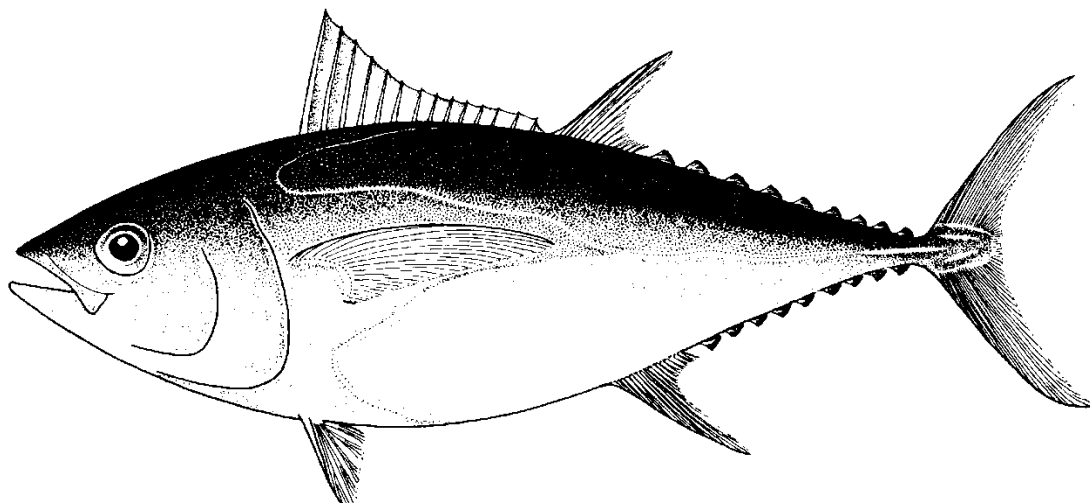


TENTH MEETING OF THE TUNA FISHERY DATA COLLECTION COMMITTEE

DEC 12-15th, Nadi, Fiji

**INFORMATION PAPER
DCC10 – IPO2**

FFA Regional Electronic Reporting strategy



Pacific Community



Forum Fisheries Agency



FFA

Opportunity to insert PNA and SPC logos

Regional strategy to strengthen fishery monitoring and data collection through the use of electronic reporting and independent monitoring

Draft for comment

December 2016

- [Aim to develop and implement as a joint plan with PNA and SPC]
- PNA, SCP and WCPFC comments and additions welcome over the coming weeks
- Will develop further with SPC and member input at the DCC meeting on from 12 Dec 2016.
- Timing – Aim to send out to members for comment by 23 December]

Table of Contents

Regional strategy to strengthen fishery monitoring and data collection through the use of electronic reporting and independent monitoring.....	1
Introduction	2
Regional Vision.....	3
Longer term regional fishery monitoring outcomes.....	3
Regional objectives	3
Primary objective	3
Strategy and key actions	3
E-reporting implementation plan	4
Management approach and legislative needs.....	14
Data management process and training.....	15
Independent monitoring options and plan.....	16
Roles and responsibilities	18
Summary of outcomes, objectives and key actions.....	21
Background Q and A	23
Issues and drivers for electronic reporting and higher independent monitoring	23

Introduction

The purpose of this document is to set out a plan to strengthen data collection and fisheries monitoring in accordance with existing fishery management objectives and regional objectives for FFA and PNA members. The plan will outline a joint approach between PNA, SPC and FFA in order to align approaches and ensure that resources are most effectively utilised to support members.

There is a strong need to improve the timeliness and reliability of fishery data reporting to ensure fishery managers and compliance officers have the information they need to sustainably manage their fisheries. Currently there are challenges with fishers not reporting as required and the paper based reporting system makes it difficult to enforce and ensure mandatory data is submitted.

E-reporting is a proven tool that enables existing fisheries data to be transmitted more quickly and efficiently back to fishery management agencies and scientific service providers. A key priority of this strategy includes implementing e-reporting to replace paper based reporting for all FFA and PNA members and driving its use more broadly across the WCPO region.

The strategy also focuses on how e-monitoring can be implemented regionally to improve independent monitoring of fishing activity, ensure compliance with management regulations and ensure that scientists have reliable information to support stock assessments and measure bycatch.

Independent monitoring includes both existing onboard observers and the use of camera based electronic monitoring systems. How these two monitoring approaches are implemented will vary by country but is ultimately driven by data needs. Supporting existing commitments, expanding the use of e-monitoring and linking this to e-reporting, is a key focus of this strategy.

Regional Vision

A monitoring and assessment framework that provides reliable and timely information to ensure ecologically sustainable management objectives can be met and illegal, unreported and unregulated fishing can be eliminated.

Longer term regional fishery monitoring outcomes

- Data and information available to national fisheries agencies in a timely manner to support fishery management decisions and measure progress against objectives
- Reliable and accurate record of fishing effort and mortality (catch and discards) for all species that are caught by [or interact with] fishing gear
- Responsible fishing practices encouraged with individual fishing masters and license holders accountable for their actions and reporting
- More efficient data reporting, management and monitoring processes for industry, national fisheries authorities and regional management organisations.
- Mis-reporting identified and investigated by relevant national compliance authority

Regional objectives

The Regional Roadmap for Sustainable Pacific Fisheries sets specific objectives to ensure sustainable management of tuna stocks and increased value to coastal states between 2014 and 2024. Progress against fishery objectives can only be measured with an effective monitoring and assessment framework and this strategy includes actions to improve measurement and assessment of the following objectives under the Regional Roadmap:

- Stock status moving towards target for all key tuna species
- Significantly reduce the impact of fishing on bycatch species including Sharks, turtles, seabirds and marine mammals
- Management not undermined by IUU fishing
- Value of tuna catch increased from 2014 levels

Primary objective

The objective of this strategy is the efficient, timely and reliable collection of fisheries data in all FFA, PNA and SPC member's waters supported with comprehensive independent verification that ensures high confidence in the data.

Strategy and key actions

To pursue the strategy objective FFA, PNA and SPC will work with members and seek to achieve the following:

1. All existing paper based fishing boat registrations and licensing, logbooks, vessel notifications (pre reporting and clearance) and data collection forms are reported and submitted electronically with common standards from 1 January 2018.
2. All fishers licenced by FFA members required to report all of their catch, discards and bycatch in their electronic logbooks from 1 January 2018.

Comment [DP1]: May be a bit ambitious but it is a good starting goal and is certainly achievable for many members.

Comment [DP2]: Many members have noted that fishers are not reporting as required in their logbooks and fishers use the excuse that the paper forms do not have enough rows to report all species that are caught. With e-reporting there is an opportunity to address this, remind fishers of their obligations and make it easier for them to report what the catch and discard/release.

3. Independent monitoring of all fleets operating in FFA members waters is strengthened through the increased uptake of electronic monitoring by members with common standards and a coordinated approach.
4. Data generated from e-reporting and e-monitoring is compatible with relevant data confidentiality rules and integrated with existing SPC, PNA and WCPFC databases, FFA surveillance activities and national level data systems that support analysis by members (FIMS and RIMF).
5. Information obtained from e-reporting and e-monitoring analysis is effectively utilised in MCS and fisheries management operational system.
6. Costs for national development and ongoing administration of e-reporting and e-monitoring are recovered from industry.

To help members achieve these strategy actions PNA, FFA and SPC will ensure that

- members are technically and economically well informed in decision making processes in regard to the adoption of e-reporting and e-monitoring, in order to ensure achievable and effective roll out.

Scope

This monitoring strategy focuses on actions to improve ongoing data collection programs that support stock assessment, measurement of progress against management objectives and identify misreporting by fishers. Off-boat surveillance activities and investigations into cases of non-compliance by fishers are out of scope for the monitoring strategy and are dealt with in national and regional compliance risk assessments and strategies.

In particular this strategy will focus on how FFA and partner agencies can support the implementation of e-reporting and e-monitoring with the region. The approach outlined in this strategy recognises that there are significant monitoring programs already in place and that e-reporting and e-monitoring are tools that can help more effectively meet existing objectives.

E-reporting implementation plan

Over time the objective is to replace paper based forms with electronic forms that can be completed on a computer or tablet device and submitted to a central database. The following forms are currently paper based and are included in the scope of this plan to be submitted electronically:

- Vessel registration forms (completed by operator)
- Licence applications (completed by operator)
- Longline daily fishing logbook (completed by operator)
- Purse seine daily fishing logbook (completed by operator)
- Transshipment notification/declarations (completed by operator)
- Bunkering notification/declarations (completed by operator)
- Unloading forms (completed by operator)

- Observer data forms (completed by national or regional observer)
- Pre reporting and vessel clearance
- Boarding and inspections (completed by national compliance officer)

Discrete goals and required actions are defined below for each type of data form that will be included in the implementation of e-reporting. It is acknowledged that members are at different stages of implementation for e-reporting systems. Many PNA members have led the development of the IFIMS system which supports e-reporting and is working well for those who are implementing it. A summary of current member status and progress with implementing e-reporting is included in table 1.

The actions included below are intended as an indicative summary of key steps that are required to implement e-reporting and identify what support and services are being provided by PNA, FFA and SPC for each of these actions. An indicative timeline for non PNA members and those that have yet developed an e-reporting framework is included in table 2 and table 3 outlines the implementation process for PNA members using IFIMS.

Vessel registrations

Vessel registration is a step in the licencing process and there is a standard set of data that needs to be included. Historically vessel registrations have been completed on paper based forms with fisheries departments manually inputting the data to an electronic data base and passing the data on to WCPFC, FFA and PNA vessel registers. Some countries have already developed electronic vessel registration systems, which is supported through the PNA FIMS but wider support is needed.

Goal and actions

- Goal: Electronic and database support available for all members so that fishers can submit vessel registrations electronically from 1 Jan 2018.
- Actions
 1. Develop electronic vessel registration form that can be lodged via HTML website or smart form
 2. Develop national and agency capacities to manage, collate and interpret the details held on these data bases, and when required to facilitate training to industry and fellow staff members
 3. Vessel registration data saved into specified national database [E.g. TUFMAN, FIMS or other]
 4. Vessel operators and agents instructed of electronic registration requirements and directed/trained on how to use the electronic process.
 5. Amend regulations to specify electronic submission as the 'approved form'
 6. Develop industry login to access and view their vessel registration and licencing data

Licence applications

Licence applications include a standard set of information about the vessel and operator. Some members already have the capability for electronic licencing (using FIMS) but many still use a paper based system.

Goal and actions

- Goal: Electronic and database support available for all members so that fishers can submit licence applications electronically from 1 Jan 2018.
- Actions
 1. Develop electronic licence application form that can be lodged via HTML website or smart form
 - a. Develop national and agency capacities to manage, collate and interpret the details held on these data bases, and when required to facilitate training to industry and fellow staff members
 2. Vessel registration data saved into specified national database [E.g. TUFMAN, FIMS or other]
 3. Vessel operators and agents instructed of electronic registration requirements and directed/trained on how to use the electronic process.
 4. Amend regulations to specify electronic submission as the 'approved form'
 5. Develop industry login to access and view their licencing data.

Longline daily fishing logbooks

The longline daily fishing logbook contains a standard set of data designed to meet national management requirements as well as scientific data needs specified by the WCPFC commission. The paper logbook forms are currently produced and maintained by both national governments and the Oceanic Fisheries program at the Secretariat of the Pacific Community (SPC). SPC have developed a software application to allow electronic reporting of existing logbook data, called TAILS. This software is available free of charge and runs on an android based tablet. Other commercial products are available included integrated systems like IFIMS that are very effective and provide both reporting and analysis features.

The data recorded in logbooks includes crucial catch and effort data that is needed to measure the total catch and enable assessment of stock status. However, the WCPFC scientific data needs fall short of listing all data that is needed to effectively manage the tuna fisheries and it does not include mandatory reporting of all discards and bycatch.

It is proposed that when electronic logbook reporting is introduced, that all fishers be obliged to report all of their catch, discards and bycatch. Providing fishers report accurately, this will ensure fishery managers have vital information on bycatch and real fishing mortality (retained catch plus discards) that occurs in their waters.

Goals and actions

- Goal: Implement electronic logbook reporting requirement for all longline boats with data submitted electronically to SPC database from 1 Jan 2018.
- Goal: Enhance logbook reporting requirements to oblige vessel masters to report all catch, discards and bycatch.
- Actions:
 1. Define time period for when boats must submit e-logbook form
 - Daily is recommended

2. Amend Regulations to require all longline vessels to submit their logbook data in the approved form and within the specified time period
 - Approved form to include a requirement for all catch, discards and bycatch to be reported
 - Approved form can be defined as the 'data schema' or as an existing software product that meets your data needs
3. Consult with industry and support industry develop data transmission options for vessels at sea
 - Set standard – what data by when
 - Transmit through existing MTU on the boat (some upgrades may be required)
 - Trial data transmission options
 - Industry can use their own satellite data services to submit logbook
4. Training for fisheries staff and industry on Installation process for e-log software on computers and tablets
5. Training support program for Fisheries staff and agents and operators to ensure all operators can effectively submit their logbook data.

Purse seine daily fishing logbook

PNA and associated party AW purse seine boats already have support for electronic logbook reporting through the IFIMS system. For other members they can choose to use IFIMS or develop e-reporting software similar to the longline TAILS application.

[Confirm goal and possibility for support with SPC]

- Goal: Implement electronic logbook reporting for all purse seine boats with data submitted electronically to SPC database from 1 Jan 2018.

Transshipment, offloading and bunkering notification/declarations (completed by operator)

Fishing operators are required to advise the relevant fisheries authority of any transshipment at sea, where it is permitted. This currently occurs mostly via email and there are challenges with how records of transshipments are maintained.

Goals and actions

- Goal: Transshipment and bunkering notifications (where applicable) to be sent electronically from both carrier and fishing vessel to the relevant fisheries authority with records integrated into licensing database. System to be implemented by 1 Jan 2018
- Actions:
 1. Develop transshipment/bunkering notification form. Consider integrating it with e-logbook software and define best approach for submitting notification.
 2. FFA/SPC/PNA to lead development and enable signing/verification on the tablet and/or integrate within IFIMs.
 3. Amend regulations (include with changes to e-logbook requirements)
 4. Provide training for fishery authority staff trainers and fishing operators

Unloading forms (completed by operator)

Catch unloading destination forms are method specific and must be completed for each and every unload. They are completed by industry and document the species, weights and destination for fish that are unloaded.

There is currently no electronic form for unloading documents.

Goals and actions

Goal: Implement electronic unloading forms for all vessels from 1 Jan 2018.

- Actions:
 1. SPC/FFA/PNA to develop a regional electronic unloading form. Options for it to be HTML based and/or integrated into electronic logbook software. Aim for electronic forms to be available from mid-2017)
 2. Fishery authority to amend regulations to require electronic submission of unloading form once after it is available for use.
 3. Consult with industry on reporting change and ensure they understand reporting requirements.

Observer longline forms

Observers currently record all of their data on paper based workbooks that are submitted to SPC for data entry at the end of a trip. All observer data is stored in the TUBS database maintained by SPC and members can login through the Dorado access portal. This allows access to all observer data for a national fleet and allows the generation of data reports.

SPC is working to develop a module in TUFMAN 2 in 2nd half of 2017 to support an observer data app. This app would be available on a tablet for observers to use on longline trips. The observer data could be submitted the end of a trip once connected to a network or during a trip if a satellite network device is used.

Marshall Islands and PNG are currently trialling an electronic observer tool that links to a module in IFIMS and submits data in real time through the use of a Delorme satellite network device. Once submitted, the data is transferred to SPC databases.

While electronic observer systems are currently being trailed, it is anticipated they will be more broadly available by late 2017.

Goals and actions

- Goal: All observers using electronic observer forms supported on tablets compatible with the regional observer program by 1 Jan 2018.
- Actions:
 1. PNA members to continue trials with members on e-observer system
 2. SPC to develop electronic observer forms by second half of 2017
 3. Training for regional observers
 4. Procure and supply observers with tablets and e-observer software
 5. Evaluate the mechanisms to integrate E-M e-viewing to observer reporting

Boarding and inspections

Boarding and inspections are carried out by national compliance officers. Notes and records of the inspection have been recorded on paper forms. FFA and iFIMS have developed an application that officers use on a tablet to keep records of boardings and inspections (The Boarding Officer Jobkit). This is available for all members and links to the national IMS and can be saved into national databases.

Goal and actions

- Goal: All boardings and inspections records to be taken electronically and uploaded to the national database when back in port (or in real time through satellite transmission on boat). Implement this process by 1 Jan 2018.
- Actions:
 1. FFA and PNA to brief relevant fishery authority staff on options and capabilities
 2. Ensure national database (IMS and FIMS) support electronic boarding's and inspections records
 3. Procure tablets and software enabled tablets and provide to compliance officers
 4. Provide training to compliance officers

Catch documentation scheme

There are plans to introduce a catch documentation scheme (CDS) in WCPFC region to enable consignments of fish to be traced from point of capture to point of sale. The development of such a scheme is dependent on having effective electronic reporting for existing catch documentation. And meeting objectives set out in this plan is an important step towards a CDS.

As plans for a working CDS develop it is likely some changes will be required to catch forms, however, these are not currently covered in the scope of this plan and will be incorporated in the future as the need arises.

Establishing electronic transmission of existing logbooks and catch unloading forms with a unique unload ID will greatly assist the implementation of near real time traceability mechanisms.

Table 1. E-reporting and E-monitoring implementation status for each member.

[Draft under development and insert during DCC meeting in December

This includes input from TNC, WWF, ISSF, EF]

DRAFT

Table 2 - Indicative Electronic reporting actions, timelines and support for Non PNA members [It seems easiest to split the actions up between PNA and nonPNA simply because PNA members are much more advanced with IFIMS. Open to any comments and suggestions on how to present this?]

DRAFT

E-reporting form	Jan-Mar 2017	Apr-Jun 2017	Jul-Sep 2017	Oct-Dec 2017	Jan-Mar 2017	Apr-Jun 2018
Vessel registration and licence application forms						
1. Develop electronic vessel registration and licence application form	SPC/FFA support					
2. Vessel registration data saved into specified national database - Trialled			FFA and Fishery Authority			
3. Vessel operators and agents instructed of electronic registration requirements and directed on how to use the electronic process.			Fishery Authority, FFA/PNA support			
4. Amend regulations to specify electronic submission as the 'approved form'		Fishery Authority lead, FFA legal support				
5. Develop industry login to access and view their vessel registration and licencing data	SPC/FFA support					
Longline daily fishing logbook						
1. Define time period for when boats must submit e-logbook form and finalise plan	National decision					
2. Amend Regulations to require all longline vessels to submit their logbook data in the approved form and within the specified time period		Fishery Authority lead, FFA legal support				
3. Consult with industry on proposed changes and support industry develop data transmission options for vessels at sea	Fishery Authority lead, SPC support					
4. Training support program for Fishery staff trainers and agents/operators to ensure all operators can effectively submit their logbook data.		SPC training for fisheries staff who then train industry				
Transshipment and bunkering notification/declarations						
1. Develop notification form. Consider integrating it with e-logbook software	SPC lead, Fishery authority/FFA/PNA support					
2. Amend regulations		Fishery Authority lead, FFA legal support				
3. Training		SPC and fisheries staff conduct training				
Unloading forms						
1. SPC/FFA to develop a regional electronic unloading form. Options for it to be HTML based and/or integrated into electronic logbook software	SPC/FFA/PNA support					
2. Amend regulations to require electronic submission of unloading form once after it is available for use.		Fishery Authority lead, FFA legal support				
3. Consult with industry on reporting change and ensure they understand reporting requirements.	Fishery Authority consultation		Fishery authority training			
Observer data forms						
1. SPC to develop electronic observer forms	SPC developing - expected mid 2017					
2. Training for regional observers			SPC and Fishery authority training			
3. Procure and supply observers with tablets and SPC e-observer software			SPC and Fishery authority			
Boarding and inspections						
1. Ensure national database (IMS) is established to support electronic boarding's and inspections records	FFA and Fishery authority					
2. Procure tablets and software enabled tablets and provide to compliance officers		Fishery authority and FFA support				
3. Provide training to compliance officers			Fishery authority provide training			

Table 3 - Summary of actions and timelines for PNA members implementing e-reporting through IFIMs.

[Opportunity for PNA to insert summary of actions and implementation plan for the year ahead – noting that PNA members are more advanced with IFIMS]

DRAFT

Management approach and legislative needs

Conceptually the process for implementing electronic reporting involves replacing existing paper based forms with an electronic means for entering the data to a device in situ and submitting the data to a central server. The technology and software is available but there are some logistical and management challenges.

From a management perspective it is crucial that industry are involved in the implementation process and that they understand they are ultimately responsible for submitting the data in the standard and format specified by the relevant Fisheries Authority. This will enable them to assist with finding options to most efficiently submit electronic logbook report.

Institutional capacity and leadership by national fisheries staff is critical to the successfully pursuing the objectives for ER and EM specified here. Some members already have a dedicated ER and EM officer and a key action of this strategy will be to build on that and ensure all members have identified a lead staff member to support and drive this work. FFA, PNA and SPC have resources to support such persons and this can include training, technical assistance and limited financial support.

In the actions specified above, there are several actions that will require an amendment to the fishing Regulations. It is proposed that all regulatory changes to support electronic reporting occur at the same time to simplify the process. The regulatory changes identified include amending the Regulations to require:

- Vessel registrations to be submitted electronically as the approved form
- Longline daily fishing logbooks to be submitted electronically in the approved form (software and content) on a daily basis while fishing
- Longline fishers to report all catch, discards and bycatch in logbooks
- All transshipment and bunkering notifications to be submitted electronically to VFD in the approved form
- Unloading destination forms to be submitted electronically in the approved form.

There is further work required to draft these amendments and FFA legal can offer some assistance if required. FFA is currently considering developing some suggested text for implementing text to support e-reporting.

The summary of the key steps in the management timeline for e-reporting are listed here:

- December 2016 – Finalise e-reporting plan and publish proposed objectives and timeline for consultation with industry
- January 2017 – March 2017 – Support national capacity and identify lead staff member to drive ER/EM objectives and ensure they are briefed and have access to necessary training and support.
- January 2017 – June 2017 - Liaise with industry, SPC, PNA and FFA to support the development and testing of final electronic forms. Develop protocols for how electronic reporting logbooks will be submitted daily while at sea.
- April 2017 – December 2017 – Ensure legislative amendments are drafted and take effect to support the 1 Jan 2018 implementation target.

Detailed actions and targets are outlined in the timeline and Fisheries Authorities will be responsible for managing the overall process and keeping actions on track.

Data management process and training

E-reporting includes a range of different forms that are completed by fishers, fisheries officers and observers. The data is recorded in different places, gets submitted to different places and has different time requirements for submission. A summary of the different forms and these attributes is presented in Table 2.

Table 2. E-reports and attributes

E-report	Completed by	Sent to (first destination)	Sent to (further destinations)	Submission time
Vessel registration	Fisher/agent	Fisheries Department	PNA, FFA and WCPFC vessel registers	As needed
Licence application	Fisher/agent	Fisheries Department	FFA and PNA information systems	As needed
E-logbook	Fisher	Fisheries Department	SPC and scientific users. WCPFC scientific data and part 1 reports	Daily / within 24 hours of set end
Transshipment/bunkering	Fisher	Fisheries Department	FFA and PNA information systems – Ops support	Prior to activity
Unloading form	Fisher	Fisheries Department	SPC	24 hr from unload
Observer form	Observer	Fisheries Department	SPC WCPFC scientific data and Part 1 reports	After trip ends
Boarding's and inspections	Compliance officer	Fisheries Department	FFA and PNA information systems WCPFC part 2 reports	After completion
Pre notifications and clearance	Fisher/agent	Fisheries Department	None	As needed

Vessel registration, licence applications and unload forms can be submitted from shore based facilities using land based network infrastructure. E-logbooks and transshipment notifications will be submitted at sea and require a satellite internet connection. All licenced longliners are required to have a Vessel Monitoring System (VMS) that includes an MTU capable of transmitting data via satellite. Currently this system transmits vessel location data and it is capable of transmitting electronic logbook data and notifications.

Further work has been identified as an action in the plan to assess the most efficient process to enable e-logbook reports to be submitted via satellite. The e-logbook software developed by PNA IFIMS and SPC can run on any tablet and just requires a network connect in order to submit data. This network link could be established with the MTU currently on longline vessels. Newer systems already have this capability but some older systems may need upgrading. The data volumes for logbooks are very low and equivalent to a single text based email.

It is envisaged that operators will be responsible for procuring their own tablets and the choice of software and system support will be driven at the national by fisheries departments.. Fisheries departments define the legally approved form for data submission and this can be one or more system or service providers. PNA members have the iFIMs system implemented which is working well and non PNA members have choice of options available.

Fishers are legally responsible for ensuring that they submit their e-logbook data daily while registered to fish in a members waters. This would include an update stating 'no fishing gear set or hauled' on days where the vessel is not actively fishing. Fishers are responsible for their reporting and are expected to take suitable steps to ensure redundancy in the event of equipment failure or loss. This can include keeping a spare tablet or computer with e-logbook software enabled or possibly an e-form that can be completed on a separate computer. These options will be explored further during the implementation phase.

Training

Training and national capacity is a very important part of the implementation process. As new systems are developed and become ready for implementation SPC, PNA and FFA provide training for fisheries staff, including training for trainers. It is envisaged that Fishery Authority staff who have received training will take the lead on training agents and operators on the use and implementation of e-reporting tools.

Fishing operators are themselves responsible for training their captains and crew on e-reporting requirements and use of systems. Fishery Authority staff can provide training sessions for operators and it is also envisaged that vessel crew can receive training when they are in port for the mandatory pre-fishing inspection. It is noted that members using IFIMs have these training services included as part of the subscription. Similarly SPC have provided great training support for trials and initial implementation of ER for several members.

Training sessions for all activities involving the fisher can be combined into one session with separate sessions for observers and a separate session for fisheries officers on boarding and inspection forms.

Independent monitoring options and plan

Both on-board observers and EM are monitoring approaches that are used to independently monitor a fishery and collect data that is reliable and considered a true and verified record of fishing activity. EM is a technological based tool that enhances existing vessel monitoring systems (VMS) that use GPS capacity, through the addition of cameras and gear sensors to independently monitor fishing activity.

For all tuna fisheries it is acknowledged that onboard observer coverage and/or port sampling are crucial for collecting data (e.g. biological data) required for fisheries science and EM is intended to complement existing observer coverage and improve the quantity and quality of catch/effort data by significantly increasing the level of independent monitoring.

Longline sector

In the longline fishery existing onboard observer coverage requirements of 5% will remain unless all biological data needs can be met through port sampling. For some members this is feasible and they may choose to go with 100% e-monitoring coverage supported by representative port sampling of biological data.

It is up to members how they wish to meet their monitoring needs and there are options for how observers and EM can be used together to improve the reliability of data. However, it should be noted that the benefits of using EM are maximized when it is used on all boats in a fleet, and observers are tasked to the data collection which EM cannot achieve. This ensures that scientists, managers and compliance officers have reliable data across the full fleet and that all boats are held to the same compliance standards. Legally this is simpler to implement as it avoids discriminating between who have EM and those who do not, and it also has stronger support from industry who want to see the management rules enforced consistently for all boats.

If EM is used on all boats, a risk based analysis approach can be used that ensures a minimum proportion of imagery is analysed across the fleet with closer/higher analysis of boats that are suspected of misreporting. Note that for longline the existing recommendation is for 20% observer coverage and this can be considered as a target review level. This is an efficient way of operating an EM program and helps keep the cost affordable for industry and management while ensuring accurate reporting in logbooks and providing the potential to check compliance on every boat.

Purse seine fishery

While much of the need for EM has been focused on the longline fishery, there is great value in including this technology on purse seine boats. The need in the purse seine sector is slightly different and is driven by industry to monitor their fleets and by the pressing need to ensure observer safety and more efficiently collect data. On purse seine boats, EM sensors and cameras can be used to independently monitor the amount of effort, FAD sets, and interactions with protected species. They can also be used for verifying which wells are used for storing catch from specific sets. If this data is recorded independently of the onboard observer it removes significant pressure from the observer and can improve observer safety. SPC has suggested that a purse seine EM workshop be held over the coming year to address the data needs and standards.

Implementation approach

Implementation approach for these new and emerging technologies is an important consideration and both ER and EM need to be considered concurrently. While it is envisaged that members should aim to pursue both ER and EM together, ER is simpler can be implemented more quickly. In this regard this strategy sets a goal for implementing ER from 2018 across all membership while concurrently supporting implementation of EM. For some members it may be most cost effective to link these technologies into one support systems and source a supplier who can provide all services. In such cases this plan will support members to do so.

There has been a lot of progress in trialling and implementing EM in the region. Some countries have fully implemented across their fleets and other members are well underway with trials complete and more boats being progressively added. SPC, PNA and FFA have all actively supported and lead trials as well as a range of ENGOs and industry members. The ENGOs are playing a strong and valuable role in this space and this strategy seeks to strengthen engagement and help coordinate the work that all players in the FFA/PNA region are doing in this space.

It is envisaged that we are heading towards an environment where independent monitoring is in place across all commercial/industrial tuna fleets in the WCPO. A precedent has already been set with the purse seine fishery where 100% on-board observer coverage is required. WCPFC has been supporting the adoption of these new technologies through driving development of regional standards. This is an extremely important component and the aim is for ER standards to be adopted at the end of 2016 and EM standards from the end of 2017.

SPC is planning to host a second EM workshop in the first half 2017 to progress development of EM standards. This will also be an excellent opportunity for all parties to review current progress, share lessons learned help shape the plan for FFA, PNA and SPC members as well as the broader WCPO.

Goals and actions

- Goal: Independent monitoring of all fleets operating in FFA members waters is strengthened through the increased uptake of electronic monitoring by members with common standards and a coordinated approach.
 - a. [Could consider a more concrete goal for EM? E.g. X% of all boats in FFA waters independently monitored Dec 31 2019? Or just list individual member goals in supporting tables]
- Actions:
 1. Members encouraged and supported to implement e-monitoring where they choose do so.
 2. Support the adoption of minimum data standards for e-monitoring at the WCPFC.
 3. Develop regional best practice standards and implementation approach for e-monitoring. SPC to hold a workshop around March 2017.

Roles and responsibilities

Members

National jurisdictions will play the largest role and are responsible for implementation within their EEZs. This will require legal and policy changes as well as investment in time and resources to support data management and close consultation with industry. FFA, PNA and SPC will provide technical assistance and support for regional data management systems and processes.

FFA

FFA, working with regional partners, will provide a coordinating role to help define objectives and align resources to support implementation of electronic reporting. Actions and services that FFA can provide members include:

- Review member's management and legal status and assist with developing implementation plans for e-reporting and e-monitoring.
- Support the development of regional data standards in the WCPO tuna longline fishery. Seek endorsement at WCPFC and support implementation by FFA members.
- Develop suggested legal text to enable e-reporting and e-monitoring technology and support national implementation of policy and legislation

- Support the development of the Regional Information Management Framework (RIMF) and National Information management systems for selected members. The FFA IMS includes support for:
 - Vessel registration and licencing (electronic report to be developed with SPC)
 - Boarding's and inspections (electronic report for tablet available now)
 - Data access and storage
 - [FFA IT to provide input]

SPC

SPC plays a crucial role as both the regional science provider and data manager. All logbook reports and observer data is held and managed by SPC and they leading the development of regional data standards for both ER and EM. SPC will be responsible for supporting:

- Electronic logbook forms for longline and purse (longline now available, purse seine under development)
- Electronic observer forms - will be available for all observers to use an expected mid 2017
- Transshipment and bunkering notifications – under development and option to include in TAILS e-logbook package?
- Electronic unloading forms - under development

SPC is planning an electronic monitoring workshop early 2017 to bring together members to develop a regional plan to support implementation.

PNA

PNA has a lead the development of a first class Fishery Information Management System (FIMS). This data management tool is modular and supports electronic reporting of vessel registration, vessel licensing, asset tracking, logbooks, observer reporting and compliance monitoring. FIMS primarily supports the monitoring and reporting requirements of the national agencies in accordance with VDS, catch reporting and the application of compliance standards, as well as a supplementary role in providing data to SPC, the science provider, and FFA, the MCS provider.

PNA offers support for its members on administrations of the vessel day scheme for both purse seine and longline boats. For members choosing to use the IFIMS software, this system is ready and available to support e-reporting.

[add additional text as desired]

WCPFC

Overarching support for amending monitoring and data measures. Could play a role in facilitating access to real-time data (location and fishing activity). Note that over time boats with e-monitoring may not need separate VMS units as location data is provided in real time via e-monitoring.

[add additional text as desired]

Industry

Industry will be heavily involved and need to enable systems to be installed, maintain the systems and report accurately in their logbooks. It is crucial they closely involved in all stages and the costs and incentives are considered by managers.

E-monitoring and e-reporting service providers

There are an increasing number of service providers lobbying members and advocating their products. This increased competition is providing valuable with advances in technology and lower costs starting to come through. However, FFA and our members need to be clear on what our needs are to ensure we get value for money.

ENGOS

Environmental groups have a strong interest in monitoring and several groups are investing heavily with trials and advocating for certain countries to take specific approaches. On balance this offers a valuable resource that should be supported. But FFA and other sub regional bodies need to ensure that there are regional standards and that the various approaches are compatible.

[I think we can expand this to summarise the initiatives that ENGOS are leading/supporting with ER and EM – I am working in the margins of WCPFC Commission to help expand this with some updated info from TNC, WWF, EDF, PEW and others]

DRAFT

Summary of outcomes, objectives and key actions

Comment [DP3]: Update as required

Monitoring outcomes			
<ul style="list-style-type: none"> Data and information available to national fisheries agencies in a timely manner to support fishery management decisions and measure progress against objectives Responsible fishing practices encouraged with individual fishing masters and license holders accountable for their actions and reporting Reliable and accurate record of fishing effort and mortality (catch and discards) for all species that are caught by [or interact with] fishing gear Mis-reporting identified and investigated by relevant national compliance authority 			
Strategy objectives	Supporting Actions	Responsible party	Timing
1. All existing paper based fishing boat registrations, logbooks, vessel notifications and data collection forms to be reported and submitted electronically with common standards from 1 January 2018.	<ul style="list-style-type: none"> Members to consult with their industry and develop plans to implement ER PNA continue leading with rollout IFIMs for members FFA/SPC to develop additional e-forms as specified for non PNA members Members to amend legislation by late 2017 or as required Note detailed actions included in Table 1. 	FFA, PNA, National administrations, SPC	Various through to 1 Jan 2018
2. All fishers licenced by FFA members are required report all of their catch, discards and bycatch in their electronic logbooks from 1 January 2018.	<ul style="list-style-type: none"> Update suggested text in the minimum terms and conditions Members to amend domestic legislation 	FFA, PNA, National administrations, SPC	FFC mid 2017 Late 2017
3. Independent monitoring of all fleets operating in FFA members waters is strengthened through the increased uptake of electronic monitoring by members with common standards and a coordinated approach.	<ul style="list-style-type: none"> Members encouraged and supported to implement e-monitoring where they choose to do so Support the adoption of minimum data standards for e-monitoring at the WCPFC Develop regional best practice standards and implementation approach for e-monitoring. SPC to hold a workshop around March 2017. 	Fisheries authorities, FFA, PNA and SPC	Incremental No specified time
4. Data generated from e-reporting and e-monitoring is integrated with existing SPC and PNA databases, FFA surveillance activities and national level data systems that support analysis by members.	<ul style="list-style-type: none"> SPC, WCPFC, FFA, PNA and national databases receive ER data in the <u>standard format</u> specified and data can be readily accessed by users Real time data (e-reports, gps location and sensor) is integrated with national regional surveillance picture E-monitoring service providers analyse video footage and store EM data in a <u>standard format</u> that is integrated with national and regional databases 	FFA, SPC, PNA and National Administrations	E-reporting data integrated by late 2017. E-monitoring data plan developed by Mid 2017
5. Information obtained from e-reporting and e-monitoring analysis is effectively utilised in MCS and fisheries management operational system.	<ul style="list-style-type: none"> Regional and national MCS strategies updated to outline how best to use e-reporting and e-monitoring data 	National Administrations, PNA and FFA	Mid 2017
6. Costs for national development and ongoing administration of e-reporting and e-monitoring are recovered from industry on a user pays basis.	<ul style="list-style-type: none"> Cost recovery policies and mechanisms developed 	National administrations, industry, service providers	Mid 2018
7. FFA and PNA members are technically and economically well informed in decision making processes in regard to the	<ul style="list-style-type: none"> Effective communication strategy implemented 	FFA, PNA, SPC and	Continuous

adoption of e-reporting and e-monitoring, in order to ensure achievable and effective roll out.	<ul style="list-style-type: none"> Progress monitored and priority areas for assistance identified 	National Administrations	
	<ul style="list-style-type: none"> 		

DRAFT

Background Q and A

Issues and drivers for electronic reporting and higher independent monitoring

Mis-reporting of catch and discards is illegal and costs the Pacific Islands millions in lost revenue.

- The 2016 IUU report highlighted that mis-reporting is now one of the largest threats in the fishery and is costing a large amount in forgone revenue and undermines the quality of data and stock assessments.

Accurate data on retained catch, discards and fishing mortality is required for all species to meet existing ecologically based management objectives.

- There are concerns over the status of bigeye tuna and several bycatch species (particularly sharks) and data on true fishing mortality is not reliable.
- Comparisons between observer records and logbook have shown large amounts of catch and discards are not reported accurately in logbooks.
- WCPFC scientific committee has noted in the past that much higher levels of observer coverage (>20%) are needed in the longline sector to reliably account for fishing mortality
- Two new management approaches are being implemented in the longline sector that are based on limiting fishing days or catch of key target species. Both management approaches require accurate measures of fishing effort and catch.

Unreported bycatch is a threat to the future of the fishery and livelihoods of Pacific islanders

- Market states are increasingly requiring national fishery authorities to demonstrate that fishing practices are ecologically sustainable. Without high levels of independent monitoring in the longline fishery, there is a real risk that market access and revenue will be lost.
- Unreported bycatch of vulnerable threatened, endangered and protected species is a threat to the health of regional ecosystems and damages credibility of management.

Fisheries Management need cost effective monitoring and data collection solutions

- High levels of observer coverage are not always practical or cost effective in the longline fishery as boats are smaller and operating margins are tight.
- E-monitoring and e-reporting tools have been successfully implemented in many fisheries around the world and are cost effective. E-reporting of logbook data is cheaper and quicker than traditional paper logbooks.
- Economic analysis and experience in fisheries around the world has shown that e-monitoring (with cameras and sensors) is the most cost effective method to ensure reliable data in a longline fishery.

What is ER and how is it useful?

Currently, there can be a significantly delay in the availability of complete fisheries data due to delays in manually recording, submitting and entering data through paper based systems. At its most basic ER is simply an electronic form that allows data to be submitted and integrated to a database more quickly. More sophisticated versions of ER focus on reducing the effort required by fishers, observers and port-samples to complete data collection requirements. Such systems focus on increasing the quantity of information available and they facilitate the submission of high quality information and the integration of different data sources. The benefits of this are immense across

science, compliance and fisheries management. One example is that it should enable greater reliability in the assessment of current stock status and should provide more certain projections of sustainable catch levels for the years ahead.

Why do we need more reliable data and how is EM useful?

EM is a data collection and verification tool that enhances existing vessel monitoring systems (VMS) that use GPS capacity, through the addition of cameras and gear sensors to independently monitor fishing activity. The proven capabilities of EM offer an opportunity for members to redefine how they monitor fishing effort and compliance with regulations in their zones. In addition to improving data quality, quantity and submission timeliness, EM is a powerful compliance tool that offers a cost effective approach to minimize and deter IUU fishing in the longline fishery.

The recent Pacific fisheries IUU fishing quantification report (MRAG, 2016) identified that unreported and misreported catch is one of the biggest IUU threats in the longline fishery that is costing the region several hundred million USD each year. EM offers two new streams of data that regional MCS officers can use. Firstly, gear sensors on the mainline shooter and the longline drum can transmit data in real time with the VMS data allowing MSC officers to see exactly where fishing is occurring at all times. Secondly, cameras placed strategically on the deck of the boat record imagery of catch and fishing activity that allow officers (or shore based observers) to independently verify whether all catch and effort has been correctly reported by the vessel and potentially whether transshipping has occurred.

How does EM compare with observer data and what are data standards?

The capabilities of EM are compatible with the existing observer data but there are differences and there is a need to define what EM can be expected to monitor (data standards). To support the development of data standards for EM (longline), and with funding from ISSF, SPC hosted a meeting in late June 2016 that included SPC scientists, data managers, EM service providers and management staff. The process involved systematically reviewing all existing observer data fields and defining if and how EM can collect this data and what standard is required. The EM (longline) standards document produced at this workshop will be provided to all members for consideration at EREMWG2.

The WCPFC ER and EM working group was formed following WCPFC 11 and has already assessed and developed draft standards for ER. It is planned that by the end of 2016, this working group will provide useable standards to support members and service providers who are implementing ER and EM (longline) technology on boats across the Pacific.