# SPC/FFA/PNAO Data Collection Committee (DCC)

# Longline Electronic Monitoring (EM) Planning Workshop

FFA Main Conference room

Honiara, Solomon Islands

16–18 October 2019

**[DRAFT] SUMMARY REPORT**

# Agenda Item 1: Opening

1. Mr Tuikolongahau Halafihi (Tonga) offered a prayer to commence the Workshop.
2. Dr Manu Tupou-Roosen, Director-General of FFA, welcomed FFA member country representatives and other participants. She advised that the Workshop provided an important opportunity for FFA members to collectively advance strategies for the broad implementation of electronic monitoring (EM). She also reminded participants that the Western and Central Pacific Fisheries Commission (WCPFC) will be considering the key elements of EM for the Commission through the work of an inter-sessional working group in 2020 and that the Workshop provided an opportunity for FFA members to prepare for substantive input to that initiative. In concluding her introduction, Dr Tupou-Roosen expressed appreciation to the International Seafood Sustainability Foundation (ISSF) for the financial support it had generously provided for the Workshop.
3. The Facilitator, Andrew Wright, invited participants to introduce themselves. He then briefed the Workshop on administrative and logistical arrangements including an outline for managing the Workshop agenda and the proposed Workshop schedule of work.
4. He noted that the objective for the Workshop was to prepare a Draft EM Policy. He recalled that this task had been assigned by the June 2019 Ministerial meeting of FFC. To advance this, FFA, SPC and the PNAO, under the auspices of the Data Collection Committee (DCC), had arranged this Workshop to produce a Draft EM Policy that would be forwarded for further consideration and refinement as considered appropriate to various FFA regional meetings prior to the May 2020 FFC Officials meeting. It was then planned it be submitted to the 2020 Ministerial FFC in June for adoption. At the same time, PNA members would consider the outcomes of this Workshop as the PNA EM Programme is progressed through to the 2020 meeting of PNA Fisheries Ministers.

A questionnaire was circulated to FFA member officials and fishing industry representatives in advance of the Workshop. The Workshop itself supported a combination of formal presentations and subsequent questions and answer sessions. A framework for a Draft EM Policy, presenting key headings which had been prepared prior to the Workshop, was used as a guide by participants to elaborate the Draft Policy in facilitated group break-out sessions.

1. A List of Participants is at **Attachment A**.
2. An Annotated Agenda is at **Attachment B**.

# Agenda Item 2: Recent governance and policy developments regarding longline EM in the region

With the objective of reviewing recent developments regarding EM in the region, representatives from the FFA, SPC Secretariats and the PNAO provided background information and updates on EM-related activities in the region.

***2a. FFA Regional EM Policy Status***

Vivian Fernandes (FFA Secretariat) noted that FFA’s support for EM in the region had commenced in 2012 and included regional support for workshops, collaboration with partners in conducting pilot studies and analysis and support for FFA member’s engagement in the WCPFC Electronic Reporting and Electronic Monitoring Working Group (ER&EM WG). He highlighted the linkage to the Regional Monitoring, Control and Surveillance (RMCS) Strategy which is the key policy guiding FFA’s MCS work. The Strategy provides the basis for the 2017 Regional Monitoring Strategy which aims to support regional efforts to enhance and streamline independent fishery monitoring throughout the region. He noted that the Secretariat provided considerable support to FFA members in policy and legislative areas in an endeavour to strengthen fishery monitoring including through EM.

Mr Fernandes recalled that the 16th meeting of FFC Ministers in 2018 had endorsed EM as a tool that demonstrates potential to address some of the serious data gaps experienced for many years across longline fleets operating in the Western and Central Pacific (WCPO), particularly those operating on the high seas. As a result, the Ministers had tasked the FFA Secretariat, in collaboration with PNAO and SPC, to work with members to develop an EM policy for consideration at their meeting in 2020. It was planned that this Workshop would commence the process by preparing a draft EM Policy for subsequent review and refinement, as considered appropriate, at technical and policy meetings of FFA members over the next 6 to 8 months.

***2b. EM and the PNA***

Bradley Philip (Federated States of Micronesia (FSM)), noted that, as the chair of the PNA EM WG, FSM, was engaging with both PNA and non-PNA members to develop an EM Programme for the PNA. He noted that cooperation with the Chair of the WCFPC ER&EM WG, through discussions relating to the WCPFC EM Concept Paper, the possible future development of an EM Conservation and Management Measure (CMM) and the associated work under WCPFC Project 93 to assess the capability of EM to meet both science- and compliance-related data needs in the Commission were critical considerations in developing the PNA EM Programme. He advised that the PNA are committed to ensuring that any EM data standards considered by the Commission for the high seas are not lower than those of the PNA EM Programme.

He noted that the PNA, as members of the FFA, are committed to the development of a policy framework for EM and therefore the outcomes of this Workshop will be of significant importance.

***2c. ER/EM work at the WCPFC***

The WCPFC’s Compliance Manager, Dr Lara Manarangi-Trott, provided an update on the EM work at the Commission including the ER&EM WG and the WCPFC Science Committee’s (SC) Project 93. She noted that the Commission’s consideration of EM had commenced in 2013 with a consultancy report that documented the status of ER&EM in the WCPO. Noting that, at that time, EM was at very early stages of consideration, the Commission accepted that, although Members, Cooperating Non- members and Participating Territories (CCMs) would progress EM at their own pace, it acknowledged that policies and standards for e-technologies were required.

Dr Manarangi-Trott noted that, since 2013, the Commission has dedicated considerable effort to improving data collected by the Regional Observer Programme (ROP). This led to the establishment of the ER&EM WG which was tasked with assessing how EM and ER technologies could benefit the work of CCMs and the Commission. There has been positive progress in relation to ER and the attention of the WG will focus on EM in 2020. To support this, the Chair has produced a Concept Paper which sets out a general framework for supporting EM in the Commission. The Concept Paper outlines minimum EM programme standards including technical, logistical and data analysis standards. At last year’s annual session, the Commission agreed to prioritise EM to areas where there is low independent data collection and requested the WG to develop a draft CMM for EM for the consideration of the Commission in 2020.

Dr Manarangi-Trott also briefed the Workshop on Project 93. She noted that this Project had largely been the initiative of FFA members who advocated for a review of the sources of Commission data to identify current gaps as a precursor to considering the potential role of EM in addressing those gaps. With this objective, SC14 had tasked the WCPFC Secretariat, the FFA, SPC and PNAO to review the data needs and current data collection programs of the Commission. The key conclusions in relation to the purse seine fishery were that, as a consequence of 100% observer coverage, there were no significant data gaps that might be addressed by EM at this point in time. However, the review concluded that EM offers significant potential to address data gaps in the longline fishery because of the current low human observer coverage of the majority of WCPO longline fleets. SC15 acknowledged the value of the review. The 15th session of the WCPFC Technical and Compliance Committee (TCC15) also supported the conclusions from the review and recommended that the Project 93:

* analysis be considered in respect of CMM 2018-05 (ROP);
* conclusions be considered at the ER&EM WG meeting, and
* conclusions be considered by Intersessional Working Group – Transhipment.

The ER&EM WG’s work plan, endorsed by the Commission last year, includes:

* requests for CCMs to communicate to the Chair of the ER&EM WG their established or emerging national or subregional EM standards or specifications for EM,
* the preparation of a revised Concept Paper to be prepared for WCPFC16 taking account of the key conclusions from Project 93, and
* a recommendation that progress with implementation of the work plan be reported to WCPFC16, and
* to seek the Commission’s support for a physical meeting of the ER&EM WG in 2020 prior to TCC16.

***2d. EM Process Standards transition***

Peter Williams (SPC) summarised transition considerations from the EM process standards work facilitated through the DCC that had focussed on data fields collected under the ROP to Project 93.

Two workshops on EM process standards were conducted at SPC headquarters in June 2016 and November 2017 involving various stakeholders (member countries, sub-regional and regional agencies, NGOs, technical service providers and industry) with an interest in EM. The objective of these workshops was to provide a set of standards for ‘how’ the required data fields could be acquired/collected through EM. At that stage, the initial assumption was that EM should be based on the data collected by observers, so these workshops reviewed the potential of EM to collect each of the WCPFC ROP and DCC observer minimum data fields.

The main outcomes of these workshops was a table showing the EM potential for each field, which was assigned to one of the following three broad categories: “EM Ready” (4 sub-categories), “EM Possible with work” (2 sub-categories) and “EM Not Possible”. The table also included the distinction of EM source (e.g. generated by EM Analyst versus Sensor/EM Device). The workshops were useful in providing guidance to several trials that had commenced, or were planned, at that time.

Mr Williams noted that Project 93 (described in the presentation by Dr Manarangi-Trott) was a recent initiative with the objective to compare the Commission’s data needs against the programs and tools available to the Commission (including the potential for a WCPFC EM program); in the context of EM, Project 93 aims to determine ‘what’ data fields EM is most efficient to collect, and ‘what’ those data fields will be used for.

Mr Williams then explained the linkages between the EM process standards and Project 93. Essentially, the EM process standards will be used in developing the EM Standards, Specifications and Procedures (SSPs), once the EM minimum data fields are identified through Project 93.

***2e. FFA/SPC-member questionnaire feedback***

Vivian Fernandes (FFA) summarised the results of responses from 14 of 16 FFA members, New Caledonia and French Polynesia to a questionnaire on the status of EM circulated in advance of the Workshop. The results are summarised in **Attachment C**.

**Agenda item 3: Scientific- and compliance-related Objectives**

Drawing on a series of Workshop presentations, and further discussed during break-out sessions, participants considered scientific objectives, compliance objectives and supplementary objectives, and associated principles, for EM. Supplementary objectives considered by the Workshop concentrated on benefits that EM may provide to industry. The purpose of this session was to promote an increased shared understanding of the potential uses of longline EM data for compliance and scientific purposes to inform further development of the EM Policy.

***3a. EM for science purposes***

Malo Hosken (SPC) summarised considerations associated with the potential use of EM data for scientific purposes. He reviewed existing national and regional scientific monitoring data requirements and the potential for EM to satisfy these requirements noting the on-going relevance of a paper presented to SC14 in 2018 titled *The use of electronic monitoring within tuna longline fisheries: implications for international data collection, analysis and reporting* (Emery *et.al*, 2018). This document is available from the WCPFC website.

Mr Hosken outlined the current scientific use of observer data, which inferred a similar use of EM data. The requirements for observer data for science have been clearly defined and established for more than a decade through the work of the SPC/FFA/PNAO Data Collection Committee (DCC) and the WCPFC to define Regional Observer Programme minimum data standards.

 Mr Hosken provided three examples of potential science applications of EM data: i) to produce fine-scale spatial information on catch, ii) to produce a depth profile of species catch (used in CPUE standardisation analyses), iii) to produce size composition data, and iv) provide a comprehensive source of species composition data. He noted variances between data produced from the analysis of EM data and data provided by human observers particularly in relation to catch composition, which will be used for quality assurance in the future. He concluded by confirming that EM data has significant potential to be used in stock assessment studies including for catch reconstruction and/or CPUE standardisation.

***3b. EM for compliance purposes***

Viv Fernandes (FFA) reviewed the support provided by the Agency to describe compliance objectives for EM include regional workshops, direct collaboration with partners, assistance in the WCPFC, through implementation of the RMCSS and Regional Monitoring Strategy and direct assistance for the development and enhancement of associated national policy and legislation. He recalled that the 16th FFC Ministerial Meeting tasked the FFA Secretariat to progress this work:

*Ministers welcomed FSM’s leadership on the issue of EM through the Technology for Tuna Transparency (T3) Challenge, recognising the potential for EM to be a game changer for improving management of longline fisheries, and tasked the FFA Secretariat to work with Members to develop an electronic monitoring policy, in collaboration with PNAO and SPC, to be considered at their meeting in 2020*.

The Workshop noted that compliance objectives will be driven by the management regime of the fishery and that compliance objectives may be different for different management objectives. It was also acknowledged that compliance objectives tend to continually change or evolve with the result they require regular review and adaptation.

In regard to EM Records and EM Data ownership, the Workshop agreed that EM data should be no different to other fishery data and that ownership is vested in the licensing State. Building on existing regional arrangements, security, access and use of EM data will need to be described under appropriate data sharing arrangements in the SSPs.

Key compliance-related applications discussed during the Workshop included:

* + monitoring by-catch and discards,
	+ comparing performance between human observers and EM,
	+ catch validation
	+ monitoring infractions of license conditions and CMMs,
	+ behavioural change experienced on-board vessels with EM installed, and
	+ data security and confidentiality including privacy considerations which need to be elaborated in domestic laws and regulations and any associated SSPs.

The Workshop agreed that priority work is required to establish compliance objectives and how EM can be applied to satisfy these objectives in a cost-effective manner.

***3c. Options for EM coverage***

Peter Williams (SPC) provided background on the current recommended longline observer coverage rate of 20%. He recalled this was based on the work of an ex-SPC staff member, Tim Lawson, over the period 2003-2006, which used observer data to compare the coefficients of variation (CV) of catch per unit effort (CPUE) estimates for the range of species taken in the longline fishery. The outcomes of the study were:

* + reliable estimates of CPUE for species with extremely low catch rates (e.g. certain species of special interest (SSIs)) require almost 100% observer coverage,
	+ increases in the coverage rate beyond 20% result in smaller incremental improvements in the CV of estimates of CPUE, and
	+ as the reliability of CPUE estimates improves less rapidly beyond 20% coverage rate there are important financial or other considerations in limiting observer coverage.

During discussion on key elements for longline EM coverage, the Workshop noted that:

* the pre-workshop member and industry questionnaire confirmed FFA members consider that EM programmes should address both science and compliance objectives;
* 100% of vessels will be required to carry operational EM equipment that has been accredited, and
* anticipated EM analysis protocols will nominally specify a minimum review rate for randomly selected sets per trip, with all trips being sampled. For those sets selected, the entire haul will be reviewed.

It was noted that further analyses are required to inform these decisions, including an update of the Lawson study, ensuring that both compliance and science objectives are accommodated.

With respect to debriefing and quality assurance of the analysis of EM data it was noted that the environment is different for an EM Analyst than an observer. Observers do not have the support services at sea to monitor quality assurance as data are collected. It was also suggested that quality assurance of data generated from the EM analysis may not require the comprehensive debriefing that is undertaken for observer data. Online error checking built into the review software has the potential to eliminate some issues directly. In addition, the ability of EM Analysts to pause the review of EM Records, including seeking verification from local or remote experts, means that standard observer post-trip debriefing processes can probably be accommodated during the EM review process.

***3d. Fishing industry panel***

A panel of industry representatives provided some initial general comments on their experiences with, and aspirations for, EM. The Fiji industry representative, Anare Raiwalu, reported positive collaboration with the Ministry during the FAO-sponsored trial and industry is preparing to move forward with EM. In Micronesia, the Luen Thai Fishing Venture (LTFV) company representative, Garland Shen, advised that the company is piloting EM to obtain species composition, size data and exploring possibilities for using artificial intelligence (AI) to generate e-logs in the future. E-log generation is a priority in the short to medium term as a response to market pressures to provide more timely details of catch on board. Experience to date has demonstrated species identification is challenging so full implementation is not yet possible.

A representative from Trimarine, Amanda Hamilton, also noted that markets were increasingly demanding greater transparency in relation to catch. In a situation where 100% human observer coverage is not possible EM provides an obvious candidate to respond to these demands. Cynthia Wickham (National Fisheries Development Ltd (Solomon Islands)), advised that NFD had conducted initial EM trials in 2014 and are now working with the technical service providers on a new EM rollout.

Observations, constraints and challenges identified by industry included:

* satisfying the requirements of Government agencies,
* costs and concerns regarding affordability,
* the reliability of EM equipment at-sea,
* timely access to EM Records and EM Data to assist with industry-driven product quality control,
* a general acceptance that vessels would be responsible for equipment costs and maintenance,
* different vessels and different operating procedures require customised EM equipment installation which can be time consuming and technically and financially challenging,
* concerns that service providers establish a monopoly in the market with the result the absence of competitive pricing drives increasing costs,
* constraints on crew being authourised to trouble shoot and maintain equipment at the risk of being accused of tampering,
* that EM will be applied in an equitable basis across all fleets, domestic and distant water fishing nation (DWFN), so as to provide a reasonably level playing field,
* that 5 years is a realistic time frame for full implementation of EM,
* the value of improved data, acquired by EM, to support better informed review of WCPFC CMMs,
* the value of EM for accreditation to traceability schemes,
* the value to industry for improving fish handling practices on board,
* the use of EM for monitoring crew and observer welfare,
* the value of EM to challenge an incorrect infraction claim, and
* port departure delays if EM equipment is not functioning to expected standards.

Generally, industry was of the view that the market is ahead of Government with EM implementation with major brands starting to restrict product sourcing to only vessels with 100% observer coverage. In addition, there are increasing demands for EM to be applied to processes supporting product traceability and social responsibility monitoring such as in relation to labour conditions and crew safety on board vessels.

**Agenda item 4: Approaches for EM implementation for the longline fishery**

FFA member country representatives directly involved in the implementation of EM described their experience with EM trials highlighting key issues with EM programme design and implementation.

***4a. Fiji***

On behalf of the Ministry of Fisheries in Fiji, Mr Netani Tavaga, the Ministry’s EM Coordinator, summarised the Fiji experience with an EM longline pilot project on 50 locally-based vessels which is 56% of the local fleet. The trial was facilitated with the Food and Agriculture Organization’s (FAO) Common Oceans Areas Beyond National Jurisdiction-Tuna Project (ABNJ-TP) with funding provided by the Global Environmental Facility (GEF).

The Project’s objectives were to develop a harmonized MCS tool that provided guidance on best practices to sub-regional organizations and t-RFMOs for up-scaling. The technical service provider for the trial was Satlink based in Madrid. In addition to providing strong political support and financial contributions, the Ministry had supported the development of policies and operating procedures for EM, noting EM implementation requires a sound basis in domestic law and regulations. Fiji had benefitted from legal support from the FFA in this regard.

The Ministry acknowledged the collaboration of the Fiji Fishing Industry Association (FFIA) which had initiated the trial. It was noted that, in addition to facilitating vessel involvement, the Association had contributed co-financing. To encourage engagement, industry had requested that copies of EM trip records and data be made available to the vessel operators, at least in the form of near real-time catch data summaries and that any infractions detected during the trial not be prosecuted. Vessel access to their own EM data remained an outstanding issue that industry is keen to see resolved soon.

Fiji expressed appreciation for the support provided by SPC to incorporate EM data into SPC databases. Fiji was supportive of SPC extending its services to developing EM analytical software including the application of AI for catch recognition.

***4b. Fiji Fishing Industry Association (FFIA)***

The FIFA representative, Anare Raiwalu, noted that FFIA’s view of EM are:

* the current programme should continue until the WCPFC decides on the *modus operandi* of their preferred EM protocol,
* the programme should be subject to modification and change within that period to comply with likely WCPFC requirements and recommendations, and
* funding support is required to avoid an unfair fiscal burden being imposed on the Fiji industry.

In summarising its experience under the 4-year trial, FIFA noted that:

* the acceptance of EM on board vessels is reliant on the cooperation of crews and owners. FIFA doubts that a blunt “compulsion” regime is practical in WCPO where voyages of two or three months are common,
* system standards and protocols should be compatible throughout the region,
* EM programmes should limit the financial and operational burden on industry,
* industry should have access to their own EM data, and
* developments relating to the integration of GPS and other technology supporting VMS, data transmission and live vessel tracking are positive. It was noted that industry is already investing in such systems independently.

In conclusion, FIFA underscored the importance of stakeholder engagement and consultation noting that the Workshop was an excellent example of Government, IGOs, NGOs, the fishing industry and technical service providers consultation.

***4c. FSM***

Bradley Philip from the National Ocean Resources Management Authourity (NORMA) in FSM reported that the FSM’s EM experience is based on a Memorandum of Understanding (MOU) signed in 2016 with LTFV. Under the MoU, and with funding from The Nature Conservancy, Satlink camera systems were installed on five FSM-flagged frozen longline vessels.  The objective of the trials was to develop the capacity of FSM to implement a longline EM program across all components of EM ranging from on-vessel equipment installation and maintenance to office-based EM data analysis. NORMA has stablished an EM data review centre staffed with fourteen EM-trained fisheries observers. To date, eight complete EM data trips (465 sets), from a total of 33 EM data trips, have been analysed.  The Workshop noted that FSM Analysts compensation is set at a daily rate whereas other programmes compensate on the basis of number of sets analysed daily.

Challenges experienced to date included delays experienced with remote diagnostics by Satlink in Madrid as a consequence of time zone differences, the durability of equipment and logistics associated with hard drive transfers between vessels and the data review centre.

In conclusion, consistent with the T3 Challenge, FSM advised that it will continue to explore opportunities to apply new technologies to the management of its tuna fisheries. This will include achieving 100% EM coverage on all licensed longline vessels in the FSM EEZ by 2023.

***4d. PNA***

On behalf of PNA members, Leontine Baje, advised that, in August 2018, PNA Ministers endorsed the development of a PNA EM Programme tasking the PNAO to develop it as a matter of priority. The Parties have established a small working group (PNA EMWG), chaired by the FSM, to progress the development of the program. Early work, supported by three workshops, have considered cost recovery, which is a critical factor, analysis rates for both science and compliance purposes and broader Programme elements that already reflect elements of the draft EM Policy. The PNA EMWG consider that a minimum data review rate of 20% of randomly selected sets per trip should apply. The PNA have requested clarification from SPC on the rationale for a 20% review before a rate is finally agreed.

Four PNA Parties have been engaged in national trials since 2014. While the PNA EM programme is nationally driven it will be based on regional standards to allow for data management and sharing and integration of EM data to PNA’s Fisheries Information Management System (FIMS). An EM module has been developed within FIMS to cater for EM data.

The PNA consider an EM programme will be implemented on all licensed longline vessels fishing in PNA waters and adjacent high seas. The PNA will continue to develop its EM Programme acknowledging that many standards must be compatible across the region.

**Agenda item 5: Financing EM for the longline fishery**

This item provided an opportunity for FFA members to describe sustainable financing considerations for their EM programmes.

***5a. Cost recovery principles***

The Facilitator, Andrew Wright, introduced this item with an overview of potential financing options for EM. He observed that, to date, most trials had been supported under arrangements with NGOs and that this was not sustainable in the long term. It was therefore critical that FFA members thoroughly consider the possibilities for cost recovery arrangements to support EM. In assessing this, he noted that the economic viability of some components of the regional longline fishery would be sensitive to absorbing significant costs that might be associated with EM, stating that, although national cost structures differed across the region, it was important that high costs did not force fleets to relocate out of zones and move their operations to the high seas.

Mr Wright noted that Policy considerations associated with cost-recovery for EM may include:

* + an assessment of the extent costs can be attributed to the user/beneficiary,
	+ Government policy to stimulate an economic activity,
	+ the extent the Government is willing to provide support to transition to a new process,
	+ the relationships to other monitoring measures/tools and both the national and regional level, and
	+ arrangements with neighbouring States for vessels that fish multiple zones/high seas.

Profiling the costs associated with EM requires an understanding of all fixed and variable cost items which provide the basis for considering cost recovery options. The proportion of costs that might be recovered from industry will essentially be a Government policy decision but, a general overarching principle should be that full cost recovery should be the default. Other principles guiding cost recovery could include:

* + that cost recovery policy applies equally across all vessels, unless there is a policy decision not to,
	+ that cost recovery arrangements minimise financial exposure and risk to the Government,
	+ incentives to encourage voluntary compliance,
	+ that Governments will provide a cost-effective and efficient service to support EM,
	+ that cost recovery arrangements will be transparency with high levels of accountability, and
	+ that cost recovery arrangements will be as streamlined and as uncomplicated as possible.

The Workshop noted that an EM Policy should incorporate high-level principles such as beneficiary or user pays, avoidance cost principles, exacerbator pays and attributable cost principles.

***5b. The PNA perspective.***

The PNAO presentation by Richard Banks covered the development of a generic model which could support in-country cost recovery analysis. It included the allocation of key cost category core assumptions. The model had yet to be rolled out for ground truthing, but aside from identifying core costs, had helped to identify critical cost barriers which could be analysed more closely with a view to reducing costs. These included an appraisal of reviewing or analysis rates, provider costs and savings made through economies of scale.

In subsequent discussion, the Workshop noted:

* legal issues associated with using the Cloud to transmit and store EM data,
* “views per day” represents the number of full HAULs reviewed for ROP minimum data fields by an EM Analyst each day,
* the three main issues that currently hinder the EM are (i) review rate, (ii) hard drive costs, and (iii) provider costs,
* there is an urgent need to refine current cost models. It was noted that some models were using vessel cost data based on US$7,000 per vessel whereas industry experience was that it is closer to US$14,000 over a projected equipment life-span of 3 years,
* in addition, harmonising cost recovery arrangements is challenging as a result different salary structures in place across FFA members. To an extent, regional or sub-regional data review centres may assist in addressing this particular challenge,
* it was proposed that a robust cost benefit analysis should be undertaken to support planning and decision-making,
* the importance of consistent policy among FFA members to avoid creating inequalities and inconsistencies,
* in this regard, the Workshop noted challenges associated with applying fair and equitable costs to different components of longline fleets such as fleets targeting albacore or tropical yellowfin and bigeye or frozen and fresh product. For example, industry representatives pointed out that the installation of EM systems on small Chinese Taipei CT4 (< 100 GRT) will be a challenge. From industry’s experience, EM equipment generally has a life-span of less than three years which is less than provided for in most cost recovery models. Industry was of the view that technical service providers need to undertake more research to make sure EM equipment is robust in harsh tropical marine environments,
* In regard to EM compliance application, it was noted that FFA has developed a compliance risk assessment matrix which may be useful, at least for an initial risk appraisal of vessels.

***5c. A business case for EM in the Fiji tuna longline fleet***

Mr Netani Tavaga, the EM Coordinator, Ministry of Fisheries, Fiji and Mr Kim Stobberup representing the FAO ABNJ-TP, advised that the trial on 50 Fiji-based longliners which was commenced in 2015, is almost complete. More than US$1 million in GEF funds were provided for the Project. One of the tasks supported by the Project was the development of a business case for EM, including an assessment of the costs and benefits, for Fiji. It included the development of models for cost-recovery scenarios. The outcomes of the study has since been used by the Fiji Government to continue support for EM for 2-4 years while a CMM on EM is developed in the WCPFC.

 The Workshop was advised that Fiji historically achieves high human observer coverage rates on its domestic longliners, achieving 32% coverage in 2017/18. EM coverage for the past few years has ranged from 20-30%. It was also reported that data storage was a constraint for Fiji with current storage capacity limited to EM data for 30 vessels.

The Workshop was advised that long-term costs were expected to reduce as improvements with review rates and technology are implemented.

**Agenda item 6: Recent and future technical developments**

Representatives from technical service providers and NGOs with EM programme implementation experience were provided with an opportunity to profile recent and planned EM-related developments and enhancements

***6a. Digital Observer Services (DOS)***

Mr Vicente De Ramon from Digital Observer Services (DOS), an EM service provider which uses Satlink equipment (Satlink SeaTube), presented an overview of their SeaTube video recording solution service, including insights to future EM developments.

The Satlink system consists of up to eight cameras installed on a vessel that are operational 24/7 recording impartial, automatically encrypted, information. EM data is backed up on the vessel on a mirrored hard drive so if anything happens to a drive being transported to the data review centre the backup copy can be retrieved from the vessel. He noted that DOS can interact in real-time with their systems to undertake routine maintenance or to investigate any issues reported by the systems or vessel crew. The system records VMS information, which is type-approved by FFA, and includes a SMS-style ‘chat’ functionality between shipowners and the vessels.

There are three different SeaTube configurations available: Normal, Lite (ideal for long line vessels) and the Nano which is suitable for smaller vessels. Camera configurations are determined by EM objectives and vessel layout. The systems support real-time reporting capabilities in relation to integrated VMS, GPS, storage capacity and camera view performance and various alarms that generate alerts in the event of malfunction. Catch reports can also be forwarded from the vessel to fishery management offices.

Two case studies were presented where SeaTube systems had provided continuous data for up to a year with no issues reported. Data can be output in formats compatible with TUFMAN 2 and iFIMS, etc.

Examples were provided of machine learning and AI to enhance the video review process through the automatic detection of various events of interest. This is an on-going active area of EM systems development. Catch detection systems are being improved through providing fish images to algorithms in order to ‘teach’ an EM system what a fish looks like and what to report. At present, 60% of the catch can be reliably identified.

In relation to hypothetical 5-year cost projections, the Workshop was advised that system prices may in fact rise in future as more tech-based solutions and features are rolled out. However, it was emphasized that all these efforts are intended to reduce the time and effort to review EM data so, while there may be more costs upfront, total system costs are expected to reduce.

***6b. World Wide Fund for Nature (WWF)***

Bubba Cook, WWF, acknowledged recent developments that are assisting drive EM in the region including the announcement of an IUU-free Pacific by RMI, which is expected to include a significant technology component, the Emerging Technologies Workshop in February 2019 and the Technologies for Tuna Transparency Challenge (T3) initiative of the FSM.

He identified the main issues with current systems is that they don't tend to scale up well due to a combination factors including limitedability to meet the needs of different fisheries, the vast quantity of video data to manually review, and high costs.

He noted the rapid pace of development in the fields of AI and machine learning was contributing to increasingly sophisticated EM capabilities that will eventually support live streaming which will replace the physical transfer of hard drives. Future developments should provide robust hardware capable of capturing high definition, high frame-rate video and analysing the video data with on-vessel AI. Such advances, some of which may utilise advances in the self-drive car market, will support significant scale-up potential by reducing the amount of footage that is required to be transferred, stored and reviewed by humans (by up to 98%) - to the extent that up to 100% of fishing activity may be reviewed.

New compression algorithms allow for significant reductions in file size, over 90% under some circumstances, creating new opportunities for transmission of data from the vessel to a receiver via cellular or satellite networks. There is also the potential to use low cost and reliable USB sticks instead of full hard drives.

The technical and economic viability of the real-time transmission of live streaming video data was demonstrated by connecting to a camera located on the trawl deck of a fishing vessel in New Zealand and streaming the video over the local New Zealand cellular network to the Workshop. This communication development may extend to a live-streaming camera on the cod end of nets to allow the public to view fish in the net underwater as they are caught.

It was noted that, in future, consumer-focused broadband satellite networks which are being launched will increase low-cost global communications access which will be well-suited for data transmission for offshore tuna fishing vessels.

**Agenda Item 7: Longline EM Policy**

During the first two days of the Workshop participants met in several breakout groups to exchange experience and canvas views on a draft EM Policy framework that had been circulated on the first day. The draft EM Policy framework refined by the breakout groups included:

## Purpose

## Scope

## Objectives

## Principles

## Institutional roles, responsibilities and relationships

## Standards

* Audits

## Procedures in the event of mal-functioning EM Systems

## Measures to deter tampering

## Training

## Legal considerations

## Financial arrangements

## Review

The work of the break-out sessions was consolidated and reviewed in full on the third day of the Workshop. The outcome, a Draft EM Policy, is appended at **Attachment D**.

The Workshop agreed that, as a high-level document, the final EM Policy will require associated standards, specifications and procedures (SSPs) to support its implementation.

**Agenda Item 8: Workshop outcomes and next steps**

The Workshop considered a potential roadmap for raising awareness of the Draft Policy and to support opportunities for broader consultation and review at both national and regional levels. It also identified a number of companion tasks that could be undertaken in the short- to medium-term to support further elaboration of the Policy.

In relation to a roadmap, the Workshop suggested that the Workshop outcomes be bought to the attention of the following fora:

* the FFA Workshop on longline strategies scheduled for Honiara, 21-25 October
* the MOC which will meet in Honiara 28 October-1 November
* WCPFC16 at Port Moresby in December
* the MCS WG in March, 2020
* The Heads of Fisheries Meeting in March, 2020
* FFC Officials in May 2020, prior to being forwarded to
* FFC Ministers in June 2020.

FFA Secretariat undertook to formally circulate the Workshop Report and draft Policy to FFA members.

In relation to companion work, the Workshop proposed that, subject to funding availability, FFA, SPC, the PNAO and, where appropriate, industry, collaborate to:

* to improve and consolidate information relating to cost recovery,
* examine practical and logistical issues associated with EM particularly in regard to costs associated with anticipated life of equipment,
* undertake a thorough assessment of benefits and costs,
* through the DCC, review the minimum data fields that can be acquired by EM,
* consider cost effective training requirements that would complement the implementation of data viewing,
* develop an associated fully-costed work plan to be submitted to FFC Officials in May 2020,
* examine the opportunities AI, machine learning and other technological developments provide for reducing costs, particularly data review costs, and
* further elaborate the role and supporting activities that regional organisations can provide in the role out of EM.

**Close**

In closing the Workshop, the Director-General of FFA and the Facilitator thanked all participants for the constructive engagement and active participation. They also thanked the FFA and SPC Secretariat staff, Viv Fernandez, Malo Hoskins, Hugh Walton and Peter Williams, who had provided significant support throughout the planning, preparations and conduct of the Workshop.

The Workshop closed at 1430.

**ATTACHMENT A**

**PACIFIC ISLANDS FORUM FISHERIES AGENCY**

**ELECTRONIC MONITORING WORKSHOP**

**Honiara, Solomon Islands**

**16-18 October 2019**

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**ATTACHMENT B**

# SPC/FFA/PNAO Data Collection Committee (DCC)

# Longline Electronic Monitoring (EM) Planning Workshop

16–18 October 2019

FFA Main Conference room

Honiara, Solomon Islands

## **Annotated Agenda**

**WORKSHOP AIM**

For FFA members to contribute to the further development of a regional and FFA member national longline EM policy[[1]](#footnote-1).

**PRIMARY OBJECTIVE**

**To progress the adoption of an EM policy and associated standards for longline fisheries at the WCPFC.**

**SCOPE**

This workshop will focus on E-Monitoring for longline fishing only.

**WORKSHOP ANNOTATED AGENDA**

**Agenda item – 1:** **Opening address and objectives of the workshop**

An FFA member representative will offer a prayer to start the Workshop.

[A member of the FFA executive will welcome FFA member country representatives and other participants.

The Workshop will commence with:

* a brief introduction and a tour-de-table
* an outline of the Workshop objectives, workshop structure and anticipated outcomes
* a review the proposed schedule and agenda management, and
* an explanation of working arrangements and meeting resources available to participants.

**Agenda item – 2:** **Recent governance/policy developments regarding longline EM in the region**

Representatives from the FFA and SPC Secretariats and the PNAO will provide background and updates on E-Monitoring-related regional and sub-regional developments and initiatives:

* 1. FFA regional EM Policy status (*FFA Secretariat*)
	2. PNA Programme (*PNAO*)
	3. WCPFC context
		1. ERandEM WG (*WCPFC Secretariat*)
		2. Project 93 (WCPFC Secretariat)
	4. Transition of EM Process Standards (SPC)
	5. Summary of Questionnaire responses (*FFA Secretariat*)

**DESIRED OUTCOME**:

FFA members are informed of recent developments regarding EM in the region.

**Agenda item – 3: Scientific- and compliance-related Objectives**

An EM Policy will describe objectives for EM programmes. The Workshop will discuss scientific- and compliance-related objectives together with supplementary EM objectives that may offer broader benefits. As the objectives describe what is to be achieved, participants will also consider principles that may be required to guide how each objective will be accomplished.

1. for Scientific purposes (*SPC*)
2. for Compliance purposes (*FFA*)
3. options for ‘Coverage’ (*SPC*)
4. Fishing Industry Panel Session

This session will draw on FFA member country responses to the pre-Workshop questionnaire and build on the following:

**Science objectives** (*SPC*)

Catch validation (c.f. logsheets)

Augment HO info for bycatch estimation, incl. SSI, CPUE

Effort measurement

Standardised CPUE

**Compliance objectives** (*FFA/PNAO*)

Catch validation

National and CMM infractions

Detect pollution

Monitor Crew/Observer safety and behaviour

Transhipment event monitoring

IUU

**Industry**

Monitor fish handling

Monitor Crew/Observer safety and behaviour

Monitor for other good practices

chain of custody

Accreditation (SR, sustainability programs - MSC, etc.)…

Ensuing discussion will:

* review and agree on Compliance/Science/Industry/Other objectives
* consider principles that will be required to achieve the objectives

**DESIRED OUTCOME**:

* Increased shared understanding of the potential uses of longline EM data for compliance and science purposes to inform further development of the EM Policy.
* Workshop suggestions for EM objectives for inclusion in the Draft Policy.

**Agenda item – 4: Approaches for EM implementation for the longline fishery**

FFA member country representatives who are directly involved in the implementation of EM will describe their decision processes and practical experience with setting science- and compliance-related objectives for their EM programmes. This item provides an opportunity for FFA member country representatives to highlight key issues experienced with EM programme design and implementation at the national level. Issues may include experience with design and planning, stakeholder consultations, engagement and challenges, balancing compliance- and science-related objectives, maintenance of EM equipment, transmission of records, coordination of DRCs, Data Quality control, financial resourcing, staffing and training, and inter-departmental engagement to support EM implementation.

Brief presentations that describe/outline approaches by FFA members to EM implementation decisions covering for both scientific and compliance needs

* + National
	+ Fiji/FSM/Cook Islands/ SI/Australia/NZ?? Models [*FFA EM member country representative(s)*].
	+ Regional
		- * PNA model [*PNAO*]
	+ Key components
		- * Objectives
			* Coverage decisions
			* Relationships to other monitoring and reporting programmes (Observers, port monitoring, logbooks, etc.)
			* Etc.

This agenda item will review:

**Compliance approach decision:** Driven by FFA MCS risk approach. Coverage based on compliance risk but integrated into the same review process as data analysis. Later workshops will define specific triggers (e.g. to increase EM coverage) based on the FFA MCS risk approach.

**Science approach decision:** randomisation in sets chosen for review enhances the representativeness of the review. For science, minimum coverage of 20% is recommended to obtain representative estimates of tuna target species (Lawson, 2004); for some (less common) bycatch species, the coverage would need to be higher to get a representative estimate.

**Industry and other approach decision:** randomisation in sets chosen for review and enhances the representativeness of the review

**DESIRED OUTCOME**:

Member countries are familiar with the different considerations that have influenced national EM programme design and implementation and have provided guidance on which approaches are preferred.

**Agenda item – 5: Financing EM for the longline fishery**

This item provides an opportunity for FFA members to describe sustainable financing considerations for their EM programmes. Cost-recovery considerations will feature in Workshop discussions.

Brief presentations by Member countries who have trialled EM systems on current issues including discussion on aspects that will benefit from regional consideration and decisions (*FFA member country representatives*).

Financing EM - Cost recovery

* Options for cost recovery (Facilitator)
* PNA cost recovery considerations

**DESIRED OUTCOMES**:

A list of key issues associated with EM programme implementation.

Identification of key issues associated with cost-recovery.

**Agenda item – 6: Recent and future technical developments in longline EM**

This agenda item will be supported with presentations from representatives from technical service providers who will profile recent and planned EM-related developments and enhancements (e.g. species image banks). They will be invited to comment on constraints with EM programmes experienced to date as reported to the Workshop. A list FFA member country national and regional EM programme desired functionalities and attributes will be available for discussion under this item (*to be facilitated by SPC*)

Brief presentations by the technical service providers on recent and future planned developments.

Brief presentation on what Member countries and regional agencies want technical service providers to prioritise.

* + A list of member countries understanding of where there are potential efficiency gains to be prepared prior to the meeting and sent to Technical service providers to respond on feasibility during the meeting.
	+ Potential areas of improvement include: Artificial Intelligence (AI), sensors, Hook algorithm, smart FLOATS, smart SNAPS, etc. Use of satellite communications to improve timeliness in data transfer, etc.

**DESIRED OUTCOME**:

FFA Members are better informed on recent and future technical developments in longline EM and have provided guidance to technical service providers on future needs and priorities.

**Agenda item – 7: Longline EM Policy**

The Workshop will review the revised draft structure for the EM Policy that will be prepared during the Workshop taking into account the advice and recommendations of FFA members. The Workshop will then consider strategies and associated next steps for progressing the finalisation of the EM Policy. The supporting discussion could consider timelines and key events, national and regional institutional roles and responsibilities, relationships and complementarities with other activities, such as the draft longline EM data standards, and consultation options.

**DESIRED OUTCOME**:

A plan for the next steps, including the identification of meetings to target and how intersessional work will be conducted.

**Agenda item – 8: Adoption of workshop outcomes**

Adoption of a draft for EM Policy and an outline of next steps.

**DESIRED OUTCOME**:

Adoption of workshop outcomes and recommendations

**ATTACHMENT C**











**ATTACHMENT D**



**DRAFT REGIONAL LONGLINE FISHERIES ELECTRONIC MONITORING POLICY**

**Version 1 [Draft]**

**18 October 2019**

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## **Acronyms, terms and definitions**

|  |  |
| --- | --- |
| **Term** | **Definition** |
| Data Review Centre  | Office facility used to analyse e-monitoring records and record e-monitoring data.  |
| EM Analyst  | A person qualified to analyse e-monitoring records and record e-monitoring data in accordance with the EM standard and analysis procedures. |
| EM Analysis Rate | The proportion of e-monitored records that are analysed. |
| EM Certifier | An individual or organisation which has been accredited by the appropriate authority to inspect and approve e-monitoring systems for use. |
| EM Data  | Data produced through analysis of e-monitoring records that conforms with the data standards specified in the SSPs. |
| EM Coverage | The proportion of vessels licenced to fish in areas under national jurisdiction and the adjacent high seas that have an e-monitoring system installed and operational.  |
| EM Programme  | A process administered by a national fisheries regulator(s) that includes the use of EM systems on vessels to independently collect and verify fisheries data and information.  |
| EM Record | Imagery and sensor data recorded by an e-monitoring system that can be analysed to produce e-monitoring data. |
| EM System | An EM system is all the vessel and shore-based components supporting the acquisition, analysis and reporting of EM Records.  |
| EM Service Provider | A third-party provider of EM technical and logistical services. |
| PIRFO | Pacific Islands Regional Fisheries Observer.  |
| IUU | Illegal, Unreported and Unregulated Fishing. |
| Regional agency  | A regional or sub-regional organisation that supports FFA member national EM Programmes and EM Systems.  |
| SSPs | Standards, Specifications and Procedures |

**DRAFT REGIONAL LONGLINE FISHERIES ELECTRONIC MONITORING POLICY**

## **1.0 Introduction**

Electronic monitoring (EM) provides an additional complementary tool that is being integrated to the existing suite of FFA member country fishery monitoring systems. It is intended to strengthen the availability of quality[[2]](#footnote-2) data and information from fisheries that have historically supported low levels of monitoring. As a result, it will contribute to on-going FFA member country initiatives to secure sustainable tuna fisheries in the WCPO region.

This nationally driven, regionally harmonised and coordinated Policy describes the purpose and application of EM by FFA member countries. It includes EM programmes with both scientific- and compliance-related objectives. Cost-effectiveness is also a key objective.

## **2.0 Purpose**

The purpose of EM in the longline fishery in FFA member countries is to complement other monitoring tools in place in the region. It will improve the monitoring of national and regional longline fisheries, and so strengthen overall fisheries management, by addressing gaps in data collection and verification in the longline fishery.

The purpose of this EM Policy is to describe a regional framework that, *inter alia*:

1. supports collective action at a strategic level;
2. promotes a level playing field in relation to the implementation of EM and mitigates against market distortions; and
3. facilitates economies of scale for national and regional benefit.

## **3.0 Scope**

This EM Policy applies to EM on longline vessels operating in areas under the national jurisdiction of FFA member countries and the adjacent high seas.

## **4.0 Objectives**

With an overarching objective to strengthen fisheries management, this EM Policy aims to:

* improve the availability and accessibility of quality-assured information for scientific and compliance purposes; and
* contribute to improving economic viability of longline fisheries.

## **5.0 Principles**

Principles that will guide the national and regional implementation of EM Programmes will include that EM:

* is supported in national laws and regulations;
* avoids a disproportionate burden to FFA member countries;
* adopts a standards-based approach described in SSPs;
* will be regionally harmonised as elaborated in the SSPs;
* will be integrated with, and complementary to, other monitoring initiatives of FFA member countries[[3]](#footnote-3);
* will support FFA member countries’ engagement and leadership in the WCPFC;
* will be cost effective and demonstrate net benefits;
* will prioritise data security, ownership and confidentiality;
* will be equitably applied across all fleets[[4]](#footnote-4) operating within national jurisdictions and/or the high seas; and
* be independent and impartial.

## **6.0 Institutional roles, responsibilities and relationships**

FFA Secretariat will:

* promote the implementation of EM on longline vessels in accordance with this EM Policy;
* work with FFA member countries to promote the adoption of EM as a compulsory requirement for all longline vessels licenced by WCPFC flag States to fish and/or tranship on the high seas,
* where possible, provide assistance to FFA member countries in the adoption and implementation of national EM policies and strategies, review of national legislation, development of data sharing arrangements and associated capacity building,
* promote the best-practice analysis and utilisation of EM compliance-related data for regional decision-making,
* support FFA member country efforts to integrate EM with existing MCS tools,
* provide advice and support to Members in EM cost-benefit analyses and the adoption of cost-effective data viewing management systems,

SPC will:

* support data management systems that facilitate data extraction for analytical purposes,
* provide assistance to national-level EM data management systems, quality assurance, associated data sharing and analysis,
* collaborate with third-party technical EM service providers as required and under the direction of member countries,

FFA Secretariat, SPC and PNAO will:

* collaborate to promote the adoption of standardised and harmonised EM systems,
* collaborate to provide technical support and training to Data Review Centres,
* coordinate to promote WCPFC recognition and adoption of FFA member country EM programme scientific and compliance data standards.
* coordinate with EM Service Providers in exploring options for investment in EM artificial intelligence, machine learning and other cost-effective developments,
* coordinate in the development and delivery of training in analytical applications and procedures.

Coordination and cooperation between SPC, FFA and PNAO will primarily be through the Data Collection Committee (DCC).

## **7.0 Standards**

FFA members will adopt regional SSPs to support this Policy. This Policy does not prejudice the right of individual FFA member countries to adopt additional SSPs for their national EM Programmes.

### **7.1 EM Systems**

#### 7.1.1 Fishing vessels

FFA member countries will establish minimum standards for EM Systems on board longline fishing vessels.

Depending on the EM program structure and objectives, FFA member countries, flag State entities, vessel operators, a third party, or a combination thereof, may be responsible for acquiring, installing, and maintaining EM systems on fishing vessels.

#### 7.1.2 Data Review Centres

FFA member countries will establish minimum standards for EM Systems in Data Review Centres.

FFA member countries may internalise EM Records analysis through the establishment of Data Review Centres or contract a third party to provide viewing services or for acquiring, installing, and maintaining EM Systems in Data Review Centres.

A Data Review Centre may provide national, sub-regional or regional services.

### **7.2 EM Records and EM Data management**

EM Records and EM Data management requirements will be determined by the EM Programme’s objectives.

EM Records and EM Data will comply with regionally agreed data standards and formats as reviewed from time to time.

#### 7.2.1 Coverage and analysis rates

The default will be 100% EM Coverage – all licensed longline vessels will have accredited vessel-components of the EM System installed and operational.

Each FFA member country will adopt EM Analysis Rates necessary to meet EM Programme objectives cost-efficiently and equitably.

A risk-based approach will be applied to EM Analysis Rates to satisfy compliance objectives.

EM Analysis Rates may also be driven by market demands.

EM Analysis Rates will be periodically reviewed.

#### 7.2.2 EM Records transmission

FFA member countries will adopt protocols for transmission of EM Records between vessels and Data Review Centres. The protocols should describe, *inter alia*, agreements to accommodate longline vessels that fish in multiple EEZs.

FFA member countries will continue to seek cost-effective and timely avenues to transfer EM Records securely as technology evolves.

#### 7.2.3 EM Records analysis and quality assurance

FFA member countries will adopt standards for EM Records analysis and quality assurance.

FFA member countries will be responsible for EM Records analysis acknowledging they may decide to have the analysis undertaken in-house or contracted to a third party, under appropriate commercial arrangements.

#### 7.2.4 EM Records and EM Data storage

FFA member countries will adopt standards for the storage of EM Records and EM Data.

### **7.3 EM Records and EM Data ownership and access**

EM Records and EM Data are owned by the licensing FFA member country.

Subject to formal data sharing arrangements[[5]](#footnote-5), EM Records and EM Data may be shared among the FFA member countries concerned where a vessel fishes in more than one EEZ during one trip.

FFA member countries will share EM Data with Pacific island regional and sub-regional agencies, subject to agreed data exchange rules relating to access and use. FFA member countries will determine the protocols for EM Data flow to the sub-regional and regional agencies.

EM Records and EM Data may be shared with the vessel owner and/or the flag State, subject to data exchange and sharing arrangements.

FFA member countries will establish protocols for EM Records and EM Data retention and disposal.

### **7.4 EM Records and EM Data security and confidentiality**

FFA member countries will adopt standards for the security and confidentiality of EM Records and EM Data.

The standards will ensure that the evidentiary integrity of EM Records and EM Data are not compromised, and chain-of-custody is recorded and auditable.

The confidentiality of EM Records will be subject to the same procedures, systems and protocols as apply to other fisheries data and information generated from FFA member country fisheries including logsheets, VMS and observer data.

## **8.0 Compliance audits**

FFA member countries will develop a cost-effective auditing framework and arrange periodic audits by authorised personnel to ensure EM systems are consistent with the standards developed in accordance with this Policy.

## **9.0 EM Systems support and maintenance**

FFA member countries will adopt standards and protocols for EM Systems’ support and maintenance.

## **10.0 Integrity of EM Systems**

FFA member countries will develop protocols to ensure the integrity of the EM Systems such as deterring and responding to potential non-compliant activity and anomalous events.

Security mechanisms to deter tampering will be critical to ensuring the integrity of EM Systems.

## **11.0 Training and capacity building**

FFA member countries will develop standardised training for EM Systems’ use and application.

FFA member countries will promote cost-effective training and capacity building in the use of EM Systems.

FFA member countries will utilise SPC, FFA and PNAO to ensure training is adequate.

The selection, training and qualifications provided to EM Analysts will draw on the experience of the PIRFO, amongst other training standards.

## **12.0 Legal framework**

Domestic legislation and policies will support the implementation of EM in FFA member countries..

## **13.0 Financial considerations**

Guiding principles to financially support EM in FFA member countries include:

*User pays - full cost recovery as a default*

FFA member countries will apply full cost recovery for EM services unless there is a government policy decision not to. Full cost recovery should involve recovering both the direct and attributable indirect costs of providing the service.

*Equity in recovery*

For those costs considered recoverable, cost recovery arrangements will spread costs equitably amongst users of the service. FFA member countries shall establish a fee-for-service arrangement, as appropriate, in relation to EM services.

*Minimising financial exposure and risk*

Cost recovery arrangements will be structured to minimise financial exposure for fisheries agencies, and national governments, and minimise the risk that services will be delivered for which payment is unable to be made.

*Incentives to encourage voluntary compliance*

Incentives should be built into cost recovery arrangements to encourage voluntary compliance. As a general rule, incentives should be proportionate to the reduction in costs associated with compliant behaviour.

*Efficiency in service delivery*

Where a particular service is to be delivered by FFA member countries as a monopoly provider, there is an obligation to ensure the service is delivered efficiently to keep costs as low as possible.

*Transparency and accountability*

As a monopoly provider of services, FFA member countries have a responsibility to be transparent about the nature and level of costs being recovered and accountable for their use.

*Simplicity*

Cost recovery arrangements should be uncomplicated.

More specific policies may be required at the operational level to guide the practical recovery of costs.

In recognition of the socio-economic benefits to the national economy provided by domestic fishing vessels, special consideration may be applied to cost recovery arrangements for these vessels.

## **14.0 Approach to implementation of EM**

In considering implementation of EM, FFA member countries will, *inter alia*, take account of:

* benefits, costs and associated risks; and
* strategic engagement in the WCPFC, including the adoption of EM standards and the status of implementation of EM on the high seas.

## **15.0 Review**

This Policy, and associated SSPs, will be reviewed periodically by FFA member countries.

1. Without prejudice to an FFA members’ rights and obligations. [↑](#footnote-ref-1)
2. Improving data quality, for example, by progressively addressing human recording/reporting errors utilising automated devices/sensors (e.g. automated date/time/positions through integration of GPS). [↑](#footnote-ref-2)
3. Including, but not limited to the MTCs, the FFA Regional Register, port State measures (PSM), at-sea and in-port transhipment monitoring, port sampling, aerial and maritime surveillance, vessel monitoring systems (VMS), catch documentation schemes (CDS), logbook reporting including electronically and WCPFC systems such as its VMS, regional observer programme, vessel register and transhipment measures. [↑](#footnote-ref-3)
4. The application of EM to national small-scale longline vessels operating solely within national jurisdictions will be a national decision. [↑](#footnote-ref-4)
5. May utilize existing data sharing arrangements. [↑](#footnote-ref-5)