ocean which allow ship access to the lagoon and the only deep water wharf in the country. The mean tidal range is 1.2m and the lagoon is by far the largest in the country, occupying an area of 205 km². The total land area is comprised of 33 islets totalling 271 hectares of land. Recently two of these islands were washed away during cyclones (Tepukavilivili in 1997 during Tropical Cyclone Keli and Vasafua in 2015 during TC Pam).

As the centre of government and most economic activity for the country, Funafuti has seen huge in-migration from outer islands, shifts in urbanisation and socio-economic changes, especially in the past 15 years. These have been driven by an increasing inflow of new values, culture and practices (globalisation) which have led to changes in the traditional communal order and a gradual movement from a community-based society to a more individualistic one (Kaupule, 2016). The changes have provided technological

1.1 Fakamatalaga

Funafuti ko te laumua o Tuvalu, tela e tu i te koyaloto ki saute o te atufenua tela e 9 fenua I ei kae takoto i te 630 kilomita mai matu-togaala ki saute saegala, e takato foki I konei te kogatai a Tuvalu (EEZ) tela e tai nofo ki te miliona sikuea kilomita te lasi. Te aofaki o tino I luga I Funafutii te 2012 e nofo ki te 6,152, tela se 37% te fanake mai te aofaki i te 2002.

Te lasi o te namo o Funafuti e nofo ki te 25 kilomita te loa, kae 18 kilomita te lauefa. Te loaaga o te namo e takato fakafesagai ki matu ki saute. Te poko o te namo e oko ki te 55 mita kae uke a ava kola e soko i ei te namo ki te moana poko, kola e mafai foki I ei o ulu a vaka ki te namo o sai ki te uafu sai vaka tela e tasi aka eiloa i te Atufenua. Te tai maluga masani e nofo ki te 1.2 mita, kae te toe namo lasi eiloa i te Atufenua ko te namo o Funafuti tela e nofo tena lasi ki te 205 sikuea kilomita. Te lasi o te laufenua o Funafuti I ana motu e 33 e nofo ki te 271 eka. E lua motu ko galo ona ko afaa kola ne poko i te Atufenua (Tepukasavilivili i te 1997 Afaa e igoa ki te Keli mo Vasafua i te 2015 Afaa ko te Pam).

I te 15 tausaga ko teka, ko lavea ne Funafuti te mafuliga o te tulaga o te maumea totino o tena fenua ona ko te tokouke o tino e omai ki te laumua mai fenua o te Atufenua o sala galuega. E fakamafuagina tulaga o mafuliga konei mai te uke o tu, faifaiga, mo suiga fou tela, ko mafuli i ei te olaga masani faka-Tuvalu tela ko te faifai mea fakatasitasi

mo te galue fakatasi, ki te olaga tu tokotasi eiloa te tino ia ia(Kaupule 2016). A mafuliga konei, e omai tasi eiloa mo auala fou, poto fou, auala fou i te

Feature	Area (ha)	% Category	% Overall
Reef platform	3,696		15
Islets	270.5	7.3	
Beaches	27	0.7	
Reef flat	3,398	92	
Lagoon	20,522		85
Total atoll reef top/rim	24,217		100

Table 1: Breakdown of reef, lagoon and island areas of Funafuti Atoll in the early 1990s. Source: (McLean and Hosking, 1992).

Taipola 1: Fakamauga o te lasi o kautua, te namo mo laufenua o Funafuti i te 1990 Source: (McLean and Hosking, 1992)

advances and economic development, but also changes in culture and traditional knowledge; forms of leadership; issues with climate, pollution, ecosystem degradation and disasters; and concerns over water, food and nutrition security. The Moeakiga o Malefatuga II (Funafuti Island Strategic Plan 2016-2020) (Kaupule, 2016) recognises that sustainable livelihoods and protection from threats of climate change and natural disasters in Funafuti are closely linked to healthy terrestrial and coastal ecosystems.

Coastal marine resources (including invertebrates) are currently being exploited by traditional subsistence and small-scale artisanal fishers (Pita, 2005). Fisheries have been a major source of employment and income for local fishers as well as the source of fish supplies for the community through the roadside fish markets. This also includes women who collect shellfish and focus on handicrafts. Traditionally, fishers used outrigger canoes by paddling or sailing, working in the lagoon or outer reef and coastal waters. In the 1960-70s there was a shift to part-time fishing using small outboard-powered monohull aluminium, fibreglass or plywood boats. Trolling for pelagic species and hand-lining for reef fishes became the main fishing techniques using monofilament lines, lures and natural bait. By this stage the traditional pole and line technique was no longer in use. About 65% of households were engaged in these activities. In the 1980s fishermen supplied the Teone Fish Market, initially operated by the newly-formed Fisheries Division, and later by NAFICOT. In 2002 that allowed for 60 full time fishermen plus 30 employed under a shared fishing scheme operated by NAFICOT. After years of losses NAFICOT was suspended and fishers resorted to selling their catches at the roadside. After independence in 1978 the Fisheries Department implemented at least 14 projects with external funding aimed at to upgrading the small-scale fisheries sector by involving private fishermen in the development of commercially oriented activities for income generation and exports (Pita, 2005).



Tuna for sale in Funafuti

atiakega o te maumea ke oko foki ki te mafuliga ki tu mo faifaiga mo iloa mo poto masani, tulaga ki vaega taupulega; tulaga ki te fakamaseiga o tau o aso; pokotiaga ki mea ola I tou tafa; mo pokotiaga mai matagi malosi mo saikolone; mo pokotiaga ki tulaga o vai mo mea kai. Te Moeakiga o Malefatuga II (Te Palani a Funafuti 2016 – 2020) (Kaupule 2016) e fakapatino mai i ei me i te fakatumauga o te olaga lei kae filemu pena foki mo te puipuiga mai pokotiga o mafulifuliga o tau o aso mo pokotiaga mai galuega a te natula, e aoga tonu kae olo tasi e iloa mo te atafai kae fakaaoga fakaleiga o te laukele pena foki mo mea ola mo figota I koga tai o te fenua.

A maumea i kogaatai pili aka aofia ei a nisi figota mai tafa o ika ko lasi te faaika mo kai kae mo togi foki. (Pita, 2005). Te faaika se tasi o galuega tela e maua I ei a tupe ma tino faaika kae ko mafai foki o togi ne tino a ika I tafaa auala. . E aofia foki I konei ko fafine kola e tae ne latou a pule mo misa ke fai ki ei mea taulima. A tino faaika I Tuvalu e fakaaoga a vaka faka-Tuvalu io me ne paopao kola e alo ki foe mo olo ki moana io me faaika I loto i te namo. i te 1960 – 70, ko mafuli te faaika I vaka faka-Tuvalu ki te fakaoga o pooti kaapa, laupapa, io me ko pooti faipakilasi kae fakatele ki masini. Te taki mo te matau ko faiva masani e fakaaoga I ei a uka nailoni mo poa. Te faiva ki te sisi atu ko se fakaaoga. E nofo ki te 65% o tino e galue ki te faaika. I te 1980 a tino faaika e togi a olotou ika ki te maketi ika I Teone tela e fakagalue ne te Matagaluega Faaika kae ne toe fakagalue ne te fakapotopotoga faaika ko te NAFICOT. I te 2002 e tusa mo te 60 tino faaika tumau kae 30 tino galue ne fakagalue i te sikima faaika tela e fakagalue ne te NAFICOT. Mai te seai o tupe maa e maua mo te se lei o te sikima ne pono i ei te NAFICOT tela a tino faaika ne toe foki loa o togi a olotou ika I tafaa auala. Mai tua o te tutokotasi o Tuvalu i te 1978, te Matagaluega Faaika ne kamata o fakagalue e 14 polotieki mai te fesoasoani tupe mai tua. Te manatu autu ke avaka te tulaga faaika kae ke fakagalue ne tino faaika ke mafai o faaika kae fakatau atu a ika ki tua atu o Tuvalu. (Pita 2005).

Offshore tuna resources are also being harvested by fishing vessels from Distant Water Fishing Nations (DWFNs) through fishing access arrangements, providing substantial funding annually for the Tuvaluan economy since independence. In 2016 this reached a total of AUD 36 million in revenues, or 57% of government revenue.

1.2 The Situation Now

In the last 10 or so years, there has been a worldwide move away from fisheries development (i.e. expansion of effort) to a more moderate approach which recognises that resources are limited and can relatively easily be overfished. The focus is now more on good management, or stewardship of the resources to ensure the food supply and resilience for communities against climate change. The Tuvalu Fisheries Department (TFD) is tasked to improve fisheries livelihoods and food security in Tuvalu in line with Te Kakeega III and TFD's Corporate plan.

The so-called “nutrition transition” is well underway in Funafuti, with dietary patterns shifting since the 1970–80s from traditional low fat diets, typically based on complex carbohydrates, fresh fish and meat and leafy greens, to increasingly modern diets, based on refined starch, oils, processed meats and confectionary (Charlton et al., 2016, Ahmed et al., 2011). These changes now mean that access to food of sufficient nutritional and cultural value is the primary driver affecting food security, more so than general food availability (McCubbin et al., 2017). In the McCubbin study 52% of people surveyed in Funafuti ate less desirable imported foods, which tended to be nutrient poor



Coastal Team fixing a FAD

A Ika o te moana pela mo atu mo takua e faaikagina ne kamupane faaika o fenua lasi o te lalolagi, e auala I laisene kolaa e togi ki te maloo o Tuvalu telaa se alagasene lasi a te atufenua mai taimi ne tutokotasi ei ke oko mai ki taimi nei. I te 2016, e tusa mo te AUD 36 miliona tupe ne maua mai luga I laisene, telaa se 57% o te tupe maua a te Maloo.

1.2 Te Tulaga i Aso Nei

I loto i te 10 tupu tausaga ko teka atu nei, ko lasi te mafuliga o te tulaga ki te atiakega o te faika (avaka te tulaga o mea tau faaika) ona loa me ko iloa tonu e iloa me i te maumea tenei ka mafai o seai io me galo atu manafai e sona fai kae se tausi fakalei . Tela la ko fakataua atu te atafai kae tausi fakalei a te maumea tenei ke fakatumau i ei te maua ne meakai e puipuigina foki i ei a tino o te atufenua mai pokotiaga o mafulifuliga o tau o aso. Se tiute taua e tauave ne te Matagaluega Faaika ke fakatumau te lei mo te lava o meakai mai te tai ki tino Tuvalu e pela loa mo tapula toki I loto i te Kakeega III pena foki m o te Palani a te Matagaluega Faaika.

Te muagana telaa ‘**mafuliga o te ulukai masani**’ ko oko te lasi aka i Funafuti nei, ko taulasi te mafuliga o vaegaa meakai e kai mai i te 1970-80, mai meakai tuvalu kolaa e seai se sinu I ei, ika fou mo meafasi, laulakau ki luga I meakai palagi kolaa e uke I ei a fakafetega, sinu, meafasi ko oti ne gaosi, mo mea magalo kola e fakatau I loto I sitoa (Charlton et al; 2016, Ahmed et al; 2011). A mafuliga konei e mafua mai i te see lava o meakai fakatuvalu kolaa e lasi te niutlisini i ei. McCubbin et al; 2017). Mai te iloiloga a McCubbin, e 52% o tino i Funafuti nei e togi meakai mai te sitoa ona me se mafai o maua ne latou meakai faka-Tuvalu. Te se mafai o maua ne meakai faka-Tuvalu ona loa ko te se lava o laumanafa o toki i ei lakau kaina, ko te seai ne tino e galue ne latou fatoaga, te maua gofie o mea kai togi I sitoa, te se lei o alaaga vaka ke mafai i ei o fakatau meakai faka-Tuvalu i Funafuti nei, mo te pokotiaga lasi tenei ki mafulifuliga o tau o aso, tela se pokotiaga tauave kae tumau o pokotia i ei tulaga o mea taumeakai o te atufenua. Mafulifuliga o tau o aso e pokotia i ei a lakau kaina I loto i te atufenua maise loa ko umaga ona ko te lasi o te sua taia o laukele kona pogai mai mafulifuliga o tau o aso pena foki mo te tai fanaka. (Freeman et at; 2011, Job and Ceccarelli, 2012) Te tau lasiga o sukesukega ki tulaga o mea taumeakai e tau lasi loa ki te iloiloga ki tulaga o lakau kaina mo te tokilakau. E see lasi te iloiloga mo te sukesukega ne fai ki mea kola e atili fakalei kae fakatumau i ei te lei o

because they could not access preferred local foods. Factors affecting access to local foods included availability of and access to land; declining involvement in local food production; the convenience of imported foods; unreliable interisland shipping; and climate and environmental changes that have negatively affected food security and are expected to continue to do so. Climate change is said to be degrading agricultural areas through sea-level rise, salinity increases, and extreme weather reducing production and in some cases killing crops (Freeman et al., 2011, Job and Ceccarelli, 2012). However, most food security studies tend to focus on agriculture and there is insufficient research aimed at assessing how maintaining and/or improving fish consumption benefits the diets and health of Pacific Islanders as they contend with the ongoing nutrition transition.

1.3 Status of Coastal Resources: Results of Creel Survey

As part of its work, the Coastal Fisheries Section of the TFD has been carrying out resource assessments and monitoring to provide the information needed for management. Creel surveys are suited to that task because they provide information on the fishers, the resources being caught and the effort required in a way that can be used to assess the health of the fishery. The purpose of the creel survey, which was begun in April 2015 and will be on-going indefinitely, included measuring the catches (numbers, sizes and weights) of fished resources, assessing their health and identifying stressed resources in need of management. Full results of the creel are found in the Creel Report No. 1

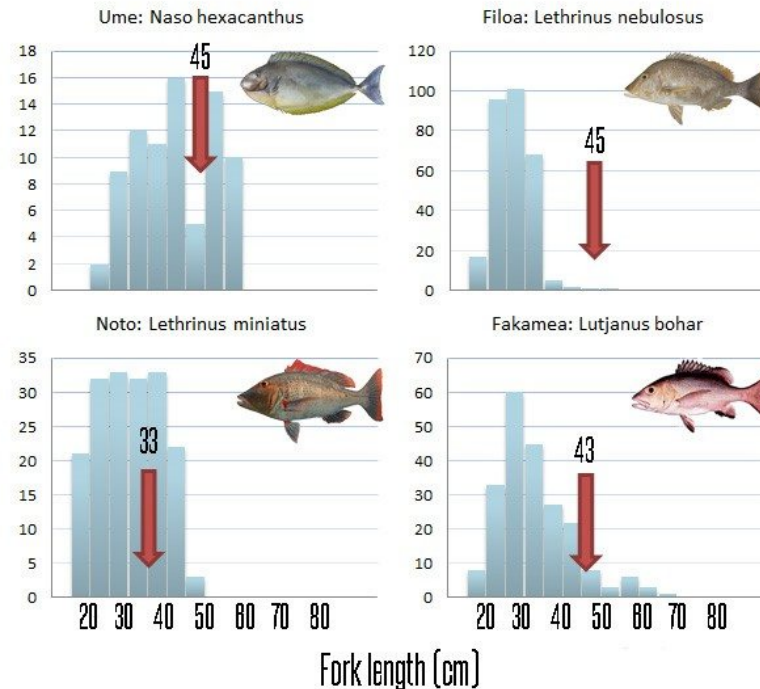


Figure 1: Sizes of fishes landed in Funafuti (and some in Nukufetau and Nui) between 30/4/15 and 28/9/16. The red arrow shows the length (bottom axis) at which the species becomes reproductive (Lm). If 50% or more of the fishes landed were below that size, we considered the species stressed and in need of management. This is a conservative approach, and there are some who would suggest that any fish caught smaller than Lm would indicate the need for management.

meakai mai te tai mo te aoga o tulaga ki te kai ki ika tela e aoga ki te ola lei o tino o te Pasefika kae fakafoliki i ei te mafuliga ki te ulukai masani o tino Tuvalu.

1.3 Tulaga O Maumea o te Papa: Maua Mai te savea lau ika mo te fuaga o ika

A te sekiseni a te Matagaluega Faaika e isi ne ana galuega tauave konei e fakateleki te iloiloga o te maumea i tou kogatai ke mafai o iloa tonu te tulaga o te maumea, ke mafai ei o fai ne aofaga lei ki tausiga o maumea a tatou konei. Te galuega ki te savea lauika e tauga tonu me ka maua mai i ei ne molimau mai tino faaika, te vaega ika tela ne maua, mo auala kola e mafai o fakaaoga e tumau i ei te lei o te faaika. Te pogai o te galuega tenei ko te savea lauika, tela ne kamata mai i te 2015 kae e mafaufaugina ke fakatumau, e aofia ei te fuaga o ika maua (te mafa, lasi mo te aofaki),ko te

mea ke sukesuke i ei a te tupu malosi o ika, mo vaega ika kolaa ko manakogina ke fai ne aofaga ki tausiga fakalei ki ei. Te tala saukatoa io me ko te lipooti ki tulaga o te savea lauika e maua i te lipooti *Creel Report No. 1 (Alefaio et al; 2016)* tela e mafai o download mai te www.tuvalufisheries.tv/library.

Tasi o vaega taua o te savea, ko te fakapaupauga o te lasi mo te loa o ika ki luga i fakamatalaga kolaa ko oti ne iloa ki luga I saisi o ika mo itukaiga o ika e 22. Te tulaga tenei ka mafai o iloa i ei me pefea te lasi o te faaikaga o te itukaiga o ika tena. Kafai e 50% ika maua e foliki ifo I te saisi telaa ko oti ne iloilogina me matua lei, ko tena uiga te ituukaiga tenaa ko mutana.

I te katoaga te tasi mo te afa tausaga i te faiga o te savea (Mai te masina o

Taipola 1: Te saisi o ika ne maua I Funafuti , Nukufetau mo Nui mai te 30/4/15 & 28/9/16. Te maaka kula e fakatino i ei te lasi o te ika tela ko mafai o fanafanau (Lm) Kafai ko 50% io me lasi atu te aofaki o ika ne maua mai lalo i te saisi tena ko tona uiga kotoo lasi te faaikaga o te vaega tena, tela ko manakogina ke atafai kae ke tai tausika fakalei me ko pokotia te vaega tena .

(Alefaio et al., 2016) which can be downloaded from www.tuvalufisheries.tv/library.

As part of the creel survey, data on fish lengths were compared with known values of size at maturity (Lm) for 22 species for which data are available. This was used as an indicator to assess whether the resources were overfished. Fishes were considered overfished if 50% or more of the animals landed were smaller than the size at maturity.

By 1.5 years into the survey (September 2016) 227 landings were met and measured in Funafuti. Most of the catch was destined for sale (95%) and fishers targeted reef fishes 69% of the time and pelagic species 33% of the time, making reef fishing the most important across the survey. When interviewed 73% of Funafuti's fishers said that they used different fishing grounds from 5 years ago, 85% said that the amount of catch had declined and 86% that sizes had reduced. The main reasons fishers gave for the declining resources included too many fishers and boats, climate change, increasing human population and the presence of purse seiners within the 12 nm zone. Fishers suggested that small and spawning fishes should be released or not caught and that gillnets should be of larger mesh size.

The results of the first Creel Report also showed that coastal fisheries in Funafuti are overfished. A total of 14,508 specimens were landed and measured just in Funafuti during the survey, including 180 species of fishes in 30 families. Of the 22 species that could be assessed for signs of overfishing, 13 (60% of species) had 50% or more of the catch below the size at maturity. This means that the fishes are being caught and removed from the population before they could reproduce. The main fishes showing strong signs of overfishing in Funafuti included acanthurids (pone), carangids (ulua, kamai), serranids (gatala), lethrinids (noto) and lutjanids (taea).

1.4 Consultations: FMMC Meetings

In response to this clear need to address overfishing in Funafuti's

Setema 2016) e tusa mo te 227 a pooti ne savea I Funafuti nei. Te ukega o ika maua ne togi katoa(95%) , kae 69% faaika ki ika o te papa kae 33% e faaika ki ika o koga poko, tela laa ko lavea aka i te savea me taulasiga e fiafia ki ika o te papa. . E tusa mo te 73% o tino ne fakasautala I Funafuti e fai mai me fakaaoga ne latou a taulaga kesekese i te 5 tausaga ko teka atu nei. E 85% e fai mai me ko oko loa te fanaifo ki lalo te aofaki o ika e maua ne latou kae 86% e fai mai me ko oko aka loa te foliki o ika o maua. Te pogai I olotou mau me ko tokouke tino faaika, ko uke foki pooti faaika, mafuilifuliga o tau o aso, te lasi te fuainumela o tino, mote uke o vaka faitili mai fenua mai tua atu o Tuvalu I loto i te 12 maila o kogafaaikaatai o Funafuti. A tagata faaika ne fai lotou manatu ko ika foliki mo ika kolaa ko tauga lei o fanafanau ke mafai o toe fakasao mafai ko faaikagina ne tino, kae ke mafai o fakaaoga a tili mata lasi.

Te savea lauika e fakaasi foki i ei me ko foliki te fuainumela o maumea o te papa. E tusa mo te 14,508 ika takitasi ne maua i te saveai Funafuti nei. E aofia i ei te 180 vaega ika i itukaiga ika e 30. Mai te 22 vaega ika kola ne lloilo ke mafai o matemate i ei te lasi o te faaika e 13(60% o te vaega tena) e maua se 50% io me lasi atu o ika maua e nofo mai lalo i te lasi tela e tau o puke. Ko tona uiga a ika ko ave keatea io me ko puke kae seki oko ki te taimi ko tau o fananau i ei me koi foliki kae ko puke. Vaega ika kola ko matea atu ko tuu i tulaga telaa ko mutana fuainumela i te savea tenei e aofia i ei pone, ulua, kamai, gatala, noto mo taea.

1.4 Faigaa Fonotaga: Fono e autu tonu mo te fakasoasoaga o maumea o tou kogaa tai i tafa o fenua

Ki te agaiga o te fakalavelave tenei ko te lasi o te faaika I te kogaatai pili aka o Funafuti, a te Matagaluega a te Kaufaaika ko oti ne kamata ana fonotaga o sautala mo tagata faaika, takitaki o fenua I luga I Funafuti nei ke oko foki ki te fenua katoa o Funafuti ki te faitega ose palani fautua e mafai i ei o toe fakafoki mai te maumea o kogaataipili aka o te fenua ki se tulaga fakafiafia loto.



FMMC 1 in 2017

reef fisheries, the Fisheries Department began consulting with fishers, leaders and the community to develop a management plan capable of reversing the declines and restoring the fisheries to a more productive state. To ensure that the interests of members of the public were taken into account in the process, several Fisheries Monitoring and Management Consultations (FMMC) were conducted in 2017. This Stewardship Plan is the outcome of those consultations.

Initial Fisher's meeting 9th February: A pre-meeting held between Funafuti Fishermen's Association and TFD (Coastal and Operations & Development sections) to inform fishermen on Creel Survey results, Artisanal Tuna, Ciguatera Fish Poisoning, Sea Safety and post-harvest training.

FMMC1 23-24 February: This meeting included four main activities: (1) Report by Coastal Section on results of the creel survey; (2) Presentation of a range of management options that could be used in Funafuti; (3) Working Groups to discuss the options and suggest approaches that might work; (4) Consensus mandate derived by the participants to guide TFD's work on the FRFMP. The meeting was attended by members of the Funafuti Fishermen's Association, the Kaupule and Falekaupule, representatives of the outer islands communities living in Funafuti, and other members of the public. At the end of the meeting, participants requested that TFD develop a proposed plan to present at the next consultation for them to consider. The full report (Paka, 2017) and all others in this series can be downloaded from the Tuvalu Fisheries website www.tuvalufisheries.tv/library

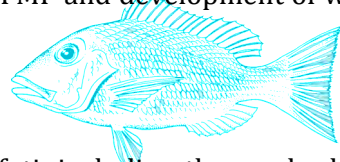
FMMC2 27th April: Presentation of the proposed FRFMP to identify any issues and steer further development.

FMMC3 July: First draft of the FRFMP presented for discussion and adjustments.

FMMC4 December: Adoption of the finalised FRFMP and development of work plan and implementation.

1.5 Why do we need a Plan?

The livelihoods of all people who live in Funafuti, including those who have migrated in from outer islands, are directly interconnected with the health and productivity of the resources, and the reefs and lagoon ecosystems that



E fakataua I konei a sose tino tela e tau o aofia ana manatu ki te faitega o te palani tenei, tela ko oti ne kamata ana fonotaga fakasolo i te tausaga 2017. Te palani tautua tenei ko manakoga taua kola ne maua mai I fonotaga konei ne fai saale.

Fonotaga Muamua mo Tagata Faaika i te po 9 Fepuali: Fakapotopotoga Tagata Faaika o Funafuti fakatasi mo te Matagaluega a te Kaufaaika (ofisa e onoono ki kogaa tai pili aka mo galuega fakatele mo atiakega) ne fono ke mafai o fakaasi atu ki tagata faaika a tulaga o iloiloga o savea lauika, Ika o te moana poko, Ika muu, puipuiga tou ola i te tai mo te fakaakoakoga ki luga i te gaosiga o ika.

FMMC 1 23-24 Fepuali: Te fonotaga tenei e aofia i eie 4 mea taua: (1) Fakaasiga o te lipooti ki iloiloga o savea o ika e maua ne tagata faaika; (2) Fakaasiga o auala e mafai i ei o fakasoa tou maumea o kogaa tai pili aka o Funafuti; (3) Galue i potukau ke tiitii manatu me nea auala kola e mafai o fakagalue I Funafuti nei; (4) Onoono fakatasi ki ikuga e tau o galue k i ei te Matagaluega Kaufaaika i te fakafoligaaga o te Palani tenei ka faite. Tino ne aofia i te fono tenei ko tagata faaika, Kaupule mo te Falekaupule o Funafuti, sui mai fenua takitasi I luga I Funafuti mo niisi tino kola e nofo I luga I Funafuti. I te otiga o te fono, ne iku aka I tino katoa ne aofiai te fono ko te Matagaluega a te Kaufaaika ke mafai o galue ki luga i te faitega o te palani tenei ke mafai o toe foki mai mo latou o fakaasi i te sua fonotaga. Te lipooti (Paka, 2017) mo niisi lipooti aka ka mafai o maua mai te website a te Kaufaaika www.tuvalufisheries.tv/library.

FMMC 2 27 Apelila: Fakaasiga o te ata o te palani PTMPF ke mafai i ei o toe onoono ki luga I feitu o te palani kola e tau o tai fakalei ke oko foki ki te fakatokaga o te faitega fakaoti o te palani.

FMMC 3 Iulai: Fakaasiga o te tusiga muamua loa o te ata saukatoa o te palani ke mafai o onoono fakatasi k i ei kae fai manatu fakatasi ke mafai o fanotonu mo manakoga o te fenua.

FMMC 4 Tesema: Te fakataliaga o te palani mo te faitega o te palani fakagalue fai fakatasi mo te fakagaluegaga.

1.5 Kaia e tau i ei o isi se Palani?

Te ola lei o tino katoa I luga I Funafuti pena foki mo latou kola e aumai mai

support them. However, the resources and the ecosystems are now under significant stress and are no longer providing the benefits they could if in better condition. Fishers have long been reporting that there are less fish in the lagoon, and there are now problems with sewage pollution and eutrophication, rubbish, algal overgrowth, ciguatera fish poisoning, uncontrolled reclamations and coastal developments and loss of protective beach ridges that are leading to further damage to resources, property and a loss of overall resilience.

Without management of the fisheries and the ecosystems that support them, Funafuti will become increasingly barren and fish stocks will decline further, driving people more and more to imported foods, loss of food sovereignty (control of the food supply) and greater problems with non-communicable diseases. A plan for better stewardship could put a stop to this decline and set a path to healthier and more productive fisheries. A stewardship plan is a framework for everyone with an interest in fisheries (that is, everyone) to agree on what outcomes and pathways to those outcomes they want for themselves, their children and their children's children.

1.6 What is the Funafuti Reef Fisheries Stewardship Plan (FRFSP)?

A stewardship plan describes the fisheries, their supporting ecosystems and social resources, identifying current threats and how they can be addressed. It provides the structure to enable people to understand and monitor threats and to identify solutions. This sets up a framework to enable all groups to work together to ensure that Funafuti's reef fisheries become healthy and productive, that the human population can thrive, and the atoll is a beautiful and safe place to live.

The Funafuti Reef Fisheries Stewardship plan is focused on reversing some of the damage already done to the nearshore fisheries in Funafuti with the ultimate aim of increasing the current low productivity. In the end, the aim is to increase the supply of fishes, invertebrates and other seafoods being fished now or in the past, to improve the state of the ecosystems that support them and to reduce problems with ciguatera, algal overgrowth and coastal pollution. The FRFSP is designed to:

- ✿ Establish the conditions for recovery of the resources,
- ✿ Educate and involve the public so we are all part of the solution,

fenua I tua o Funafuti ki te laumua e isi se sokoga o latou ki te maumea mo te ola lei o mea ola i te tai, kamu mo koga e nofo i ei a sose mea ola o tai. Te tulaga ki maumea o te tai ke oko ki koga e ola i ei latou ko nofo nei ki se tulaga fakamataku tela ko se mafai i ei o fakataunu manakoga o latou. Molimau mai tagata faaika e fakaasi mai me ko fanaifo kii te fuainumela o te maumea I loto i te namo, kae ko isi foki niisi fakalavelave pela mo fekau o tatou e tafe ki te namo, kaiga, ola vale o te limu, ko ika ko muu, se fai fakalei o galuega ki luga I laukele faopoopo mo mea fakatuutuu e pili kite tafaatai mo te lasi o te fakamaseiga ki kamu mo kaupapa tela ka mafai i ei o lasi te fakamasei ki luga i te maumea o tatou i te tai, ke oko foki loa ki te fanaifo o te mafai ne tatou o agai atu ki mea tupu fafuaesei.

Kafai e se atafai fakalei ne tatou maumea o te papa mo te lotou natula Funafuti ka mafai o lasi te fanaifo o te aofaki o tena maumea e pena foki te fanaifo o te fuainumela o te ika, ka mafua i ei te lasi o te togi ne tino a meakai mai sitoa, se faeteete o tatou ki te lasi o te meakai e aumai mai tua, ko fakamafua ei te fanaka o te aofaki o masaki se pisi. A te palani tautua tenei ka mafai o fakagata ne ia te fanaifoga o te tulaga tenei kae ka fakaasi mai i ei auala kolaa e mafai ei ne tatou o avaka tulaga o maumea o te papa o tou fenua. Te palani tautua foki tenei se auala moo latou kolaa e fiafia o faaika (tena uiga sose tino) ke mafai o loto tasi ki ikuga i auala kola e tau kae fanotonu mo mea e manako latou k i ei, olotou tamaliki pena foki mo olotou mokopuna.

1.6 Sea te Palani Tautua mo Mea ola i te Papa o Funafuti (PTMPF)?

Te palani tautua tela e fakamatala mai neia maumea i kogaatai, sokoga ki koga e nofo i ei mo sokoga ki luga ia tatou tagata ola, fakaasi foki i ei pokotiaga i te vaitau nei kae e mafai foki pefea ne tatou o fakagata. Ko mafai foki i ei o lavea te ata saukatoa ke galue fakatasi katoa a vasega mo fakapotopotoga i luga i Funafuti nei ki te atafaiga o maumea o te papa o Funafuti ke toe fakafoki te maumea o te kogaatai o Funafuti. Mai konei, tino katoa ko ola saogalemuu, kae ko gali foki te fenua kae ko mafai o ola filemu foki i ei a tino.

Te palani tenei PTMPF ka fakapitoa loa ki luga i te toe fakaleiga o pokotiaga kola ko pokotia i ei a kogaa tai pili aka o Funafuti mo te fakamoemoega maluga ke mafai o avaka te tulaga o te maumea o tou kogaa tai kise tulaga lei. Te fakamoemoega taaua ke mafai o faopoopo te fuainumela o vaegaa ika

- ✿ Establish transparent processes for activities, enforcement of rules and funding, and
- ✿ Ensure good coordination with other development activities and departments so that clashes in approaches can be minimised or eliminated.

1.7 How does it fit in with our laws and development plans?

The **Marine Resources Act** 2006, 2008 and Amendment 2012 (GoT, 2012, GoT, 2008d) was designed to “ensure the long-term conservation and sustainable use of the living marine resources for the benefit of the people of Tuvalu.” The act gives the Minister authority for the conservation, management, development and sustainable use of the resources in the exclusive economic zone (EEZ) of Tuvalu on the basis of 15 principles, the first two of which require: (a) adopting measures that ensure sustainability while promoting optimum utilisation; and (b) ensuring measures are based on best scientific evidence and are designed to maintain or restore stocks at maximum sustainable yields taking into account economic and environmental factors. These principles are central aspects of the FRFSP as it is applied to coastal resources and implementing the plan fits the mandate of the Fisheries Department within the Government of Tuvalu (GoT).

In addition, the Minister may proclaim a fishery as a ‘designated fishery’ if it is important to the national interest and/or requires management measures for effective conservation and optimum utilisation. Such designation would require a management plan constituted in accordance with the Act.

The **Falekaupule Act** 1997, 2008 (GoT, 1997, GoT, 2008b) makes provisions for the authority of the Falekaupule (Landowners, Elders) and Kaupule (Executive arm of the Falekaupule as the Island council) on each atoll. The authority extends over the islands themselves and the internal waters, lagoons, lakes and the territorial waters of the EEZ (out to 12 nm of each atoll). This authority includes administration of the island and resources and the creation of by-laws. The work of the Falekaupule and Kaupule includes the preparation and implementation of plans in consultation with the community and government, including seeking technical advice. It also includes ensuring the proper management and use of the physical and natural resources in the Falekaupule Area.

These two Acts create an ideal arrangement between the Kaupule and

takitasi ke oko foki ki mea olai te tai kola sei ne ivitua o latou mo niisi mea ola kaina foki i te tai kola ne lasi te faaikagina I aso ko teka ke oko foki ki te vaitau nei , fakaleiakaga tulaga o koga nofo o sose mea ola kae fakafoliki te muu o ika, ola vale o te limu mo sose fakamaseiga ki kogaa tai pili aka. Te palani tenei ko te PTMPF ka onono ki te :

- ✿ Faitega o ne fakanofoga e mafai i ei o fakalei tulaga o te maumea i te tai;
- ✿ Fakalausa akoakoga kae fakaaofia foki a tino katoa ko te mea ke tasi katoa te mainaga o tatou I tulaga e tau o fakalei i ei te palani tenei;
- ✿ Faite ne gasuega kola e mafai o fakataunu I galuega fai, fakamalosiga o tulafono pena foki mo feitu tau tupe kae ke;
- ✿ Fakamautinoa ke lei tou vasia o galue tasi mo niisi taugasoa o tatou kola e mafai o pau tou galuega e fai ke moaa e fakafokifoki i ei galuega.

1.7 E Pefea te Sokoga o ia ki Luga i tou Tulafono mo Palani Atiake?

Te tulafono lasi ko te **Marine Resources Act** 2006, 2008 mo te toe fuliga 2012 (GoT 2012, GoT, 2008d) ne faite “mo te fakamoemoega ki te puipuiga mo te atafaiga fakalei o tou maumea i te tai mo se taimi e leva ke ola lei i ei tou tino Tuvalu.” Te tulafono lasi tenei e isi se pulega o te Minisita o onono ki te puipuiga, atafaiga, atiakega mo te fakaaogagafakalei o maumea i te kogaatai fakatulafonogina o Tuvalu kae fakaaautuu ki luga I fakanofonofoga e 15, kolaa fakanofonofoga e lua muamua e manakogina ke: (a) fakagalue ne tatou ne auala kola e mafai i ei o lava lei i ei tatou mafai e lasi te fakaoga te maumea o tatou; kae ko te (b) auala konei e fakaoga ne tatou e tau o mai luga I sukesukega a tagata poto ko oti ne fai kae ke mafai ei o faite ne fautuaga lei ki luga i te fakatumaufa io me ko te fakaleiga o te maumea ki se tulaga telaa lei kii loa, ke amanaia foki a feitu ki fakataugaa tupe mo fakalavelave o mea tau enevalomene e mafai o pokotia i ei. A fakanofonofoga konei ko feitu taua loa konei o te palani PTMPF ona me autuu tonu ki luga I maumea o kogaa tai pili ake kae ko te fakagaluegaaga foki o te palani ke fanotonu mo galuega a te Matagaluega a te Kaufaaika mai lalo o te Malo o Tuvalu (GoT).

Se gata i ei, a te Minisita e mafai o fai tena tonu ki te kogaa tai faaika a tatou pela me se “kogaa tai faaika fakamatea” mafai e isi ne manakogina o te atufenua io me ko te maloo ki ei/ io me ne auala kola e fakasoasoa i ei fakalei ne tatou a tulaga tau puipuiga o mea ola mo te fakaogaga fakalei o tou maumea. Vagana faiga penei e manakogina se palani fautua mo te atafaiga o te maumea kae ke fano tonu tena fakavae mo te tulafono.

Fisheries Department for management of the coastal marine resources of Funafuti, without any need to 'designate' the fishery. With the Kaupule being the authority for managing the resources and TFD providing technical support through monitoring and policy development as part of adaptive management the FRFSP already has the legal support it needs.

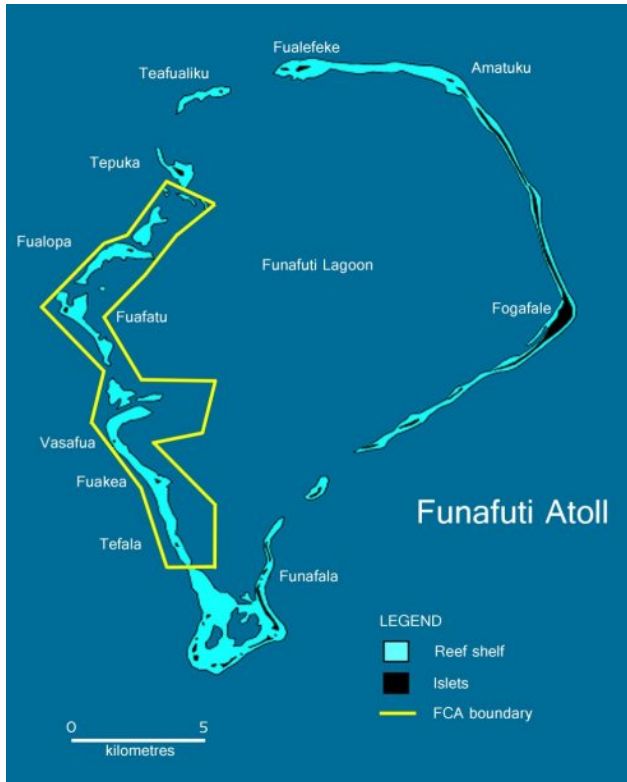


Figure 2: Boundaries of the Funafuti Conservation Area 2012. Ata 2: Tuakoi o te Kogaakoga puipuigina a Funafuti.

marine resources of the atoll.

The **Kakeega III** is the GoT's national strategy for sustainable development 2016-2020 (GoT, 2016) has among its Key Performance Indicators (KPIs) in Strategic Area 8 on natural resources an increase in fish stocks/coastal marine life for artisanal and semi-subsistent fishermen. Under Strategic Area 12 on Oceans & Seas it includes the assessment of coastal fish stocks and marine life

The Tuvalu **Conservation Areas Act** 1999, 2008 and **Funafuti Conservation Area Order** 1999, 2008 (GoT, 2008a, GoT, 2008c) make the Kaupule responsible for the management of conservation areas, including the development of management plans based on scientific survey data. The initial boundaries of the only officially legislated reserve, the Funafuti Conservation Area (FCA), established in 1999 may have been modified in 2012. The previous establishment of the FCA means that implementation of the FRFSP can leverage that earlier work, strengthening its administration and functions for the purpose of managing the coastal

Te **Falekaupule act** 1997, 2008, (GoT, 1997, GoT 2008b) se tusi tulafono tela e fakapatino ei a te malosiiiga tela e mafai o fakaoga ne te Falekaupule(matai mo tino fai manafa) pela foki mo Kaupule (te lima fakagalue o te Falekaupule) o fenua takitasi. Te malosiiiga la o te falekaupule e oko loa ki mea katoa I luga I tena fenua, pela foki taisala, namo o te , namo I loto I fenua pela mo niutao mo nanumaga ke oko foki loa ki kogaa tai pili aka o tena fenua (mai te pisitai ki tai I te 12 maila o fenua takitasi). Te malosiiiga tenaa e aofia I ei ko te fakatelega o te fenua mo ana maumea totino mo te faiteega I ei o ana tulaafono foliki. A Falekaupule mo Kaupule ko latou foki kola ka fakatoka kae fakataunu foki a palani ki luga I vaasia o latou mo tino o te fenua mo te malo, e pena foki ki te aofaga ke maua mai ne fautuaga mo ana atiakeega. A te tulafono lasi foki tenei (Falekaupule Act) e aofia ei te fakapatonuga o te atafaiga fakalei mo te fakaaogaga fakalei o maumea totino o te fenua kolaa mai lalo I tena maalosi.

A tulafono konei e lua (Marine Resource Act & Falekaupule Act) e fakafaigofiegina ne laua a tiute fai o te Kaupule o Funafuti mo te Matagaluega a te Kaufaaika ki luga i te aofagaaga mo te atafaiga o maumea totino o te tai o Funafuti. A te Kaupule o Funafuti e onono ki te atafaiga o maumea totino konei kae ko te Matagaluega Faaika e fai ne ia fautuaga ki luga I atiakega mo aofagaga moo maumea totino konei e manakogina ne te palani tenei.

A tulafono lasi konei e lua, te **Conservation Areas Act** 1999, 2008 mo te **Funafuti Conservation Area Order** 1999, 2008 (GoT, 2008a, GoT, 2008c) e fakatonu mai me i Kaupule ko latou e onono ki te atafaiga o kogaakoga puipuigina, telaa e aofia foki I ei te faiteega o palani atiake o te atafaiga o kogaakoga puipuigina kolaa ka fakavae ki luga I suksesukega faka saenisi. o te ki te o te . Te kamataga o te fakamailogaaga o te tuakoi o te kogaakoga puipuigina a Funafuti ne fakamailoga I te tausaga e 1999, kae ne toe fakafouu io me ne fakamafuli malie a te tuakoi o te kogaakoga puipuigina a Funafuti I te 2012. Te fakamoemoega o te faiteega muamua e iloa o te Kogaakoga Puipuigina a Funafuti (KKPF) ko te mea ke mafai o fesoasoani te PTMPF ki te fakataunuuga o ana galuega maise ki luga ki te o te o te i te i tefakamalosiiga o te fakagaluegaaga o te kogaakoga puipuigina moo te lei o mea ola I motu. a te a te i te i te.

I loto i te **Kakeega III**, te la ko te palani atiake a te Atufenua 2016-2020 (GoT, 2016) I te tapula 8 o te palani tenei tela ko te tapula ki luga i maumea totino, tasi o tapulaa fakamaatea mai I ei ko te avakaaga o te fuainumela o ika/ mo mea ola katoa i te tai ke aoga mo pisinisi foliki faaika pena foki mo te faaika mo

across Tuvalu, as baseline for measuring impact of protection and rejuvenation measures; and conservation of at least 10% of coastal and marine areas, consistent with international law, based on the best scientific evidence. These three KPIs are embodied by the Funafuti Reef Fisheries Stewardship Plan and implementing that plan will see significant progress towards fulfilling the Kakeega III's requirements.

Moeakiga o Malefatuga II: Funafuti ISP 2016-2020: The Funafuti Island Strategic Plan has much to say about managing and improving the marine resources of Funafuti. The plan calls for monitoring of resources and the need to coordinate with the Kaupule and other agencies. During consultations for the ISP there was a reported decline in the near-shore fishery resources and coral health. The adaptation options called for installation of fish aggregating devices (FADs), imposing controls for overfishing, monitoring the Funafuti Conservation Area and the development of a marine resource management plan (Kaupule, 2016). This Funafuti Reef Fisheries Stewardship Plan will address these issues in alignment with the Funafuti ISP.

1.8 Who will implement it?

The Funafuti Reef Fisheries Stewardship Plan will be headed up by the Tuvalu Fisheries Department, with main technical parts of the plan to be coordinated and undertaken by the Coastal Fisheries and Operations & Development Sections. The Funafuti Kaupule is responsible for management of Coastal fisheries out to the 12nm zone and is also the agency responsible for the Funafuti Conservation Area. A Steering Committee drawn from Fisheries, the Kaupule, Falekaupule, Fishermen on Funafuti Association (FOFA) and Outer islands Leaders living in Funafuti, will form the main decision-making mechanism to ensure the plan is implemented



kai. Te tapula 12 o te palani atiake tenei i moana mo kogaa tai, e aofia i ei ko te iloiloga o ika I kogaa tai pili ki te fenua pena foki mo mea ola katoa o te tai I Tuvalu. Mai luga I iloiloga konei ko mafai ei o faite ne puipuiga ki luga I pokotiaga kola e mafai ei o pokotia a kogaa tai puipui mo te aofagaaga ke tumau te fanafanau o mea ola o te tai, ke mafai foki ne te palani tenei o puipui te 10% o kogaatai mo mea ola I ei, te aofaga tenei e fakapau ki tulafono lasi o fenua ki tua atu kolaa ne ikuga mai luga I sukesukega faka saienisi ki Ki luga I kogaatai puipuigina. A tapulaa fakamaatea konei e tolue aofia I loto I te PTMPF palani tenei kae ko te fakataunuga o te palani tenei ka faigofie I te fakataunuuga o tapulaa fakamaatea I loto I te Kakeega III. a

Moeakiga o Malefatuga II: Funafuti ISP 2016-2020: Te ISP io me ko te palani fakatautau o Funafuti e lasi kii te aofia o ia ki luga i te atafaiga mot e fakaleiga o te tulaga o mea ola o te tai I kogaa tai o Funafuti. Te palani tenei e fakataua ne ia ke galue fakatasi a te Kaupule mo nisi matagaluega ki luga i te puipuiga mo te fakatumauga a te ola lei o mea ola o te tai. Ne maua aka mai luga i te faiteega o te palani tenei (ISP Funafuti) me ko gasolo loa o lasi te sei ne ika mo mea ola o te tai pena foki mo kamu ko gasolo loa o sei. Mai luga i te kiloga tenei ne mafua mai ei o faite ne poe fakalata ika ko te mea ko tino ke lasi te faaika ki ika o te moana, kae fakafoliki te faaika ki ika o te namo io me ko ika o te papa kae faite foki se palani mo te kogaa tai puipui o Funafuti (Kaupule 2016). A te PTMPF palani tenei e fakasae kae fakataua ne ia a tapula kola ne sae I loto i te palani atiake o Funafuti.

1.8 Kooi ka fakagalue ne ia te palani?

Te PTMPF ka takitakigina ne te Matagaluega a te Kaufaaika a tulaga o fesoasoani e pogai tonu loa mo te fakateleega o te PTMPF kae ko te fakataunuuga o galuega konei e fai ne te vasega o te kau faaika kola e galue mo kogaa tai pili o fenua. Te Kaupule ko ia ka aofaga ne ia te atafaiga o ana kogaa tai ke oko atu loa ki te 12 maila tuakoi, ko te Kaupule foki ka panaki mo te tausiga kae leoleo a te Kogatapu o Funafuti. E tau o isi se committee tela ka lloilo fakalei ne ia a tulaga o te PTMPF pena foki mo te fakateleega fakalei o galuega ki luga i te fakataunuuga o fautuaga o te PTMPF. A te komiti la tenei e tau o aofia i ei ne tino mai te Matagaluega a te Kaufaaika, Kaupule, Falekaupule, Fakapotopotoga Tagata Faaika (FOFA) mo toeaina takitaki o fenua kesekese I luga I Funafuti. A tagata faaika kola e kau ki loto i te fakapotopotoga a te



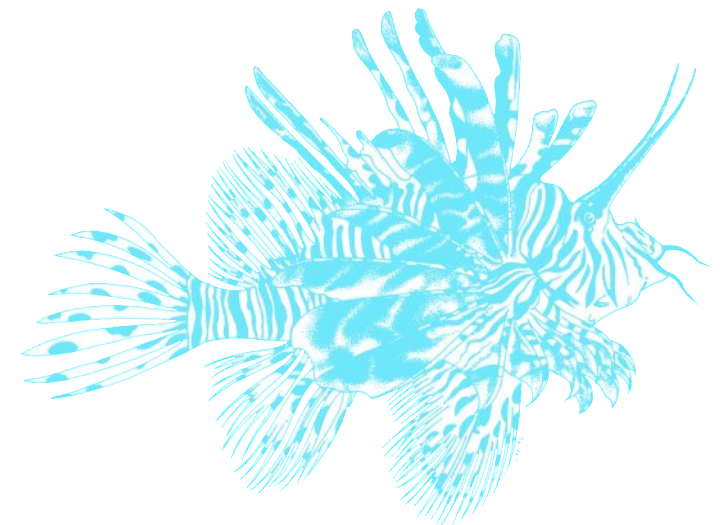
Spawning fish

efficiently and fairly and with all stakeholders' concerns and issues considered. FOFA will work with its members to ensure voluntary compliance with the plan to the maximum extent possible and work with TFD and the Kaupule in the case of infringements. FOFA members would also contribute to some of the monitoring by filling in fishing logs to complement the creel data being collected by TFD.

Finally, it is envisaged that the general public will assume ownership and become involved in different aspects of the plan because we are all beneficiaries of more productive fisheries in Funafuti. This would involve regular public consultations at which the results of on-going monitoring are presented to the public and recommendations for adaptive management discussed for implementation. Ideas from the FRFSP could then be applied on outer islands as may be needed where signs of overfishing are also beginning to emerge.

FOFA e tau o fesoasoani I tulaga o galuega fai a te Matagaluega a te Kaufaaika masani mo tagata faaika kae maise ke moa e solisoli ne latou a fakanofuuga o te palani aua ko te mea ke taunu a fakamoemoega o te palani. A tagata faaika foki ka fakamoemoegina foki ke fakamau faeloa ne latou olotou ika maua ki tusi fakamau kola ka tufa atu ne te Kaufaaika ko te mea ke fesoasoani ki te galuega a te Kaufaaika tela ko te savea lau ika mo te fuaga o ika maua.

E fakamoemoegina ko tino katoa I luga I Funafuti ke nofo mo te mafaufauga me e pule ne tatou a kope konei tela ke aofia foki a tino katoa I luga I tulaga kesekese o te palani me ko tatou katoa ka manuia mai fuataga o te palani tenei I tulaga o mea tau ika I luga I Funafuti. Na la e fakataua I konei ke fai ne fonotaga masani a te Matagaluega a te Kaufaaika mo tino katoa I luga I Funafuti ko te mea ke titi manatu me nea fuafuaga lei e tau o fai ke fakagalue fakalei a te palani tenei. Kafai ko matea atu me e galue se vaega palani penei mo te PTMPF ko mafai ei ne te Matagaluega a te Kaufaaika o fai ne vaega palani penei mo fenua atu I tua o Funafuti maise loa ki fenua kola ko pokotia a mea ola o te tai I olotou fenua.



2 Core Ideas Manatu Taaua

In Sections 1.2 and 1.3 the current status of the Funafuti Reef Fisheries and the ecosystems that support them were summarised, showing that the resources are in decline and are no longer as productive as they should be. Fishers have been complaining for years that the resources in the lagoon are low in number and still declining, and that the fishes are very small (UNDP, 2013) (Annexe 5 Consultations with Fishers). There are also problems with ciguatera outbreaks, overgrowth of *Sargassum* algae, sewage and other pollution (JICA, 2011) and damage to seafloor ecosystems, including coral cover which is now near-zero close to Fogafale, caused by coastal developments.

The basic aim of the Funafuti Reef Fisheries Stewardship Plan will therefore be to reverse these problems and increase the supply of fished resources.

To achieve these improvements and increase the supply of fishes and other seafoods it will be necessary to protect the breeding populations, especially of fishes, and reverse at least some of the ecosystem damage.

Restore breeding: Damage to the breeding populations has come about mostly due to overfishing. That is, as fishers captured more and more of the reef fishes the adult population started to decline. Eventually, this became self-reinforcing because as the adults became more scarce, people started to take smaller and smaller fishes, further reducing the number of breeding adults. This sets up dangerous a downward spiral in the fish populations. Fewer adults means fewer eggs and babies, which along with fishing smaller and smaller fishes, leads to even fewer fishes in the future. For some species (the most prized) we are already seeing that more than half of the population does not make it to reproductive size. In Figure 2 is shown the general behaviour of a fishery as it moves from its original unfished state to levels of higher and higher fishing pressure (which can be described as the number of boats fishing, the number of people fishing, amount of gear used or other measures). Funafuti is now somewhere on the declining side of the curve (marked by the “we are here” flag). One of the aims of the FRFSP will be to take actions that will move the fishery back towards the theoretical “maximum sustainable

Ite vaega 1.2 mo te 1.3 o te tulaga o te palani mo mea ola o te tai o Funafuti (PTMPF) mo te natula tela e ola i ei e fakaasi mai me ko oko ki se tulaga tela fakamataku tela ko seai ne mea ola i ei aua me ko se mafai o fanafanau a mea ola i ei pela mo te masani. Ko fia nei a tausaga ko teka atu mo te faitio faeloa a tagata faaika o Funafuti ki te tulaga o te mutana o ika I loto i te namo o Funafuti pela foki mo te foliki o saisi o ika maua I loto i te namo (UNDP,2013) (Annex 5 Consultations with Fishers). Ko iloa atu foki me ko lasi foki te ika muu ko maua atu I loto i te namo o Funafuti, pena foki mo limu foou (*Sargassum*) kola ko ola valevale I loto i te namo, ko fakamaseiga o te tai mai luga I lailaiga mai te fenua pena foki mo septic tanks (JICA,2011) mo te fakamaseiga o te natula mo mea ola I ei, aofia ei fakamaseiga ki kamu, telaa ko faigataa o lavea ne koe ne kamu ola I kogaatai pili ki Fogafale ona ko te lasi o mea fakatuutuu mo nisi atiakeega foou I tafaatai.

Te tapula fakamoemogina o te palani tenei PTMPF ko te fakafokiga o fakalavelavega konei e pokotia ei tou maumea totino kae avaka te aofaki o figota.

Te fakataunuuga o te fakamoemoga tenei ke toe avaka te fuainumela o ika mo nisi figota ka mafai o taunuu mafai ko puipui ne tatou a mea ola kola ka fanafanau, maise a ika, kae ke mafai foki o toe fakalei a tulaga o te natula mo mea ola kolaa ko isi se fakamaseiga ki ei.

Ke toe fakafanafanau: Te pokotiaga tenei ki te seai o ika fanafanau e mai luga loa I te lasi o te faaika soko o tino. Telaa, ko fanaifo te aofaki o ika fanafanau mai luga I te lasi o te faaika ne tagata faaika a ika o te papa. Tela laa e tau o toe fakamalosigina te tulaga tenei, me ko te mutana te aofaki o ika lasi, a tino ka saga o faaika a ika foliki o te papa, telaa e pokotia foki loa I ei a te tulaga o ika fanafanau. Te mutana o ika lasi ko te mutana foki o te fanafanau o ika, tela la ko te faaika soko ne tatou a ika foliki ka gasolo loa o foliki te fuainumela o ika mo aso mai mua. Naii vaegaa ika kolaa e masani o faaika ne tino ko lavea atu me taulasiga ko see oko ki te tulaga telaa e mafai o fanafanau. I te Figure 2 e fakaasi mai ei a te tulaga o ika I taimi kola ne seki ai ei ne tino faaika ke oko ki te tulaga tela ko lasi kii te aofaki o tino faaika (e fakaasi mai i te aofaki o pooti mo tino e

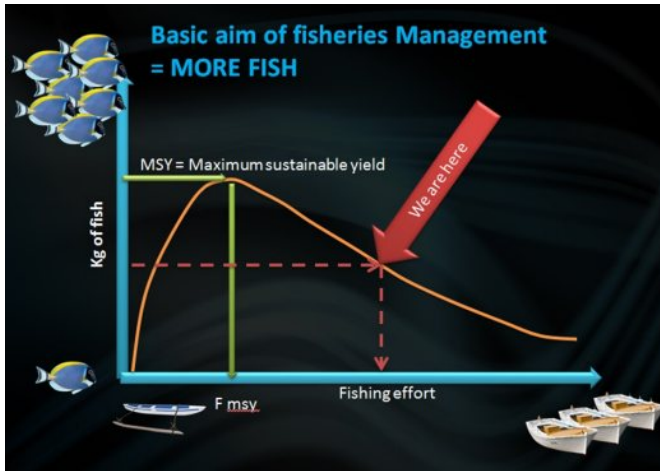


Figure 3: The basic aim of fisheries management. This graph shows how the amount of fish caught in a fishery changes under different levels of fishing pressure, or effort. Without any fishing effort the catch is zero because no one goes fishing and as one might expect, no fish are caught. As effort increases, so does the total catch, up to a point and then it starts to decline once effort exceeds the ability of

the fishery to replenish itself. In Funafuti, we are now in a situation where effort has exceeded replenishment and the catch is low, even though the effort is very high. To improve things, we need to reduce effort to allow the stock to recover towards the peak of the curve, at that point the fishery would be considered sustainable and also much more productive than at present.

yield” which simply means the level of fishing pressure that will allow the fishes to always replenish themselves through reproduction. For a while this will require reducing the fishing effort more severely in the short term to allow for recovery, a move that can be relaxed once the adult population increases and reproduction improves. The main aim of actions we might take to restore breeding will focus on **ensuring that every fish gets the chance to at least breed once, before it is captured through fishing**. For fishes this is usually about the size of the body, and the size is different for each species and sometimes also from place to place. Science is needed to determine the size that fishes need to reach to ensure they can breed and contribute to the next generation.

Ecosystem Management: At the same time, it will be necessary to work on reducing some of the ecosystem damage of the past 3 decades. This may involve reducing sewage seepage into the lagoon by promoting proper sewage disposal off the atoll in a centralised sewage system so that problems with ciguatera and algal overgrowth are addressed. Greater care in beach replenishment and seawall projects will also be needed through TFD working with the departments of Environment (DoE) and Public Utilities and Infrastructure (PUI) to ensure future projects will not lead to further losses in

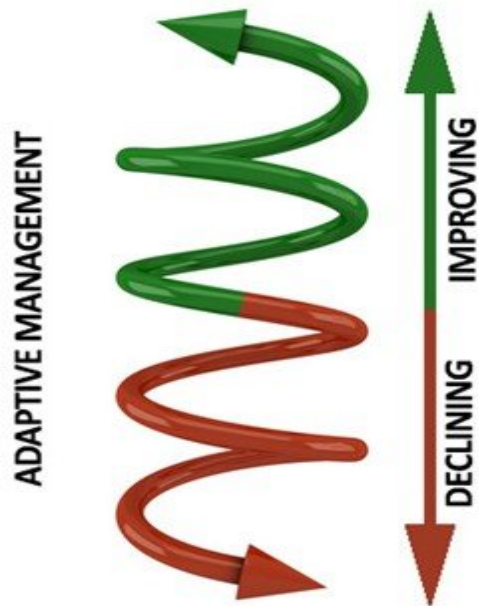
Ata 3: Te ata taua o te fakasoaga o mea ola i te tai. Te ata tenei e fakaasi ei te kесеkесеga o te aofaki o ika e faaikagina mai I ata o pokotiaga o te lasi o te faaika mo te uke o mea faaika. Ko te seai o ne mea faaika, ko te seai foki o ika e faaikagina. Kae i te taimi ko fisi ei ne mea faaika ko fanaka foki ei te aofaki o ika e faaikagina, ke oko e iloa ki te taimi telaa ko fanaifo ei te aofaki o ika ona ko te uke o mea faaika. Ko te uke o mea faaika, ko lasi te faaika telaa ko oko ki tulaga ko see lava taimi o ika o fanafanau. i ei . I te vaitau nei, Funafuti ko oko ki te tulaga tela ko uke atu a meafaika I te aofaki o ika kolaa e tau o faaika, telaa e ui e iloa e uke a mea faaika kae ko te aofaki o ika maua ko mutana. Tela laa ke fakafoki te tulaga o te maumea o te tai, e tau mo tatou o fakamutana te aofaki o mea faaika ko te mea ke maua se avanoaga mo ika o toe fanafanau, kae ke toe foki ki luga I te ulu o te mauga I te ata tenei e fakaasi atu, kafai ko foki kонаa tulaga o te maumea o te tai, mo te i ei i ei , ko mafai ei o lava kae lausa te aofaki o ika faaikagina.

faaika pena foki mo kope kola e fakaogaa ne latou mo faaika). Te tulaga o Funafuti a ika ko gasolo loa o mutana. Te fakamoemoega maluga ke mafai ne te PTMPF o fakafoki mai a tulaga o mea ola o te tai ke mafai ne tino o faaika kae ke mafai foki ne ika o fanafanau. E tau o fakafoliki a aofaki pooti kae fakatapu foki a vaega faaika kola e mate ei a ika foliki ko te mea ke isi se avanoaga o ika mo mea ola o te tai ke toe fanafanau, ke taumafai ke uke a saisi ika lasi ko lasi ei te fanafanau. Te fakamoemoega maluga ke samanaki tatou ki ei ko **te fakapatonuga ko ika katoa ke mafai o fanafanau fakatasi koi tuai o faaikagina ne tagata faaika**. A ika e kесеkесе a saisi o latou ona me kесеkесе a vaega o ika, e mafai foki o kесе mai luga I kogaa koga ne ola aka ei a latou. i ei E manakogina ke fai a Iloiloga mosukesukega faka saenisi ke Iloa tonu a saisi o ika kolaa ko mafai ei o fanafanau kae ke fakauke foki te aofaki o ika fanafanau.

Atafaiga o te natula: I te vaitau foki loa tenei, e tau ke naa galue tatou ki luga I te fakafolikiga o te fakamaseiga ki kogaakoga o te natula o tausaga e 3 ko teka. E aofia i ei ko te fakafolikiga te fekau masei e fano ki te namo e auala i te fakamalosi atu ki tino ke mafai o tasi loa se koga ke ave katoa k i ei a fekau masei e mafai foki ei o fakafoliki te muu o ika mo te ola vale o te limu I kogaa tai. Te Matagaluega a te Kaufaaika e tau o galue fakatasi mo te Matagaluega o Enivalomene pela foki te Matagaluega Fakatuutuu ki te onoonoga fakalei ki pokotiaga o polotieki mo atiakega konei; te tanuuga o tafaatai mo te faiteega o puipui tai, ko te mea ke mafai o fakafoliki a pokotiaga e oko ki maumea o te tai mai luga I vaegaa polotieki penei. mo te mo te mo te E tau foki o fai ne galuega ki luga I te fakafolikiga o pokotiaga mai luga I te fakaaogaga o vailakau tokilakau mo fagaiga o manu.

Fakaaofia Tino tonu e tau o Kau: Tasi o aofaga e fakatauagina mo te palani

Figure 4: Adaptive management model. Adaptive management seeks to take actions that are expected to improve the fisheries, then monitor the outcomes of those actions in terms of fishery productivity, adjusting the actions from time to time. The idea is to keep adapting the management strategies to the conditions found each year till the fishery becomes the most productive it can. After that, adaptive management seeks to keep the fishery in good condition. It can be visualised as either an upwards improvement spiral, or a downwards 'death' spiral for the fishery. The most productive point is at the green/red junction marked by the yellow circle. Here there are enough fishes to fully replenish the breeding stock, but also as much being caught as possible for that fishery.



Ata 4: Ata ki te Aofagaga fakaataata. Ke mafai o faigofie te fakagaluega o te palani, e manakogina ke iloa a feitu taua kola e mafai o tai fakalei i ei mea tau faaika, Iloilo kae fakamaumau fakalei fakamatalaga e uiga mo mea tau faaika ko fakamafuilifuli i ei ke fano tonu ki te manakoga o te aso tena ko tau o fakamafuli k i ei te mafaufauga I konei ke mafai o fetau tonu te fakamafuiliga I tauhaga katoa ki pokotiaga kola e lavea mai luga I fakamatalaga o savea. Mai tua ifo, te mafaufauga ke fakaoga te vaegaa auala tenei ke mafai i ei o fakatumau te maumea i te tai. E mafai o lavea ise ata fanaka ki luga io me fanaifo ki lalo a te maumea o taua i te tai. Te poini taua e fakatauagina i te ata fakaasi ko te koga tela e fetau iai te kula mo te launiu tela e fakaasi mai ei me e lava kae toe te fuainumela o te ika ke mafai ei o toe fanafanau mai ne ika e uke e lava lei ei tatou .

Aogaa tafasili ite taua mo sose koga puipuigina:

- E fakauke neia te aofaki o ika kae ke fai foki pela mese koga e puipui iei a ika I taimi ko tau latou o fanafanau, olaga sau katoa o te ika ke oko ki ana meakai;
- Koga puipui mo sose mea ola fakatasi mo te koga e ola iei aia;
- E avaka iei te ata lei o se kogaakoga mo feitu tau tualisi kae faopopo foki neia te maumea I feitu tau sene;
- Fakamaua avanoaga mo akoakoga, akoga fakaakoako mo taimi toetoe, talitonuga faka tatou mo tuu mo aganuu kae;
- Mafai foki o fakaoga mo fai se kogaakoga e fai iei a suksesukega ise taimi leva.

fishery production. There are also considerations with the use of domestic and agricultural chemicals that needs to be made.

Involve all Stakeholders: Another core idea for the FRFSP is to ensure that the beneficiaries of the plan (everybody living in Funafuti) are part of the solution at every possible level. Fishers and the public need to be educated, regularly informed and fully involved in deciding how best to implement the steps that need to be taken to recover the fisheries.

Adaptive Management: Finally, the Funafuti Reef Fisheries Stewardship Plan needs to be adaptive and based on careful monitoring of the state of the resources (through Creel and perhaps underwater visual census (UVC) surveys) over the long term. This means that we will apply actions to improve productivity, monitor the fishery, determine whether it is improving or not, and then perhaps adjust our strategies in an on-going manner. This allows us to adapt to changing conditions as needed, always aiming for the best catch possible for the residents of Funafuti (Figure 3).

tenei PTMPF ko te mea ke iloa ne tino kola e fakaoga ne latou te palani tenei (tino katoa e nofo I Funafuti) me ia latou e aofia katoa I sose tulaga e oko k i ei te palani tenei. Tagata faaika fakatasi mo tino katoa e tau o akoakogina, fakamasaua faeloa kia latou kae ke aofia katoa i te fakaikuga o aofaga gali kola e mafai ei o fakalei atu tulaga o te faaika.

Aofaga fakaataata: Te palani ko te PTMPF e taua ke fakagalue gofie kae ke fai fakalei savea ke Iloilo i ei te tulaga o maumea (mai luga I te faiga o te savea lauika kae fua ika mo te savea ki te lauga o ika valevale mo te saisi o ika I lalo I tai) mo se vaitaimi leva. Tona uiga tatou e tau o galue ke mafai o tai atili fakalei aka te uke o ika, Iloilo fakalei mea tau faaika, ke iloa me fano o lei io me ikai ke mafai i ei o fulifuli tou aofaga ke fano tonu mo mea e tupu i te vaitau tena. I konei e mafai i ei ne tatou o agai atu ki mafuilifuliga kola e manakogina, kae ke kilo faeloa tatou ki te mafaufauga ko te mea ke mafai ne tatou o lava kae toe I sose taimi e olo o faaika (Ata 3).

The main benefits of Marine Protected Areas are (from Kenchington et al., 2003):

- Arresting and reversing the global and local decline in fish populations and productivity by protecting critical breeding, nursery and feeding habits;
- Conservation of biodiversity and ecosystems;
- Raising the profile of an area for marine tourism and broadening local economic options;
- Providing opportunities for education, training, heritage and culture; and
- Providing broad benefits as sites for reference in long-term research.

3 Four Strategies to Better Fisheries

Auala e faa e tau atu ei kise kogaatai Maumea

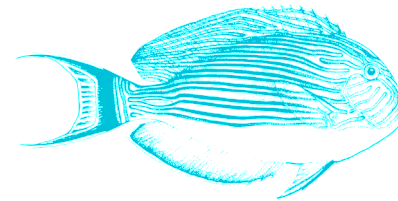
3.1 Strategy 1: A Strengthened and Fully-functional Funafuti Conservation Area (FCA)

Funafuti already has a marine protected area. The Funafuti Conservation Area was initiated in 1996 for the Funafuti Kaupule with assistance from the Secretariat for the Pacific Regional Environment Programme (SPREP) and was protected by the FCA Order on 1st December 1999 under the Conservation Areas Act 1999/2008 (GoT, 2008c, GoT, 2008e). There was some initial baseline monitoring of the marine resources and ecosystems carried out in 1997 and 1999 (Kaly et al., 1997, Kaly et al., 1999), and in 1998 a bird survey was completed (Watling, 1998) so that initial conditions could be documented for later comparison of how things may have changed under protection. A review of the FCA carried out in 2003 by the Asian Development Bank (ADB) found that the community were generally supportive of the FCA though there were weaknesses, and that it was producing results and should be maintained as a no-take zone (Berdach, 2003). The study noted that there was a high level of voluntary compliance with the FCA rules but that there was a lack of a community-based management plan for the area. No further monitoring or studies have been undertaken since that time but anecdotal information and observation suggest that the FCA is not functioning as it should be. Without survey data it is impossible to know the true status of the resources and ecosystems within the FCA. As happens in many places around the world, it is likely that the FCA is functioning as more of a 'paper park' and that the benefits that could come from it are not being realised.

A fully-functional marine protected area like FCA is an obvious part of a strategy to recover the coastal resources. As the FCA has already been long established, it will be easier to promote, educate and enforce – as much as possible on a voluntary basis – the area as a no-take breeding reserve to recover the stocks in Funafuti. The main benefits for fisheries will be:

3.1 Auala 1: Kogatapu o Funafuti ko galue lei kae ko malosi ana fakanofonofoga

Funafuti ko isi sena koga puipuigina. Ne kamata o fakatu i te tausaga e 1996 ne te Kaupule o Funafuti fakatasi mo te fesoasoani mai te SPREP tela e puipuigina nete tulafono ko te FCA Order i te po 1 Tesema 1999 mai lalo o te tulafono lasi ko te Conservation Area Act 1999/2008. E isi ne savea ko oti ne fai i te tausaga e 1997 mo te 1999 ki luga i te iloiloga o mea ola i te tai ke oko ki koga nofo o



latou, te savea o manu eva ne fai i te tausaga e 1998, tela la ko mafai o aoga savea konei mo taimi mai tua ifo mafai ko toe fai ne savea fou e fakapaupau i ei te aofaki o mea ola i te tai mai lalo o te koga puipuigina. Ne toe fai te iloiloga o te kogaakoga puipuigina tenei ne te Page Atiake o Asia I te 2003 kae ne iloa aka me I tino

e lago maloo ne latou te koga puipuigina kae koi isi loa ne feitu koi tatoo i ei mai luga I matematega, tela ko ala i ei o fakataua ke mafai o fakafoliga pela mese koga tela e tapu te puke sose mea mai i ei. Ne iloa aka foki I suksesukega ne fai me lasi kii te lago maloo o tino o tautali ki fakanofonofoga kae e tatoo mai luga i te seai se palani ne fakatu ke mafai o fakateletele ki ei te Kogaakoga puipuigina tenei. Ke oko mai loa ki taimi nei, e seki toe ai e iloa ne suksesukega fou kai toe fai ki te kogaakoga puipuigina tenei kae I matematega fua e lavea atu i ei me i te koga tenei see galue lei. Te seai o fakamaoniga e maua mai savea, e se mafai lele loa ne tatou o iloa te tulaga ko oko k i ei te koga puipuigina tenei. Ka fakatusa ki niisi koga puipui I nisi fenua, te koga tenei pela fua se koga puipui e takutaku I gutu o tatou kae se koia se tinaa koga puipui I faiga.

Te tinaa koga puipuigina penei mo te Kogatapu a Funafuti se aofaga gali ne fai ke mafai i ei o lausa te aofaki o mea ola I kogaa tai pili mai. Ona ko te kogatapu a Funafuti ko tai leva loa ne fakatu, ka faigofie kii o tai avaka tena tulaga ki luga,

- ✿ A proportion of the population of each fish species will grow to very large sizes, enabling them to produce tens or hundreds of times more eggs/ sperm than slightly smaller fish
- ✿ An abundance of adults of species to reproduce more effectively because eggs and sperm will be more likely to come together when spawning densities are high;
- ✿ Smaller fishes will be allowed to grow to maturity and add to the adult stock; and
- ✿ Fish will 'spill over' to unprotected areas of the atoll where it is less crowded and where they can be fished.

Acting together these features can mean a more resilient fishery, with more fish to catch even in unprotected areas of the atoll.

Key Activities

Strategy 1 will involve TFD supporting and collaborating with the Funafuti Kaupule through providing technical advice and assistance with obtaining the funding needed for day to day operations. Initial funding can be sourced from donor projects (TFSP, PROP) currently supporting the TFD, but it will ultimately be necessary to establish a permanent funding mechanism such as through GoT recurrent budget allocations, the Community Vessel Day Scheme (VDS) and/or other partners to establish or improve an office, patrols, FCA Plan, the FCA Management Committee and other processes as may be needed to make the FCA fully functional as a no-take reserve.

It is envisaged that a caretaker hut may be established on one of the FCA islets, probably Fualopa, and two staff recruited to stay there in turns. The FRFSP project will seek funding for a new surveillance boat to be used by the caretakers and an allowance for fuel. This will be augmented by surprise patrols to be run with TFD up to 10 times per month as part of a collaborative operation. Other forms of surveillance will be trialled such as the use of remote cameras and/or drones if required.

Fishers have often said that the boundaries of the FCA are unclear. The FRFSP will assist the Kaupule with funding and technical support to place markers all around the FCA. These may include solar lights on stakes or buoys set at regular spacings (500m apart and at all corners) so that anyone in a small boat can see where the FCA boundaries are.

fai ne akoakoga kae toe fakamalosi tena tulaga e mafai i ei o toe fakafoki mai te maumea I Funafuti. Aoga mo mea tau faaika e aofia i ei:

- ✿ Se vaega o te aofaki katoa o ika ka mafai o oko ki saisi lasi tela ka mafai i ei latou o fanafanau fakapau ki ika kola I saisi tai foliki ifo.
- ✿ Ka mafai o lasi kii te fuainumela o ika lasi ko fanafanau I ei e pela mo te iloa atu me ka mafai o lasi te fuainumela o fua/tama o ika fafine mo fua/tama o ika tagata ka mafai o fetau ona ko te lasi te fuainumela o ika lasi.
- ✿ Ika foliki ka mafai o maua se avanoaga mo latou ke olo aka o lasi ke toe faopoopo atu i ei ki te aofaki saukatoa o mea ola.
- ✿ Ika ka mafai o lausa atu ki niisi koga mai tua o te koga puipuigina tela ka mafai i ei o faaikagina latou.

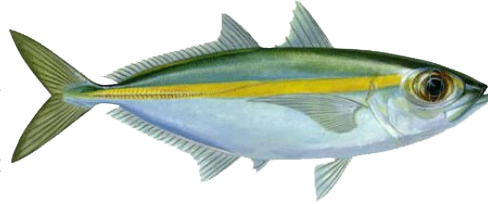
Ka tuku tasi a penefiti mo aofaga konei ka mafai ei o tupu ola tou kogaa tai, kae ka fanaka foki te aofaki o te maumea ke oko foki loa ki koga kolaa e se puipuigina.

Galuega e tau o Fai

Te aofaga muamua e aofia i ei te galue tasi o te Matagaluega Faaika fakatasi mo te Kaupule o Funafuti ki fesoasoani pela mo te iloa ke oko ki te fakamauaga o tupe e mafai i ei o fakatele galuega I aso takitasi. Tupe mo kamata galuega ka mafai o maua mai taugasoia pela mo te TFSP mo te PROP konei e fesoasoani malosi ki te Kaufaaika i te vaitau nei, kae e taua foki loa ke mafai na fakatu se fakataugatupe mai lalo o te Malo, VDS pena foki mo niisi taugasoia aka e mafai ei o fakalei te ofisa, galuega asiasi, faite se palani mo te koga puipui, komiti fakateletele neia te koga puipui ke oko foki ki niisi galuega aka kola e tau o fakatele e fesoasoani i ei ki te fakaleiga o te Koga Puipuigina.

Te fakamoemoega ke mafai o fakagalue se tino tausi ke mafai o nofo ise motu puipui e tasi, kaati ko Fualopa mo ne tino galue tokolua ke mafai o nofo foki I kona kae ke suisui laua. Te PTMPF ka sala foki neia ne sene mo fakamaua mai ei se pooti mo fai galuega asiasi ke mafai o fakaoga nete tino tausi pena foki mo te togiga o penitini mo oela mo utu te masini o te pooti. Ka mafai o fakalauuefa te galuega tenei ki ne malaga asiasi funa ne te Kaufaaika mo te Kaupule faka sefulu taimi i te masina. Niisi auala o savea o te koga puipui pela mo te fakaogaaga o mea pei ata mo vakalele foliki asiasi ka mafai foki o fakagalue.

Where voluntary compliance fails, the FRFSP will implement legislation, by-laws and traditional laws as necessary to ensure FCA functions as a true fisheries reserve. The main laws that apply are the Falekaupule Act, Marine Resources Act and FCA Act.



There is an opportunity to increase public benefits from the FCA through no-take tourism, using the opportunity to raise Tuvalu's profile in the region. TFD will work with the Kaupule to develop better ways to utilise the FCA in non-exploitive ways for the benefit of Tuvaluan families and visitors.

Public education materials to support all of these activities will include radio shows, posters and pamphlets, public talks and other media to ensure the public is fully aware of the purpose, benefits of the FCA and penalties for poaching.

Key Responsibilities

The Funafuti Kaupule would retain their current responsibilities for management of the FCA, the execution of which would be supported and strengthened by the TFD as needed. TFD will provide technical support through fisheries information, monitoring of the resources, capacity-building, joint surveillance activities, assistance with maintaining boundaries and public awareness, as well as assisting with fund-raising. TFD will work with all stakeholders including the Kaupule, FOFA, community groups and the public. The FOFA will work with the fishers of Funafuti promoting voluntary compliance through education and may sanction its members if needed. Through the FRFSP all stakeholders will work to ensure that there is joint responsibility for recovering the resources, resorting to the power of law only as a last resort.

3.2 Strategy 2: Size Limits: to Ensure Every Fish Can Breed at Least Once

Although a critical part of recovery, the FCA alone will not be enough to create the conditions for better productivity of the fishery and greater resilience for

Mai molimau a tagata faaika e fakaasi mai ei me see lei te maakaaga o tuakoio o te kogatapu o Funafuti. Te palani tenei ka fakatupe ne ia a te toe makaaga fakalei o tuakoi o te kogatapu tenei . E aofia i ei ko moli sola I pou (500 mita te mao I vasii o mea takitasi) ke mafai i ei o lavea mao ne pooti faaika te tuakoi o te koga puipuigina.

Ka isi foki ne tulafono foliki mo fakanofonofoga ka fakatoka mai lalo o te PTMPF ke mafai i ei o fesoasoani ki te fakagaluega fakalei o te kogatapu a Funafuti tenei. Tulafono lasi konei e aofia i ei ko te Falekaupule Act, Marine Resources Act mo te FCA Act.

E isi se auala e mafai foki ei o penefiti a tino mai I te kogatapu tenei, telaa e aofia ei ko mea tau tualisi, ke avaka ei tulaga o te ata o Tuvalu i te Pasefika. Te Matagaluega a te Kaufaaika ka galue tasi mo te Kaupule o sala auala lei kae mafai o penefiti ei a tino mai luga I tekogaakoga puipuigina tenei, auala kolaa seai se fakamaseigina ki te kogaakoga puipuiginatenei kae mafai o penefiti I eiakaiga I Tuvalu pena foki mo tino e aumai ki loto I te atufenua.

Ko kope e faka lausa atu ei te iloa ki tino ke fakamalosi i ei te lago maloo o latou e aofia i ei ko polokalame fai I letio, ko fakailoaga e tusi I pepa lasi aofia i ei ne ata mo pati ke oko ki pepa fakamatalaga I saisi foliki, fono fakatasi mo tino tokouke mo niisi auala aka foki kola e mafai i ei o lasi te malamalama e maua ne tino e uiga mo te pogai, te aoga o te koga puipui pena foki mo fakasalaga e mafai o fakasalagina koe i ei ma poa atu koe e soli tulafono o te koga puipuigina.

Galuega Fakapatino

Te Kaupule o Funafuti ka mafai o fakatumau/taofi te tulaga o tiute fai o latou ki te atafaiga o te Kogaakoga puipuigina (FCA), a te Matagaluega Faaika ka fesoasoani kae fakamalosi o fakagalue a feitu penei mafai e manakogina. Te Matagaluega foki ka fesoasoani o fakamaua a fakamatalaga, te onoonoga ki mea ola o te tai, fesoasoani ki te ola lei o tino galue, galue fakatasi mo te Kaupule i te asiasiga o Kogaakoga Puipuigina o Funafuti (FCA), fakatumauga o maaka o Kogaakoga Puipuigina o Funafuti, akoako atu a tino ke tasi te mainaga I tulaga o Kogaakoga Puipuigina mo te fesoasoani I mea tau alaga sene. Te Matagaluega foki ka galue fakatasi mo tino kola ne aofia i te faitega o te palani tenei, Kaupule mo te Fakapotopotoga Tagata Faaika Funafuti (FOFA). Te FOFA ka galue fakatasi mo ana tagata faaika ki te lago atu/fakasalalau atu ki ana tagata ki te

Figure 5: Summary of the main strategies of FRFSP spread geographically over the atoll. “1. No” refers to the FCA where no fish or other seafoods are ever taken – a true no-take area; “2. Size” refers to size limits specific to each species to ensure every fish has a chance to breed; and “3. More” refers to a greater focus on offshore pelagic species to relieve some of the pressure on reef fisheries while ensuring the food supply for residents of Funafuti.

Ata 5: Tuku fakatasiga o auala taua o te palani tenei PTMPF ma fakatu ki te ata saukatoa o te fenua. “1. E Tapu te Puke” e fakautuu tonu loa ki kogaakoga puipuigina (FCA) tela e tapu loa te puke o se mea ola o te tai mai i ei; “2. Saisi o Ika” e fakaasi mai ko te fakalimitiga saisi o ika ki sose vaega ika ke mafai o tuku se avanoaga ki ika ke mafai o fanafanau; mo te “3. Faaika ika o te Moana” e fakautuu tonu loa ke mafai ne tino faaika o fakaoga ika o te moana, kae ke tuku te avanoaga ki ika o te papa ke mafai o fakamautinoa te uke o ika ke fagai k i ei tino e nofo i luga i te fenua o Funafuti.



the future. To ensure good recovery of the overfished stocks in Funafuti it will be necessary to impose size limits on the fishes that can be taken by fishing in open areas (i.e. the rest of the atoll outside the FCA) (Figure 4). The main purpose of this strategy is to ensure that **every fish can breed at least once** so that replenishment of the stock can involve the fishes found everywhere on the atoll, not just the FCA. This strategy will not seek to impose any limits on the amount of catch, just on the size of the individuals caught.

Our fish species have different types of reproduction, some being born with separate sexes, like humans, and others being born male and then converting to females, and others doing the opposite. In all cases, fishes need to attain a certain body size to breed, sometimes first as a female and later at a bigger size as a male, or vice versa. If caught before they attain this size, we prevent them from breeding and set up the conditions for their decline. To reverse this, the FRFSP will establish size limits for as many species as possible based on generally available scientific information, and later on information collected in Tuvalu by TFD supported by the Secretariat of the Pacific Community (SPC).

Key Activities

The main activities for this strategy will involve assembling as much

tulaga o te fakamalosiga o fakanofonofoga/tulafono kola e manakogina. I loto i te palani (PTMPF), sose tino tela ne aofia iloto i te palani tenei ka fai tusaga katoa I olotou galuega fai mo te fakafokiga o te maumea tenei, mai loto i te i te fakamolsiga o tulafono/fakanofonofoga konei.

3.2 Aofaga I te 2: Fakatapulaga o te lasi o ika: Ke fakapatonu te mafai o ika o fanau fakatasi aka loa koi tuai o taa

Ona laa me se lava i te koga puipuigina o Funafuti (FCA) o fakafoki te tulaga o te maumea o te tai ki tulaga lei atu, tela ne avaka i ei te mafaufauga ko te mea ke mafai o fakatuu se vaega aofaga penei tela ko te fakalimitiga o saisi o ika kola e faaikagina ne tagata faaika, mai tua o te kogaakoga puipuigina i loto i te namo (tela ko te namo saukatoa mai tua o te kogaakoga puipuigina) (Ata

4.). Te pogai e fakatuu i ei se aofaga penei ko te mea ke mafai o tuku se avanoaga ki ika ke mafai o fanafanau fakatasi ise taimi ko te mea ke mafai o fakafoki io me fakatumau te uke o te fuainumela i te atu motu. Te aofaga tenei ka se onoono kiluga i te fakalimitiga o te aofaki o ika maua, kae ka onoono tonu loa kiluga I saisi o ika takitasi e mafai o maua.

Te tulaga o ika a tatou e mafai o kesekese a mafuaga o latou, pela mo nisi ika e mafai latou o fanau mai e kese a tenita o latou pela mo tino ola, kae ko nisi ika e mafai latou o fanau mai ne tagata kae kafai ko lasi ko fuli ki fafine pena foki mo nisi ika mai fafine ki tagata. Ki tulaga laa konei, a te ika e tau o isi se saisi oia tela ko mafai i ei ne ia o fanafanau, e mafai o fanau koi liu fafine i te tulaga foliki kae kafai ko tai lasi aka ko mafai aia o fuli ki te tagata, e pena foki te sua



information as possible on the main fished species in Funafuti to establish minimum size limits for fishing (Figure 5). This information will be used by the Kaupule to form the basis of by-laws or other controls on fishing, and will be used by FOFA to promote voluntary compliance among its members. As sizes for breeding can vary from place to place, it will be necessary to establish the true values specifically for Tuvalu. This will be done with the assistance from SPC as part of the FRFSP at a later date (2 or so years on).

The minimum size limits will be produced on posters and other materials, and promotional fish size stickers, rulers and other devices distributed to the community to make it easy to decide whether a fish is of sufficient size or not. Some gears may also need to be restricted to ensure the size limits can be complied with. For example, use of certain sizes of nets and/or restrictions on SCUBA and/or night spearing may also be used to protect fish till they can breed at least once. This contrasts with daytime spearfishing which will not be affected and in which fishers can be very selective, choosing only larger fishes, leaving those under protection alone.

An important part of allowing non-FCA fish stocks to breed will be to establish a ban on fishing spawning aggregations (SPAGS). Spawning aggregations are typically used by fishes and invertebrates to bring them closer together at spawning times so that eggs and sperm can meet to form a fertilised fish egg.

Figure 6: Extract from (SPC, 2005) Size Limits and Other Coastal Fisheries Regulations used in the Pacific Islands Region booklet showing size limits for two wrasse species.

Ata 6: Ne puke mai (SPC, 2005) Saisi o Ika mo nisi fakanonofoga e fakaoga i te Pasefika e fakaasi i ei a vaegaa saisai o ika ko mafai o 'ta mo ituukaiga e lua o te Tagafa.

	Cheilinus undulatus Napoleon wrasse Tagafa	63.5 cm tip of snout to end of tail	No export allowed	Palau
		65 cm for live export	Live export also regulated for gear (handline only), fishing areas, licenses, etc	Papua New Guinea
	Cheilinus sp.	20 cm		Samoa

faitu. Kafai e faaika ne tatou a ika kae seki oko ki tulaga o latou e tau o fanafanau i ei, ka mafai o pokotia i ei tatou i te tulaga o te seai ne ika. Te fakafokiga laa o te maumea tenei, ko fakatuu i ei te aofaga tenei i loto i te palani tenei ko te PTMPF tela ko te fakalimitiga o saisai o ika valevale, mai luga i lipooti mo fakamatalaga ki luga fakasaenisi o vaegaa ika mo olotou saisai konei e fakamaumau ne te Matagaluega Faaika fakatasi mo te fesoasoani mai SPC.

Galuega Taua e tau o fai

Te fakataunuga o te aofaga tenei ka aofia i ei kote salasalaga o lipooti mo fakamatalaga e uke ki ika kaina i Funafuti nei ko te mea ke mafai o fakaaoga mo faite ki ei a limiti o saisai o ika faaikagina (Ata 5). A lipooti mo fakamatalaga konei ka fakaaoga foki ne te Kaupule ke mafai o faite/fakatuu i ei ne tulafono io mene fakateletelega ki luga i te faaika, kae ka mafai o fakamalosi nete FOFA kiluga I ana tagata faaika. E pelaa mo tulaga o saisai o ika fanafanau e mafai o kesekese i kogaakoga kesekese, e mafai o fakaaoga a fakamaumauga mo lipooti konei mo faite a saisai lei mo saisai fanafanau o ika maa Tuvalu. Te fakafoligaga o lipooti penei io me ko fakamaumauga konei maa Tuvalu mai te fesoasoani mai te SPC e pela me se tasi o galuega fai o te palani tenei i se taimi fakamuli (2 io me se fia tausaga).

Fakalimitiga o saisai konei ka mafai o fakamaua mai luga I mea faigaluega penei mo posters, ko saisai o ika kola e mafai o fakapiki kiluga I pui, lula mo nisi mea faigaluega aka kola e mafai o tufa atu ki tua I fakapotopotoga pena foki mo fenua ko te mea ke fakafaigofie te filifiliga o ika kola ko tau o puke mo ika kola seki tau o puke.

Iloto foki i te aofaga tenei ka mafai foki o isi ne tapula e manakogina ki te fakagaluegaga o te aofaga tenei penei mo saisai o tili, ko te taofiga/fakatapuga o fagu uku mo fai a faiva mo te sana poo tela e mafai foki o fesoasoani kiluga i te tuku atu se avanoaga ki ika ke mafai ne ika o fanafanau fakatasi ise taimi. E faka kese ikonei a te sana ao, me e mafai ne tino sana ao o filifili ne latou a saisai o ika kola lasi kae tiaki ne latou a ika foliki ke mafai o fanafanau kae koi tuai o puke.

Te faitu taua e mafai ei a ika o fanafanau I kogaakoga kolaa se puipuigina (non-FCA) ko te faite/fakatuu se fakatapatapuga i te faaika o ika I taimi e fanau i ei. Taimi fanau o ika ko taimi tela e fakaoga ne ika mo nisi mea ola o te tai o aumai fakatasi o fanau fakatasi ke mafai o maua mai ne fuaaika. Tela la te faitu taua o

They are therefore a critical part of the FRFSP's approach to ensuring breeding.

Key Responsibilities

As the authority for fisheries within the 12nm zone, the Funafuti Kaupule will be responsible for establishing fish size limits and regulations (by-laws or other) and enforcing them. The TFD will provide all required technical support on fish sizes and any gear and other restrictions (SPAGS) that may be needed to allow stocks to recover. TFD will also seek funding and assist with monitoring, control and surveillance (MCS) as may be required to implement this strategy. The FOFA will work with its members to promote voluntary compliance with the size limits and sanction its members if necessary. TFD will also take the lead on public awareness and education so that everyone is aware of the size limits and why they are needed. TFD will also regularly provide updates from creel and other monitoring on recovery (or not) of the stocks, allowing for improvements in management if needed.

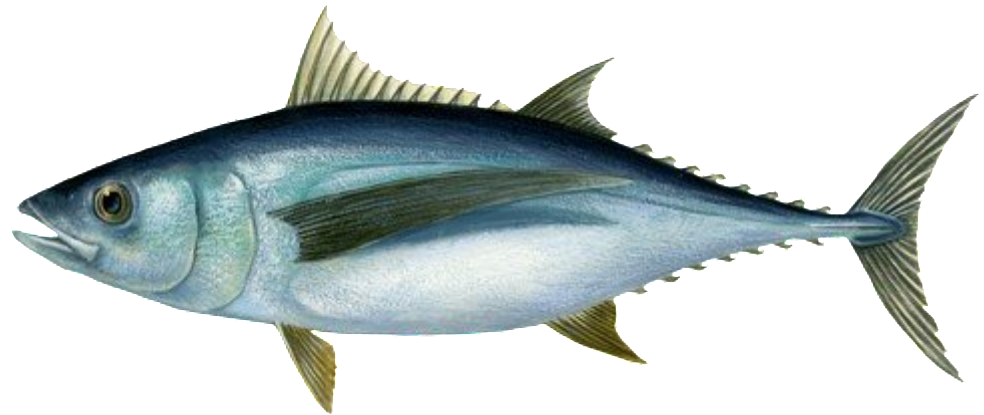
3.3 Strategy 3: Targeting Pelagic fish (tunas and others)

The implementation of Strategies 1 & 2 designed to recover the fished resources to a more productive level necessarily requires we reduce some of our fishing pressure on the reef fishes and invertebrates. To ensure food security, it will therefore be critical as part of this plan to replace and even increase the supply of at least some of the fishes from other means.

Strategy 3 aims to achieve this 'no one starves policy' by safely increasing fishing focus on offshore pelagic species such as tunas, flying fishes, and other species. From Tuvalu's point of view the tuna stocks are virtually inexhaustible for domestic use. But accessing them is difficult and expensive compared with reef fisheries. The FRFSP will seek to promote and ease this transition using a number of activities.

Key Activities

The first of these will be to improve the availability and types of inshore fish aggregating devices (FADs) to make capture of pelagic species easier, closer to home (using less fuel) and safer (by having a known place to



te PTMPF ke mafai o fakamautinoa te fanafanau o ika I kogaakoga konei.

Galuega Taua e tau o fai

A te Kaupule Funafuti, e pela mese pule o te kogaa tai i loto i te 12 maila, io latou te tiute ki te faiteega/fakatuuga o ne tulafono/fakanofonofoga ki te fakalimitiga saisi o ika kae fakamalosi foki ne latou. Te Matagaluega a te Kaufaaika ka mafai o fesoasoani kiluga ki te fakatapulaga saisi o ika, mea faaika, pena foki ki taimi e fanau i ei a ika ke mafai o toe fakafoki mai te uke o te ika. Te Matagaluega a te Kaufaaika ka mafai foki o onono ki te fakamauaga mai one tupe, kae ka fesoasoani/lago malo ki te tausiga, o te kogaakoga puipuigina mafai e manakogina i loto i te aofaga tenei. Te Fakapotopotoga Tagata Faaika Funafuti (FOFA) ka galue fakatasi latou ki te lagoon atu ki tulaga o te fakalimitiga saisi o ika. Te Matagaluega ka fesoasoani foki i te fakalauefaga te manakoga tenei e auala I letio mo akoakoga ki sose tino ke mafai o isi sena iloa/mainaga I tulaga o te fakalimitiga saisi o ika kae kaia foki e manakogina i ei. Se gata foki i ei te Matagaluega ka tumau te fakamaua ne lipoti ki luga I tulaga o te savea lauika mo te fakatumauga o te uke o te ika pena foki mo te toe fakalei akaga o te atafaiga o mea ola o te tai mafai e toe manakogina.

3.3 Aofaga i te 3: Taketi ke mafai o faaikagina a ika o te Moana Poko (takua, atu, kasi mo niisi ika aka i te moana poku)

Te fakagaluegaaga o aofaga napa 1&2 ne faite ke mafai o toe fakafoki mai te maumea o mea ola kola ko oti ne faaikagina kisse tulaga tela e manakogina ke mafai o fakafoliki te faaika a taua ki ika o te papa io me ko niisi mea ola o te tai kola e nofo I te papa. Tasi o vaega taaua o te palani tenei ko te onoonoga ki te lava lei o mea tau meakai.

fish). The FADs in use in Tuvalu are often lost and require regular maintenance, which fishers are generally unwilling to carry out. The FRFSP will investigate other FAD types used around the world and trial some of them in Tuvalu waters, noting costs of deployment and maintenance to assess benefits. This work will include gathering data on the catches around the FADs to evaluate their effectiveness.

At the same time, more effort will be placed on sea safety. Recent publicity around the effectiveness of the sea safety 'grab bags' distributed through SPC suggests that these are an effective tool, being well accepted by fishers. Under the FRFSP funding for more grab bags and training on their use will be sought, as well as mechanisms for repair and replacement of safety gear. This may include working with local businesses to bring in well-priced equipment. A national search and rescue plan will also be investigated and implemented.

Improved boats for more efficient fishing offshore will be investigated with assistance from the United Nations Food and Agriculture Organisation (FAO). The main aim will be to reduce the costs of fuel and boats to save fuel and time accessing the pelagic resources more reliably and safely. This will interface with using The National Fishing Corporation of Tuvalu (NAFICOT) as a way to use bigger boats and crew instead of the small and inefficient 5-6m wooden speed boats currently in use. This could mean more employment opportunities in fisheries – see below for more details.

A final aspect of this strategy will be to investigate the use of transshipment fish in Funafuti, while being careful of possible impacts on local fishers. It may be, for example, useful to establish a small-scale processing plant for trash fish to convert it into pig and chicken feeds along with coconuts and other materials. Another option may be to establish a micro-cannery in Funafuti to meet at least some of the local demand and reduce the need for imports. A due diligence study has already been requested from SPC (at Heads of Fisheries Meeting this year) to assist with this investigation.

Tela la e tau o onono tatou ki nisi auala kolaa e mafai i ei o sui io mee avaka te aofaki o ika maua.

Te auala i te 3 e autuu tonu loa ki te fakataunuga o te **“fakanofonofoga tela ko teseai se tino e fiakai”** mafai e saga tonu tatou o faaika te maumea I koga poko pela mo atu, kasi, takua, isave, mo niisi ika aka foki. Te kiloga tatou pela me se tino Tuvalu a te maumea i kogaatai poko penei mo atu, kasi mo takua e se mafai o palele mafai e faaika ne tatou mo tou fenua fua. Kae ko te faaikagao latou e tai faigata kae togi mafa foki ma fakapau ki ika o te papa. Te palani tenei ko te PTMPF ka onono ki ne aofaga e mafai i ei o avaka kae fakafaigofie te fakamafuliga tenei.

Galuega Fakapatino

Te galuega muamua e tau o kilo ki ei ko te fakaleiga mo te fakafaigofiega te mafai o fakaaoga o poe fakalata ika pena foki mo vaegaa poe fakalata ika i kogaatai poko kolaa e pili aka, ke fakafaigofie ei te faaika o ika poko, kae pili aka foki ki uta (mutana a fiuolo e fakaaoga) kae seai se fakamataku i ei (faaika i taulaga masani). A poe konei ne fakaoga saale I tausaga ko teka e masani o galo saale kae manakogina foki ke asiasi faeloa o toe fai fakalei, tela tagata faaika e se mafai ne latou o onono fakalei ki tulaga konei. Te palani tenei ka onono fakalei ki niisi vaegaa poe kola e fakaoga nei i te lalolagi katoa ke mafai o aumai o fai ne tofotofoga i loto i tou kogaa tai, kae ko onono ei ki te tupe fakamaumau ki te peiga o poe mo te tausiga o poe ke iloa ei te sene maua e mafai o maua mai i poe konei.. Te galuega tenei ka aofia foki i ei te fakamaumauga ne tatou a fakamatalaga mai luga o te aofaki o ika ka faaikagina I tafatafa o poe fakalata ika ke mafai i ei o iloa ne tatou me i te poe tena e galue/aoga io me se galue/se aoga.



I konei foki ka lasi te galuega mo fakaakoakoga ka fai ki luga i te fakasaoga o tou ola i te tai. Tala ko oti ne tusi fakamuli nei e fakalaua i ei te aoga o peeki/taga kola e fesoasoani o puipui ki ei tou ola i te tai. E fakamasaua mai nete SPC me i peeki tausi ola konei e taua kii kae e manakogina kii foki ne sose tagata faaika. Te fakamauga o ne peeki tausi ola konei ke fakauke mo te faiga o akoakoga ki te fakaogaaga o latou ka mafai o fakataunu mai lalo o te o te palani tenei ko te PTMPF ke oko foki ki te faitega mo te suisuiga o kope I loto i te peeki faaika. E mafai o fai se fakatokaga fakalei mo pisinisi foliki ki te mafai o aumai ne latou ne kope penei kae lei olotou togi. E tau foki I konei o fakatuu se komiti e onono ki te salaga mo te fakasaoga o tino mafai e tupu ne fakalavelave kia latou i te tai.

A te Fakapotopotoga a te UN tela ko te FAO ka fesoasoani ki te fakamauga o pooti tai lasi atu moo fakalei te tulaga faaika o tino Tuvalu. Te fakamoemoega taua I konei ke mafai o fakafoliki te togi o fiuolo e fakaoga, fakamutana te taimi fakaaoga mo faaika, kae ko tokaga

Offshore Fisheries Development Project OFDP

The Offshore Fisheries Development Project (OFDP) is an early-stage concept for a project to address the needs of Strategy 3 of the FRFSP. The project which will be investigated separately to the FRFSP aims to introduce larger, more seaworthy fishing boats into Tuvalu so that fishers can:

- Fish outside the reef for several days at a time;
- Use more effective fishing gears (such as longlines or electric reels);
- Catch more fish per trip, and keep it on ice in good condition; and
- Use less fuel per trip, making fishing more productive, more profitable, and safer.

Foreign fishing vessels currently catch between 60,000 and 90,000 tonnes of tuna in Tuvalu waters each year – which is between 50 and 100 times the catch of local fishers and would fill about 5,000 30ft shipping containers. The OFDP will allow more of these abundant tuna resources, as well as deep-water snappers, to be caught by local fishers. In doing so it will:

- Relieve pressure on lagoon resources;
- Make commercial fishing safer, more productive and more profitable;
- Improve dietary health and food security in Funafuti; and
- Eventually, create export earnings for Tuvalu.

The types of vessels needed to achieve this will be:

- Sufficiently large to safely operate outside the reef (Figure 7);
- Sufficiently small to be slipped or beached in Funafuti for repairs and maintenance;

- Have an inboard engine for fuel economy;
- Electric/ hydraulic longline shooter/ hauler and/ or reels;
- Communications and safety equipment;
- Ice holds that can carry 2-3 tonnes of fish;
- Sleeping space for 4-5 crew (working shifts); and
- Standard engines and equipment among all vessels for simplicity of maintenance and stocking of spare parts.

The approach to this project will be to:

- Use donor or Government funding to acquire a fleet of vessels;
- Five is the number suggested in the first instance, to avoid market saturation;
- Boats will be made available to existing fishers/ fishing groups;
- Boats will initially be owned by a new subsidiary of NAFICOT (to be established once NAFICOT restructuring is complete);
- Scheduled maintenance by NAFICOT/ TFD engineers;
- Vessel skippers will need to be trained/ certified through TMTI;
- Fishers/ groups could purchase the boats through soft loans; and

- Create a revolving fund – proceeds from vessel sales used to buy more vessels.

To achieve this the following initial steps will be taken. The UN Food and Agriculture Organisation (FAO) has agreed to support an initial feasibility study for which they will recruit a naval architect and economist to: (i) consult widely with stakeholders; (ii) evaluate shore facilities and conditions in Funafuti; (iii) recommend a suitable vessel design; (iv) provide estimates of vessel operating economics; (v) come up with cost estimates for vessel



Figure 7: Example of a 44ft offshore vessel in use in Australia.
Ata 7: Fakatautau mo te 44 futu o te pooti faika i koga poko e fakaoga nei i Ausitalia.

Fakamatalaga e uiga kite Polotieki e atiaka iei feitu tau faika ite moana poko

Te polotieki kote (OFDP) koi nofo nei ise tulaga kamata kite fakaleiga o manakoga mai lalo ote Auala napa 3 ote palani kote FRFSP. Te polotieki tenei kafai se iloiloga fakatea mai tafa ote FRFSP mote manakoga ke aumai ne pooti lasi, kae talia ke fakaoga I kogaa tai o Tuvalu kote mea ke mafai ne tagata faika o:

- Faika mai tua o utua ote fenua mone aso ite malaga e tasi;
- Fakaoga kope faika kola e lasi tena aoga(pela mo vaegaa faika fakaoga te uka loa kae uke matau I luga io me ko kofe vili kite iti);
- Faika se aofaki lasi ite malaga e tasi kae ke tausi fakalei a ika I loto I poloka ke mafai o tumau te lei ote ika; mote
- Se lasi te fiuolo e fakaoga ite malaga e tasi, kae lasi te ika e maua, lasi te laka e maua kae se fakamataku foki.

Vaka faika mai tua e nofo kite 60,000 kite 90,000 tane e faika ne latou I kogaa tai o Tuvalu ite tausaga e tasi – tela se e nofo kise faka 50 kite 100 taimi mafai e fakapau kite aofaki e faikagina ne tou tagata faika kae mafai o fonu se 5,000 koniteina kola e tuku saale iei kakoo taki 30 futu te loa. Te polotieki kote OFDP ka fakatalia neia ke faika atu, kasi, takuo kola e uke I tou kogaa tai pena foki mo ituukaiga palumalau, ke mafai o faikagina ne tagata faika. Kafai e fai penei ka:

- Fakafoliki te faika I loto ite namo;
- Fai neia pisinisi faika ke olaola lei, lasi te ika e maua kae lasi foki mote laka;
- Fakalei tulaga tau te olalei mote fakasoaga ke lava lei tino Funafuti; kae
- Ke mafai foki o fakatau atu ki tua atu mo Tuvalu.

Te vaegaa vaka e manakogina ke mafai o fakataunu te polotieki tenei e tau o:

- Lei te lasi o tena saisi kite mafai o faika mai tua o kauutua (Figure 6)
- Te foliki lei kite mafai o avaka ki uta o faite ana mea masei I Funafuti;

- Isi sena masini I loto ote pooti e fakafoliki iei te fakaoga ote fiuolo;
- Mea katoa I luga ite pooti e fakaoga mo faika ke mafai katoa o fakagalue kite iti;
- Isi ne mea e fosokotaki iei mo kope e puipui iei a ola ite tai;
- Koga mo tuku poloka ke mafai o nofo kite 2-3 tane o ika e mafai o tausi iei;
- Isi se koga mo moe mose toko 4-5 kauvaka (kae ke suisui o faika); mote
- Masini ote vaka mo sose kope e fakaoga I luga ite vaka ke mafai o faiagofie te faitega o latou ma masei io me mafai ko manakogina ke sui

Te mafaufauga ote polotieki tenei ke mafai o:

- Fakaoga sene mai tua io me ko sene ate Malo ke fakamaua mai a vaegaa pooti penei;
- Sala mai e lima a pooti penei ke fakagalue mote taimi muamua, ke fakafoliki te lasi ote masei o ika mafai ko too uke a ika e maua kae foliki te maketi io me ko tino togi ika;
- Pooti konei ka mafai o fakaogagina ne sose tagata faika io me ne potukau faika foliki;
- Pooti konei ka fakagalue mai lalo ote NAFICOT (ka mafai o fakagalue mafai ko toe fakaola te NAFICOT);
- Taimi sevesi/faute o pooti e fakasoaga mai loa nete NAFICOT/tino atamai I faitega o masini ate Kaufaika;
- Kapeni o pooti konei e manakogina ke toe fakaakoga/ke talia o kave ne latou a pooti lasi konei ma ui I lalo ote akoga fakakauvaka I Amatuku;
- Tagata faika/ potukau foliki tagata faika e mafai o fakaoga ne latou pooti konei e auala ite kaitalafu ke mafai o fakaoga te pooti ka oti ko tina iei; kae
- Fakatu se tupe fakagalue – mai luga I tupe maua mai I ika e maua a pooti konei ke mafai o toe togi mai kiei ne niisi pooti lasi faika penei.

construction and delivery; and (vi) identify boatyards capable of constructing and delivering the vessels (or whether the boats could be built locally). The FAO study will fill in the details on suitable fishing vessels, but there are many other factors to be considered.

The project will also look at supporting infrastructure such as refrigeration by refurbishing NAFICOT, bait supply, ice, engine spares, lubricants and fishing gear, moorings able to withstand westerlies, shore facilities and fuel supply.

There will also be a need to discuss how the vessels might be managed. The boats would initially be owned by the new NAFICOT who would be responsible for maintenance. Skippers and crew could be employed by NAFICOT, or fishers could rent boats, or a hire-purchase agreement could be established to allow the boats to be acquired by private owners. Privately-owned boats could still be serviced by NAFICOT and the proceeds of sales would be used to acquire more boats. FOFA may also play a role in this.

The project would examine local marketing which is the biggest challenge in Tuvalu. Initially catches would be sold on the domestic market, the size of which may be about 620 tonnes per year. It is expected that 5 vessels could supply around 360 tonnes/year, which is about half of the market capacity. The catch from vessels owned and operated by NAFICOT would be sold to NAFICOT at pre-agreed rates, and privately owned vessels would be free to sell to NAFICOT or elsewhere. An estimate of gross profit from one of these vessels could, after all costs (bait, fuel, rental, wages etc) are met could amount to \$900/day. There may be scope for export marketing under a joint venture TFD is currently developing with a foreign fishing company.

The project could require a \$3 million startup cost and may not be self-financing for the first few years. Previous attempts to develop fisheries in Tuvalu have failed, so it is important to learn from the mistakes of the past.

Ke maua ne tatou a mea konei e tau o tautali tatou ki sitepu konei. Te fapopotoga ate UN kote Food Agriculture Organisation(FAO) ko oti ne talia neia ke fesoasoani kite faiga ose sukesukega tela ka aumai ne latou se tagata poto ite lomi mose tino poto ke onoono ki luga ite maumea e mafai o maua I faitu tau tupe ke: (i) salasala fakamatalaga mai tino 'tau (ii) Iloilo fakalei te mafai o fakatuu ne fale lasi mo tuku ne mea I Funafuti e pili kite tai;(iii) sala se ata gali ke mafai o taa kiei a pooti konei;(iv) galue se ata fakatautau mo tupe e fakaoga kite fakagaluega o pooti konei;(v) galue mai se togi fakatautau mote faitega mote aumaiga o pooti konei; kae (vi) ke iloa a igoa o koga e mafai o faite ko aumai iei a vaka(io me mata e mafai o faite I konei). Te sukesukega tenei ate FAO ka mafai o iloa mai iei a fakamatalaga ki luga ite fakamauaga one pooti kola e taugaatonu mote polotieki tenei kae e tau foki o kilo tatou ki niisi faitu aka.

Te polotieki ka onoono foki ke mafai o fakatuu ne koga kola e mafai o tuku iei ne aisa mo tausi iei a ika ma toe fakaola te NAFICOT, togi iei a poa faika, poloka, mea e sui kiei ma masei a masini,oela o masini mo mea faika, loopu e sai kiei a pooti I taimi o aso masei, fale fakatuutuu I koga pili kite tai/namo mo fiuolo mo utu pooti.

E isi se manakoga ke mafai o sautala fakalei me fakagalue pefea a pooti konei. A pooti konei ka ulu katoa I lalo ote NAFICOT fou mafai ko toe fakaola tela ko ia loa ka onoono kite faitega o latou mafai ko manakogina o toe fai fakalei. Kapeni mo kauvaka o pooti konei ka fakagalue foki loa mai lalo ote NAFICOT, io me mafai ne tagata faika o puke a pooti kae togi, io me puke fakafeagaiga a pooti konei kae togitogi kite NAFICOT. A pooti o tino faika e mafai o sevesi nete NAFICOT kae ko tupe kola e maua mai I ika togi a latou ka fakaoga mo toe togi mai kiei ne niisi pooti. Te fapopotoga tagata faika o Funafuti e isi foki se aiaa o ia ki fakatokaga konei.

Te polotieki ka onoono o fakalei te maketiga tela e faigata tena fakagaluegaaga I Tuvalu. Te aofaki fakatautau ke mafai o kamata o fakatau ite maketi e nofo kite 620 tane ite tausaga.E 360 tane e fakatautau ke mafai ne vaka e 5 o faikagina ite tausaga tela e nofo kite afa ote lasi ote maketi.Te ika maua mai pooti o tagata faika fakatasi mo pooti mai lalo ote NAFICOT ka fakatau atu ki tua ine togi kola ko oti ne iku latou kiei, kae mafai foki ne tagata faika o togi atu lotou ika kite NAFICOT io me ki niisi koga aka. Te tupe fakatautau e mafai o maua mai ite pooti e tasi ma oti katoa ne kati a (mea ne fakamaumau kite fanoga o faika)e nofo pela kise \$900 ite aso e tasi. E isi foki se mafaufauga kite mafai o fakatau atu ki maketi I tua atu mai lalo ote pisinisi e fakatuu ne te Matagaluega te Kaufaika mo se kamupane mai tua atu o Tuvalu.

Te polotieki e manakogina ke kamata kise aofaki tupe e \$3 miliona kae se mafai o fakatele loa ia ia ise fia o tausaga. Niisi polotieki tai pau penei ko oti foki ne fakatele I tausaga ko teka I Tuvalu nei kae e se mafai loa o tele lei, tela la e taua kii ko tatou ke tauloto mai mea see I tausaga ko teka.

Key Responsibilities

Most of the responsibility for this activity will fall to the Tuvalu Fisheries Department. Working with partners such as SPC and FAO, TFD will establish projects and funding to carry out these activities over the next few years, gradually transitioning local fishing to a more pelagic focus. TFD will need to work with NAFICOT as part of this strategy to enhance usage of the vessels by individuals, groups or local companies, develop a local fish market, and extend the shelf life of the catches for sale to the public. At a later time options could be investigated for extending these ideas to outer islands as requested at FMMC2.

3.4 Strategy 4: Information, People & Ecosystems

The Funafuti Reef Fisheries Stewardship Plan depends not only on fisheries strategies 1-3, but also on timely and reliable information, excellent community engagement at every level and actions to improve the ecosystems on which the fisheries depend. Strategy 4 of the FRFSP focuses on the following areas:

- **Information:** Monitoring is a central mechanism in the plan to continually assess the status of the fisheries and FCA and is used to determine whether the strategies are working and to adjust them as needed;
- **People:** Are central to the plan. They are the ones who have to understand why management is needed, they need to be central deciding on what strategies are used and it is the public who will individually and collectively comply with rules if benefits are tangible and relevant to them; and
- **Ecosystems:** Reversing damage to fish habitats and the environment are the key to recovery of stocks.

Key Activities

The FRFSP will be dependent on on-going monitoring and evaluation of the resources and the lagoon. This includes creel surveys of fishers' landings, ciguatera and water quality monitoring, monitoring the performance of trials such as use of transshipment trash fish, new types of vessels and new FAD designs. It may also include underwater visual census (UVC) surveys from time

3.4 Aofaga i te 4: Fakamatalaga, Tino mo te Natula

Te palani ko te PTMPF e se fakanaa fua ki luga kit e aofaga faaika mai te 1-3, kae fakataua foki ke kilo tatou ki tetaimi tonu mo fakamatalaga tau kae e fakatuagagina, te galue fakatasi o tino o te fenua I sose tulaga mo te fakafoligaaga ke mafai o fakalei atu te te tulaga o tena atula telaa e fakanaa kiei te tulaga o ika mo mea ola I tai. . Te auala napa 4 o te PTMPF e kilo ki luga I feitu konei:

- **Fakamatalaga:** Te iloilogaga se vaega taaua o te palani ko te mea ke fakatuuumau te asiasiga ki te tulaga o ika mo mea ola I tai mot e fkaaoga te kogaakoga puipuigina o Funafuti (FCA) ke mafai o iloa mee ia aofaga ne fai kiei e gaalua io mee tau o toe fakamafuli;
- **Tino o te fenua:** ko te vaega taaua ki te palani. Ko latou e tau o malamalama me kaia e manakogina i ei ke atafai tou maumea, latou e taaua foki ki te faiga o ikuga ki aofaga kola e tau o fakaaoga kae ko tino katoa io latou te tiute ke tautali ki tulafono mafai a penefiti e maua mai aofaga konei e lavea atu e lei kae aoga mo latou; kae
- **Tena atula:** Toe fakaleiakaga o koga e nofo i ei a ika mo mea ola valevale fakatasi I ei mo te enivalomene saukatoa ko te kii taua ki te toe fakalasiga o te maumea i te tai.

Galuega taua e tau o fai

Te palani ko te PTMPF ka fakalagolago faeloa ki luga I savea masani mo te tulaga o te maumeai te tai pena foki I loto i te namo. E aofia i ei ko savea ki luga I ika e faaikagina ne tagata faaika, ika muu mo te maa o kogaa vai, onono ki te fakagaluegaaga o te fakaoga o ika mai vaka faaika mo faite meakai a puaka mo moa, vaegaa ata mo pooti fou pena foki mo vaegaa poe fou. E mafai foki o aofia I loto I konei ko savea kola e manakogina ke lau te aofaki o sose mea ola I lalo o te tai I ne tausaga kola ko tau o manakogina ke fakatele i ei te vaegaa savea tenei ke mafai i ei o iloa tonu te aofaki fakatautau o te maumea tela e manakogina ke toe maua ne tatou I loto mo tua o te koga puipuigina pena foki niisi kogakoga pili ki Fogafale. A ikuga o savea konei ka mafai o fakailoa atu ki tino io me fakatoka I tausaga katoa ke fakailoa atu i ei kia latou kola e fulifuli ne latou a tonu io me ko nai fakamafulifuliga ki luga I auala kola ko manakogina ke fakagalua I te vaitau tena. Te tusi e fakaasi katoa i ei a ikuga konei mai savea ka fakatoka mo te Kaupule o Funafuti, Matagaluega te Kaufaaika, fakapotopotoga tagata faaika mo te Komiti e onono ki te fakagaluegaaga o te palani tenei ke mafai o onono fakalei ki te toe fakafouga

to time to obtain independent estimates of the recovery of fishes inside and outside FCA as well as ecosystems near Fogafale. The results of these surveys will be made publicly available and published yearly to inform decision-making and adjustments in the strategies if needed. A yearbook of the results of monitoring will be produced for the Funafuti Kaupule, TFD, FOFA and Management Committee to review and adapt management if needed.

The public needs to be informed on an on-going basis on all aspects of the FRFSP and given plenty of opportunities to be involved in decision-making and to voluntarily comply with regulations because they understand the central aims and needs. This will require on-going radio shows, production of posters, booklets, and size limits materials and talks at public gatherings. A yearly public review meeting will be held, continuing the consultations of FMMC and allowing all stakeholders a voice. The key will be transparency and creating real opportunities for the voices of all groups to be heard. The FRFSP needs to be a plan for everybody.

Serious ecosystem damage already sustained in Funafuti Lagoon close to Fogafale needs to be addressed. This may include TFD seeking actions and developments to correct sewage pollution, reverse the algal overgrowth that has led to coral decline, reducing wave attack which is leading to poor water quality, cleaning up rubbish and providing meaningful inputs to developments that may damage fish habitats (such as dredging, beach reclamations, seawalls and others). The aim will be to work towards reducing the damage and allowing the fish habitats to recover, bringing fishes back to the nearshore areas of the lagoon near Fogafale.

Key Responsibilities

Most of the responsibility for this activity will fall to the Tuvalu Fisheries Department. Working with the Funafuti Kaupule, FOFA, SPC and a range of other donors, TFD will seek recurrent and external funding to carry out these activities over the next few years. Some activities are already incorporated into the work plan, such as creel, ciguatera and water quality monitoring as well as some public awareness programmes. These will be expanded as FRFSP comes into effect.



io me ke mafai o fakaoga a auala kola ko manakogina ke tautali k i ei te palanii te vaitau tena.

E manakogina ke iloa ne tino soose mea e fai iloto i te palani, kae ke tuku atu foki se avanoaga e mafai ei latou o aofia iloto I ikuga fai mo te mafaufauga ka tautali latou ki tulafono me ko nofo fale ia latou a te fakavae io meko te manakooga o te palani. Te manakooga tenei ka auala atu I polokalame fai i te letio, faitega o (posters), fakamatalaaga I tusi foliki, (size limit materials) mo faipatiiga fakapitoa iloto I lukuuga. Fonotaga ki te toe ononooga ki te palani kafai faeloa iloto I tausaga takitasi, kae ka tuku atu foki loa te avanoaga ki fakapotopotooga kola e aofia i te palani mafai e isi ne olotou faipatiiga e fia fai. Te mafaufauga maluga ko te taumafaiga ke isi ne avanoaga faipati o soose fakapotopotooga tela e aofia i te palani I taimi o fonotaga. Te palani tenei ko te PTMPF e manakogina mo soose tino iluga i te fenua.

E manakogina ke fakafoliki a fakamaseiga konei ko pokotia i ei a te natula mo mea ola o te tai i te namo o Funafuti I tena feitu pili mai ki Fogafale. Te Matagaluega a te Kaufaaika Matagaluega a te Kaufaaika ka salasala neia ne auala mo atiakeega kola e mafai o fakalei i ei te fakamaseiga mai luga I fekau o tino, te fakaseaiga o te limu tela e lasi tena pokotia ki tulaga ola o kamu, fakafoliki te fakamaseiga o galu tela e maua mai ei te lailai o te vai, taega o kaiga kae ke mafai foki o fakatoka ne aofaga aoga ke mafai o agai atu ki atiakeega kola e fakamasei ne latou a koga nofo o ika pela mo te fakamaaga o te namo (dredging), laukele faopoopo, puipui tai mo niisi atiakeega aka. Te fakamoemoega me ka mafai o faka galue a aofaga konei ke fakafoliki i ei a fakamaseiga konei, kae ke mafai o toe fakafoki mai i ei te tulaga lei o koga nofo o ika, koia tela ka toe aumai neia a ika ki loto i te namo I tena feitu pilipili mai ki te fakai (Fogafale).

Tiute Fakapatino

Te lasiiga o galuega ka panaki mo te Matagaluega Kaufaaika, kae ka galue fakatasi mo te Kaupule Funafuti, FOFA, SPC mo niisi o fakapotopotooga mai tua kola e maua mai ei a fesoasoani tau tupe. Te Matagaluega a te Kaufaaika ka galue ki luga i te salasalaga o mea tau tupe mai tua io me ko tena fakatauga tupe e mafai i ei o fakasoko a galuega ilalo o te palani mo tausaga mai mua. Niisi o galuega ilalo i te palani ko oti nei ne faka-galue mai lalo o te palani galue a te Matagaluega a te Kaufaaika e aofia i ei ko te savea lauika mo fuaga o ika, sikuatela/ika muu mo savea ki luga I tulaga o te maa o tai, mo polokalame fesoasoani ki luga I tino maise ko te iloa iluga I tulaga o galuega fai a te Matagaluega. Tiute fai konei ka mafai o fakalauefa mafai ko faka galue te palani tenei (PTMPF).

4 Key Risks Feitu Faigata

The main issues associated with the FRFSP will centre on the extent to which all stakeholders, including Government, TFD, Kaupule, FOFA and the public are willing to work together to improve the resources upon which we all depend. Part of this will be based on a clear understanding of all the issues and it is the Tuvalu Fisheries Department's responsibility to improve understanding and create ways for stakeholders to be part of the solution.

The most difficult aspect of the plan to understand is that a **reduction** in fishing pressure will within a short time (a few years) lead to **greater** productivity with **less** future fishing effort. This is demonstrated in Figure 2 and forms a central part of the logic for fisheries management.

Despite including in the Plan mechanisms for easier access to pelagic fisheries, there is still a risk that the FCA 'paper park' will continue as such and not act as a breeding reserve because people will continue to fish it. Occasional fishing for a celebration is enough to cancel any benefits gained over a whole year. To work, the closure of FCA needs to be associated with a high level of compliance and heavy penalties for breaches.

This is a complex project that will require some years to unfold. There is a risk that during that process momentum may be lost, or that people decide to focus on other things, not allowing the FRFSP the time it needs to return its benefits to the community. The greatest risks are exporting the ideas too early to outer islands, before the mechanisms are fully integrated and understood in Funafuti, and repeating the mistakes from the past with regards to NAFICOT and fish marketing. Having a market to sell your fish does not have to be external to the island or country. The local market has need of fish and is reliable without the risks and high costs of poor freight services. Starting with local markets is a good idea, and expansions should not be contemplated before reliable conditions can be created (such as through a reliable joint venture JV after it has established properly).

E fakataua ikonei nete palani PTMPF ko te mea ke mafai o faka-lausa atu ki soose fakapotopoga tela e aofia i loto i te palani pela mo te Malo, TFD, Kaupule, FOFA mo soose tino tela e fia fesoasoani ke galue fakatasi ki luga i te fakalei akaaga tulaga o mea ola i te tai tela e lasi te fakalagolago o tatou k i ei. E taua ikonei ko te mea ke lasi te mainaga i te palani, kae ko te Matagaluega a te Kaufaaika ka panaki mo te avakaaga tulaga o te mainaga mo te ononooga ki luga i auala kola e mafai o aofia i ei fakapotopotoga e kau i te palani pela mese vaega e tasi o te fakafesagai atuuga ki pokotiaga.

Te feitu faigata o fakamaina io me fakamalamala I loto i te palani tenei ko te taumafaiga o **faka foliki** te faaika, ka mafai fua o pokotia I loto ise taimi toetoe, tela koia ka maua i eifaika te uke o ika mai luga i te mafai o latou o fanafanau mafai e faka foliki te faaika I kogaa tai pilipili mai ki te fenua mo aso mai mua. Te fakaasiga tenei ka mafai o maua ne koe i te Ata 2, koia tela e fesoasoani ki te lei o te tausiiga o soose mea ola i te tai.

Me pefea te uke o auala mo fakatokaga I loto I te palani ki te fakamalosiga ko tagata faaika ke olo atu ki moana o faaika I ei, a te faifaiga ki te tala saalega o te Kogaakoga Puipuigina a Funafuti ke olo te fenua o faaika I ei I sena aso fakamanatu, io me I ona tauliiga lasi, e mafai ne ia o fakaseaoga a galuega uke mo peneifit kolaa e tau o maua ne tatou mo se tausaga kaatoa. Te fakamalosiga ko te fakaseai lele loa se saoloto o puke io me faaika iloto i te Kogaakoga Puipuigina o Funafuti tenei kae manakogina foki ke faka tulafonogina ki se tulaga tai kiluga atu mo fakasalaga ke tai avaka mo latou kola e se tautali ki te tulafono.

Mea tenei se palani (PTMPF) e lasi kae manakogina ne nai tausaga ke mafai o lavea ne koe a fuataga o te palani tenei . Tasi o fakamatakuga I konei mafai te matagi ko galo, fakatasi mo tino ko saga o fai niisi mea aka mai tafa o te palani tela ko sei ne fuataga e maua io me lavea atu maise feittuu taaua o te palani ki tino o te fenua. Te fakamatakuga I konei ko te ave ne tatou te palani tenei ki fenua I tua atu o te laumua, kae seki tasi te fakagaluega io me ko te mainaga i te palani I luga I Funafuti nei, koia tela ka fakafoki mai ne ia te fakalavelave ko oti ne pokotia i ei te NAFICOT mo te maketiga o ika. Te fakatau atu o au ika ki tua e se manakogina ke faka-lauefa ki fenua I tua atu o te laumua io meko fenua I tua atu o te atufenua. Mai te lasi o te manakooga o tou maketi ki te ika, ka fakaseai neia ne pokotiaga ki luga i te togi mafa o feleti io meko galuega se lei kola e pokotia i ei te aveavega o ika. Se mafaufauga e gali ke kamata te fakatau atuuga o au ika iloto loa i te fenua, kae ke mafai o fakagalue tasi mo fakanofonofoga pela mo ki te faiga o Feagaiga mo kampane faaika lasi (JV) mafai ko isi se manakooga ke fakalauefa atu ki tua.

5 Goals and Targets Fakamoemoega mo Tapulaa

The ultimate goals of the FRFSP are to:

- Restore Funafuti reef and lagoon fisheries to more productive and profitable levels; and
- Promote greater use of offshore resources safely and support the development of an Offshore Fisheries Development Project with (OFDP) external support.

These goals will be supported by the following targets:

- Have an educated public and government that understands the benefits to be derived from recovering the Funafuti Reef Fisheries and that mostly voluntarily comply with the strategies needed;
- Production of a yearbook each year to document changes in the state of the resource and environments to form the basis for decision-making;



Reproductive status of fish

- Get involvement by all stakeholders, TFD, Kaupule, FOFA and the public in decision-making as part of adaptive management of the FRFSP which will be based on on-going monitoring. This means a Management Committee needs to be established which involves all these stakeholders;

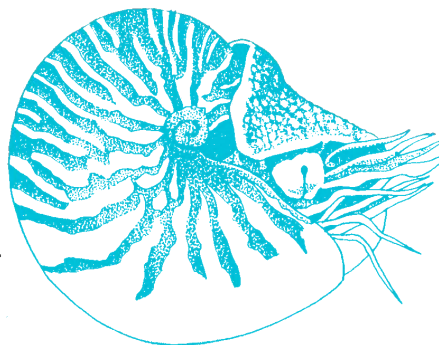
- Obtain creel survey results that show less and less fishes are being caught at sizes below maturity for each species, with the number going to zero within 3 years; and
- Good rapport between TFD, Kaupule and Government of developments that can affect fisheries, with better controls put in place to prevent damage and new projects developed to reverse some of the old damage.

Fakamoemoega maluga o te PTMPF ko te mea ke mafai:

- Fakafoki mai te maumea o te fenua I tulaga o ana mea ola I ana kogaa tai pilipili mai fakatasi mo tena namo kise tulaga tai lei atu kae aoga
- Ke avaka te tulaga o te fakaogaa mea ola o tai mai tua atu o kogaa tai pilipili mai ki te fenua tela ka fesoasoani foki ki atiakega o te polotieki ki luga I te fakalauefaga o te faaika ki tua atu I kogaatai poko.

Konei a tapulaa ka faka faigofie i ei a te fakamoemoega tenei:

- Ke fai ne akoakoga ki soose tino fakatasi mo te Malo ke tasi te mainaga iluga I feitu kola e taua ke fakafoki mai te maumea o te fenua I ana kogaa tai pilipili mai kae ke tautali foki tatou ki manakooga o te palani;
 - Ke fakatoka ne tusi mo tausaga takitasi e fakamaumau i ei a te mafuilifuliiga I tulaga o tou mea ola i te tai mo tena enivalomene tela ka autuu mai i ei soose ikuga fai
 - Ke faka-aofia te TFD, Kaupule, FOFA io meko soose tino iloto I ikuga fai io meko te fakamafuliiga te fakateleega o te PTMPF tela e fakavae mai luga I ana fakamaumauga. Te Komiti fakateletele tenei e manakogina ke faka-aofia katoa i ei soose tino io mese fakapotopotoga tela e fiafia o fai sena tusaga ki luga i te palani
- Ke tausii fakalei a ikuga o te savea tenei ko te Creel tela ka mafai o lavea i ei te lasi o te faaikagina o ika foliki, tela ka mafai o pokotia i ei tatou i te tolu tausaga mai mua nei
- Ke galue fakatasi te TFD, Kaupule mo te Malo ki tulaga o atiakeega kola e pokotia i ei tou kogaa tai, ko te mea ke mafai o fakalei io me fakaseai i ei ne fakamaseiga mai luga I atiakega konei



6 Management Framework & Decision-making

Fakanofoga o te Fakateleega mo Ikuga fai

Much of the authority and management arrangements needed for implementing the Funafuti Reef Fisheries Stewardship Plan already exists within the Fisheries Department and Kaupule through the Marine Resources, Falekaupule and Conservation Areas Acts (see Section 1.7 on page 5). To supplement these arrangements it will be necessary to establish:



- A formal relationship and working relationship with a Memorandum of Understanding (MOU) between the Fisheries Department and Funafuti Kaupule for establishing and implementing the FRFSP. The MOU would establish responsibilities, mainly with the Kaupule exercising its authority as the resource manager and TFD supplying the technical support;
- An arrangement between TFD and FOFA for data sharing and policy development to promote voluntary compliance among fishers, access to grab bags and other materials to promote FRFSP activities and provide training;
- Establish a FRFSP Management Committee with representatives from TFD, Kaupule, Falekaupule, relevant government departments, Outer Islands Leaders living in Funafuti, FOFA, focal groups (women, youth, church) and members of the public to meet yearly to discuss management arrangements, outcomes, the monitoring data and any adjustments needed under adaptive management.
- Establish annual public meetings to update and consult with the public on the management plans and adaptive adjustments.

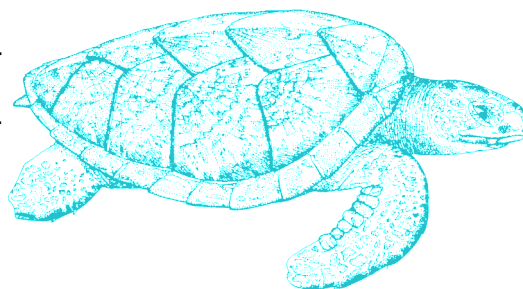
The outcomes of the Management Committee and Consultation Meetings will be used as the basis for adaptive management, allowing for the FRFSP to evolve with the needs of the community and other stakeholders as time goes on. All activities in this decision-making ecosystem will be published on the TFD website and the radio to promote transparency.

A te malosi mo te fakatelega o te palani tenei ko sae katoa I loto I Tulafono lasi ko te Marine Resources Act, Falekaupule Act mo te Conservation Act. Ki te fakaleiga mo te fakafaigofiega o te fakatelega o te palani e mafai o taunu mafai e fakatoka a feittuu konei mai lalo:

- Se Feagaiga Fakamalamalama i te vaasia o te Matagaluega a te Kaufaaika mo te Kaupule ki te galue fakatasi o laaua ki tauseiga o te palani tenei (PTMPF). Te feagaiga tenei ka faite mai i ei a tiute fakapatino mo te Kaupule tela koia ka panaki mo te taupulega o te palani kae ko te Matagaluega a te Kaufaaika koia tela ka onono ki te faiga o fautuaga ki luga I te Kaupule ki te fakatelega o te palani.
- Se fakatokaaga tela e mafai o tasi ei te mainaga o te Matagaluega a te Kaufaaika mo te FOFA iluga I tulaga o fakamatalaaga o savea(data) mo tulafono ko te mea ke mafai o tautali k i ei tagata faaika, avanoaga o fakamaua (grab bags) mo niisi kope aka kola e mafai o fesoasoani ki te fakaleiiga o galuega fai o te palani (PTMPF) ke oko foki loa ki ana akoakoga.
- Ke faite se komiti tela ka panaki mo te fakateleega o te PTMPF, kae ke faka aofia i ei te Matagaluega a te Kaufaaika, Kaupule, Falekaupule, Matagaluega a te Malo kola e tauga tonu ki te palani tenei, takitaki o fenua iluga I Funafuti nei, FOFA mo vasega I loto I te fenua(fafine, talavou, kaulotu) mo soose tino .Te manakooga ke fakatuu se komiti penei ko te mea ke mafai ne latou o faipati io me sautala iloto I tausaga takitasi ki luga I tulaga o te fakateleega o te palani, mea tupu iloto i te palani, iloilooga o savea fai mo niisi faka mafuilufuliiga foliki kola e manakogina ke tai fakalei i ei te fakateleega o te palani.
- Ke fai ne fonotaga I tausaga takitasi mo tino iluga i te fenua(public) ki luga I tulaga o te fakateleega o te palani pela foki mo niisi fakamafuilufuliiga kola e tau o fai.

A ikuga mauai fonotaga a te komiti fakateletele mo fonotaga fai mo te fenua I tausaga takitasi ka fakaaogamo fai aofaga fakaataata, ke mafai ei o fakamafuilufuli palani ki manakoga o te fenua fakatasi mo nisi fakapotopotoga kolaa e aofia I te palani tenei. Soose galuega e fai mai lalo I ikuga fai a te palani ka fakasae katoa iluga i te website a te Matagaluega a te Kaufaaika ke oko foki loa ki ana polokalame fai i te letio.

7 Budget Fakatauga-tupe



The Budget for the project includes funding from a range of sources. This includes in-kind funding from TFD and the Kaupule for items such as office rental and use of the salaries of TFD staff for monitoring activities, already paid by government. Much of the funding is in alignment with activities already underway within the TFD, and there will need to be the normal budgeting of PROP funds to ensure the activities are in alignment with the FRFSP. Funding will be sought for the Offshore Fisheries Development Project (OFDP) as a separate activity at a later date.

Overall funding follows the activities shown in Strategies 1-4 above, with the addition of:

- Establishment of a joint Kaupule-TFD Office at the Kaupule which would become the main administrative centre for Strategy 1 and 2 activities;
- Establishment of a FRFSP Steering Committee that would oversee the direction of the work, with members from TFD, Kaupule, Falekaupule, FOFA, OI Community leaders and representatives from groups. This committee would oversee all of the strategies and be involved in adaptive management; and
- Establishment of regular Consultations in the style of the FMMC consultations undertaken so far to keep the general public informed and ensure a clear pathway for addressing issues as they may arise.

The budget below shows funding needed for the first 5 years of the FRFSP from 2018 to 2022.

Strategy	A\$2018	A\$2019	A\$2020	A\$2021	A\$2022	TOTAL
1 FCA Strengthened	\$143,200	\$62,200	\$43,200	\$68,200	\$43,200	\$360,000
2 Size limits	\$4,000	\$4,000	\$34,000	\$34,000	\$34,000	\$110,000
3 Offshore Focus	\$214,000	\$294,000	\$114,000	\$114,000	\$114,000	\$850,000
4 Whole Project	\$54,820	\$48,520	\$52,320	\$58,520	\$52,320	\$266,500
Grand Total	\$416,020	\$408,720	\$243,520	\$274,720	\$243,520	\$1,586,500

Te fakatupega o te palani ka panaki loa mo te Matagaluega a te Kaufaaika fakatasi mo te Kaupule ki luga i te faka mauaga o sena ofisa, pela foki mo te fakaaogaga o ofisa o te Matagaluega a te Kaufaaika ke fai ne latou a galuega ona me isi loa ne peofuga o latou mai I te Maloo. . Te lasiiga o te fakatauga-tupe e olo tonu loa mo galuega a te Matagaluega a te Kaufaaika kolaa I tena palani fakagalue I tausaga,

kae e mafai o fakataunu nisi galuega o te palani mai lalo I te e Pacific Regional Oceanscape Project (PROP). A te fakataugaa tupe mo te polotieki ki luga i te fakalauefaga o te faaika ki tua atu I kogaatai poko ka fakamaua I se taimi fakamuli ifo.

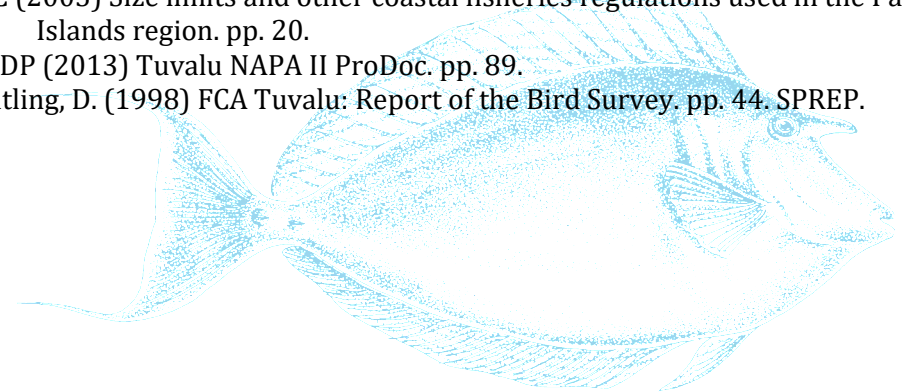
Te fakatupega saukatoa aofia i ei a galuega konaa e sae mai luga i te Aofaga 1-4 o te palani, mo nai galuega faopoopo k i ei ko te :

- Faitega o se ofisa i te Kaupule tela ka galue tasi ei te Matagaluega a te Kaufaaika mo te Kaupule ki luga loa i te fakataunuuga o galuega kola e aofia mai lalo o te Aofaga 1 mo te 2 o te palani.
- Ke fakatu se komiti fakatonutonu tela ka panaki loa moia te ononooga ki luga I tulaga o galuega fai.i loto i te komiti tenei e manakogina ke aofia i ei te Matagaluega a te Kaufaaika, Falekaupule, Fakapotopotoga Tagata Faaika o Funafuti(FOFA), takitaki o fenua i luga I Funafuti mo sui mai niisi vasega aka. Te komiti tenei ka onono ki luga I tulaga o galuega ke mafai o fakataunu kae ka aofia foki I loto i te faiga o fakamafulufuliiga ki luga i te fakateleteleega o te palani.
- Ke faka tumau te fai o fonotaga io meko sautalaaga pela mo te FMMC ko te mea ke tumau te maina o tino I tulaga o galuega fai a te palani pela foki mo niisi o aofaga kola ko manakogina ke fai.

Te fakatauga-tupe tena mai lalo e fakasae atu i ei a te fakatupeega o te PTMPF mo te 5 tausaga mai mua, kamata mai te 2018 ki te 2022.

8 References Fakamaoniga

- Ahmed, M., Maclean, J. L., Gerpachio, R. V. & Sombilla, M. A. (2011) Climate change and food security in the Pacific. Rethinking the options. Pacific Studies Series, pp. 85. Asian Development Bank, Manila.
- Alefaio, S., Finauga, M., Italeli, S., Kaitu, L., Kaly, U., Lopati, P., Makolo, F., Petaia, M., Taufilo, M., Taula, H. & Tetoa, F. (2016) Tuvalu Fisheries Creel Survey Report No. 1. pp. 21. Funafuti.
- Anon (2012) FCA Boundaries Jun12. pp. 2.
- Berdach, J. T. (2003) Case Study: The Funafuti Conservation Area, Funafuti Atoll, Tuvalu. Drawing Lessons for Future Marine Conservation Planning and Management. pp. 78. ADB.
- Charlton, K. E., Russell, J., Gorman, E., Hanich, Q., Delisle, A., Campbell, B. & Bell, J. (2016) Fish, food security and health in Pacific Island countries and territories: a systematic literature review. BMC Public Health, 16, 285.
- Freeman, A., Rodoni, B., Taufatofua, P., Taufu, L., Wasi, J., Beenna, T. & Lausaveve, I. (2011) Impact of Climate Change on Food Security and Biosecurity of Crop Production Systems in Small Pacific Nations. pp. 162. Department of Primary Industries, Victoria.
- GoT (1997) Falekaupule Act 1997. Act 8 of 1997, pp. 65. Funafuti.
- GoT (2008a) Conservation Areas Act 1999 Revised 2008. CAP 30.15, pp. 10. Government of Tuvalu, Funafuti.
- GoT (2008b) Falekaupule Act. pp. 1-65. Funafuti.
- GoT (2008c) Funafuti Conservation Area Order 2008 Revised Edition. CAP 30.15.1 (ed G. o. Tuvalu), pp. 8.
- GoT (2008d) Marine Resources Act. 2008 Revised Edition, pp. 74.
- GoT (2008e) Tuvalu Conservation Areas Act 2008 Revised Edition. CAP. 30.15 (ed G. o. Tuvalu), pp. 10. Funafuti.
- GoT (2012) Marine Resources (Amendment) Act 2012. 9.
- GoT (2016) Te Kakeega III: National Strategy for Sustainable Development 2016-2020. pp. 63.
- JICA (2011) Study for Assessment of Ecosystem, Coastal Erosion and Protection / Rehabilitation of Damaged Area in Tuvalu: Vol I. Final Report JED-JR-11-001, pp. 1-55.
- Job, S. & Ceccarelli, D. (2012) Tuvalu Marine Life Scientific Report Parts I, II, III. pp. 214. Alofa Tuvalu, Tuvalu Fisheries Department, Funafuti Kaupule, Nanumea Kaupule, Nukulaelae kaupule.
- Kaly, U. L., Alefaio, T. M., Ludescher, C. M., Talakatoa, K. & Alefaio, S. (1999) Second Marine Survey of Funafuti Conservation Area, Tuvalu. pp. 22. SPREP, Funafuti.
- Kaly, U. L., Lauti, T. P., Teiti, L., Ludescher, C. M., Belhadjali, K., Maatusi, S., Sauni, S., Apinelu, N. & Niu, T. (1997) Monitoring Training & First Survey of the Funafuti Marine Conservation Area, Tuvalu. pp. 21. SPREP, Funafuti Kaupule.
- Kaupule, F. (2016) Moeakiga o Malefatuga II: Funafuti Island Strategic Plan (ISP) 2016-2020. pp. 51.
- Kenchington, R., Ward, T. & Hegerl, E. (2003) The Benefits of Marine Protected Areas. pp. 24. Commonwealth of Australia.
- McCubbin, S. G., Pearce, T., Ford, J. D. & Smit, B. (2017) Social-ecological change and implications for food security in Funafuti, Tuvalu. Ecology and Society, 22.
- McLean, R. F. & Hosking, P. L. (1992) Tuvalu Land Resources Survey: Funafuti. pp. 64.
- Paka, L. (2017) 1st Fisheries Monitoring & Management Consultation (FMMC-01) in Funafuti 23-24 February 2017. Funafuti.
- Pita, E. (2005) Tuvalu Integrated framework diagnostic trade integration study: Fisheries - Tuvalu's pathway to trading. Tuvalu Integrated Framework for Trade Related Development Assistance Diagnostic Integration Study, pp. 33. ADB, AusAID, NZAid, World Bank, WTO, UNDP.
- SPC (2005) Size limits and other coastal fisheries regulations used in the Pacific Islands region. pp. 20.
- UNDP (2013) Tuvalu NAPA II ProDoc. pp. 89.
- Watling, D. (1998) FCA Tuvalu: Report of the Bird Survey. pp. 44. SPREP.



FRFSP: Te Palani Taufua mo Mea ola i te Papa o Funafuti



FRFSP: Funafuti Reef Fisheries Stewardship Plan

Optimising our use and benefits from Fisheries



Fisheries Department
Ministry of Natural Resources
Government of Tuvalu



FRFSP 2017