Monitoring, Control and Surveillance (MCS) Gap Analysis and Needs Assessment: Kiribati Offshore and Coastal Fisheries

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Acronyms and abbreviations

ACIAR	Australian Centre for International Agriculture Research
ACE	Automated Commercial Environment (US Customs and Boarder Protection)
AES	Advanced Encryption Standard
ADB	Asian Development Bank
ADF	Australian Defence Force
AIS	Automatic identification system
ALB	Albacore tuna
AENOR	Spanish Association for Standardization and Certification
ADB	Asian Development Bank
BET	Bigeye tuna
CC	Catch Certificate
CDS	Catch Documentation Scheme
CCTV	Closed Circuit Television
CBFM	Community-based Fisheries Management
CAE	Compliance Analysis Engine
CI	Compliance Index
CCM	Members and Cooperating Non-members (of the WCPFC)
CSV	Comma Separated Values
CMS	WCPFC Compliance Monitoring System
CDR	Corporate Data Resource
CMM	WCPFC Compliance and Management Measure
DNID	Data Network Identity
DWFN	Distant Water Fishing Nation
EMC	East Micronesia Cable
ECDIS	Electronic Chart Display and Information Systems
e-log	Electronic logbook
EDGE	Enhanced Data rates for GSM Evolution
EEZ	Exclusive Economic Zone
EM	Electronic monitoring
ENSO	El Niño Southern Oscillation
EPO	Eastern Pacific Ocean
ER	Electronic reporting
EMTU	Enhanced Mobile Transceiver Unit
E-R	Entity-Relationship
ERD	Entity-Relationship Diagram
EU	European Union
ER&EMWG	WCPFC Electronic Reporting and Electronic Monitoring Working Group
EVR	Electronic Vessel Registration
FAO	Food and Agriculture Organisation of the United Nations
FAD	Fish Aggregation Device
FIP	Fisheries Improvement Project
FIMS	Fishery Information Management System
FD	Fishing day (VDS)

FMC	Fisheries Monitoring Centre
FMP	Fisheries Management Platform
FFA	Pacific Islands Forum Fisheries Agency
FSMA	Federated States of Micronesia Arrangement
GEN-3	Regional Observer Vessel Trip Report
GT	Gross Tonnes
GSM	Global System for Mobile Communications
HDD	Hard Disc Drive
HD	High definition
GIS	Geographic Information System
GPS	Global Positioning System
GT	Gross Tonnage
HMTCs	Harmonized Minimum Terms and Conditions
HS	High seas
HSP	High seas pocket
IATTC	Inter-American Tropical Tuna Commission
IFTP	International Fisheries Trade Permit (US NOAA)
IMO	International Maritime Organisation
IMS	Information management system
IPCC	International Panel on Climate Change
IPOA-IUU	International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing
IUU	Illegal, Unreported and Unregulated
JSON	Java Script Object Notation
KPA	Kiribati Ports Authority
KSVA	Kiribati Seafood Verification Agency
KV20	Kiribati Government's 2020 Vision
KOFA	Korea Overseas Fisheries Association
LCD	Licensing and Compliance Division (MFMRD)
LRIT	Long Range Identification and Tracking
LL	Longline
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
MICTTD	Ministry of Information, Communications, Transport and Tourism Development
MCS	Monitoring, Control and Surveillance
MCSWG	MCS Working Group
MSA	Maritime Surveillance Advisor (Royal Australian Navy)
MT	Metric tonnes
MFAT	New Zealand's Ministry of Foreign Affairs and Trade
MTU	Mobile Transmitting Unit (old terminology = ALC)
NPOA-IUU	National Plan of Action to Combat Illegal, Unregulated and Unreported Fishing
NTSA	Niue Treaty Subsidiary Agreement
NFD	Non-fishing day (VDS)
NAF	North Atlantic Format
OPM	Observer Program Management System

OMSI	Oceania Maritime Security Initiative
OTH	Other species
OVR	PNA Online Vessel Register
PICs	Pacific Island Countries
PIRFO	Pacific Islands Regional Fisheries Observer
PNA	Parties to the Nauru Agreement
PNAO	Office of the Parties to the Nauru Agreement
POD	People and Organizations
PLB	Personal Locator Beacon
PPB	Pacific Patrol Boat
PROP	Pacific Regional Oceanscape Program
PS	Purse Seine
PSMA	The FAO Agreement on Port State Measures to prevent, deter and eliminate illegal, unreported and unregulated fishing
RFV	Record of Fishing Vessels
RFMO	Regional Fisheries Management Organization
RFSC	Regional Fisheries Surveillance Centre
RIMF	Regional Information Management Facility
RMCC	Regional MCS Coordination Centre
REG	Regional Register of Fishing Vessels
RPAS	Remotely piloted aircraft systems
ROP	WCPFC Regional Observer Programme
SC	WCPFC Scientific Committee
SAR1	Search and Rescue
SAR2	Satellite Aperture Radar
SIDs	Small Island Developing States
SJK	Skipjack tuna
SOLAS	The International Convention for the Safety of Life at Sea
SPC-CFP	Secretariat for the Pacific Community– Coastal Fisheries Programme
SPC-OFP	Secretariat for the Pacific Community– Oceanic Fisheries Programme
SPC-RMP	Secretariat for the Pacific Community – Regional Maritime Programme
SOP	Standard Operating Procedure
SWOT	Strengths, weaknesses, opportunities and threats
SUR	Surveillance and Vessel Sightings System
SAR	Synthetic Aperture Radar
TNC	The Nature Conservancy
TCC	WCPFC Technical and Compliance Committee
TDW	Tuna Data Workshop
TMP	Tuna Management Plan
TLL	Tropical longline
TUBS	SPC TUFMAN Observer Module System (now integrated to TUFMAN2)
TUFMAN2	SPC Tuna Fisheries Database Management System ver. 2
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stocks Agreement
USMLT	US Multilateral Treaty on Fisheries
USCG	United States Coast Guard

ULT	Ultra Low Temperature
USP	University of the South Pacific
VAP	Violations and Prosecutions System
VBI	Vessel Boarding and Inspection System
VDS	Vessel Days Scheme
VMS	Vessel Monitoring System
VOI	Vessel of Interest
WCPFC	Western and Central Pacific Fisheries Commission
WCPF-CA	Western and Central Pacific Fisheries Convention Area
WCPO	Western and Central Pacific Ocean
WWF	World Wide Fund for Nature
YFT	Yellowfin tuna
XML	eXtensible Markup Language

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EXECUTIVE SUMMARY

Background and context

At the national level, Kiribati is one of the most 'fisheries dependent' nations on earth. In 2016, around 75% total Kiribati Government revenue was generated from fisheries access payments by foreign purse seine fleets fishing under bilateral and multilateral access arrangements and transhipment fees. Moreover, coastal fisheries resources support subsistence, artisanal and limited export opportunities and underpin the well-being of coastal communities.

Ensuring the security and sustainability of fisheries resources upon which Kiribati's long-term revenue generation and food security depends requires, amongst other things, an effective system of monitoring, control and surveillance (MCS) capable of:

- delivering information of importance to the ongoing management of the fishery; and
- ensuring the integrity of relevant management measures, including the capacity to detect and sanction non-compliance.

In order to inform the design of a World Bank Phase II Pacific Regional Oceanscape Program (PROP) initiative to enhance Kiribati's national MCS capacity in offshore and coastal fisheries, a systematic gap analysis and needs assessment for Kiribati's national MCS capacity was undertaken. The assessment was undertaken in the context of the key national, sub-regional and regional MCS obligations agreed by Kiribati and included:

a. a review existing MCS-related capacity, relevance, effectiveness and strengths, needs and concerns among staff to assist with identifying institutional strengthening and capacity development needs;
b. an assessment of MCS-related risks, limitations in resources, including in respect of legislative provisions and information management, and the effectiveness of work program delivery; and
c. an examination of institutional structures and opportunities to leverage enhanced divisional performance.

The gap analysis was undertaken between October and November 2019 and included site visits to Tarawa and Kiritimati as well as detailed discussions with staff from the Ministry of Fisheries and Marine Resources Development (MFMRD), relevant regional agencies (FFA, PNA, SPC, WCPFC) and other independent experts.

Strengthening MCS and enforcement in Kiribati offshore and coastal fisheries will leverage long-term national benefit. In addition to securing improved control and regulation of the offshore tuna sector, and so further increasing economic benefit potential, improved MCS in the coastal sector

will support improved livelihoods and contribute to food security and health in coastal communities.

Legal instruments, related policies and plans

A significant body of legislation, regulations, policies and plans govern the functions of MRMFD in both coastal and oceanic sectors. A summary of the main components is presented together with a preliminary assessment of areas that would benefit from further review.

Key concerns relate to the capacity of the responsible agency, or agencies, to service the obligations and responsibilities conferred under the international and/or regional instruments Kiribati has committed to. In this regard, increased attention to inter-departmental coordination and cooperation would be productive. The fact that this is currently inadequate is one indication of current institutional capacity.

A review of market State-related expectations, using Kiribati's experience with the EU since 2016 under EC Regulation 1005/2008, is presented. The key concerns of the EU in formally advising Kiribati of the possibility of being identified as a non-cooperating third country in fighting IUU fishing (a yellow card) are summarised together with the Kiribati response to date. Although Kiribati has been added to the list of third countries or territories, provided for under the EU's Regulation 854/2004, which are permitted to export certain fishery products for human consumption to the EU, the yellow card remains in place and Kiribati continues to work through the EU process to have it lifted. Implementation of many of the recommendations included in this report will, individually and collectively, establish an environment that should comfortably meet all future market State requirements.

Kiribati's compliance reporting obligations to WCPFC are a significant institutional demand. A summary of the current WCPFC obligations is appended and recommendations presented to assist with improved servicing of some of those obligations.

As a Contracting Party to both IATTC and WCPFC Kiribati has elected to apply WCPFC Conservation and Management Measures (CMMs) to its flag vessels when those vessels fish in the WCPFC/IATTC overlap area. This does not absolve Kiribati from reporting responsibilities to IATTC associated with IATTC vessels, and their associated carriers, that might use Kiribati ports to tranship.

In general, key obligations and requirements can be found dispersed across a collection of legislation, policies and associated plans in Kiribati together with numerous reports recommending action to address apparent gaps. The main impediment is not necessarily the provisions of current domestic instruments; the challenge is to effectively marshal limited institutional

capacity to satisfy the monitoring, implementation and reporting obligations associated with them.

MFMRD's MCS services

Regional agencies have supported the development of a National Plan of Action (NPoA) to combat IUU fishing and a gaps analysis in respect of the FAO Port State Measures Agreement but, as yet, Kiribati does not have a National MCS Strategy or Plan as envisaged in the Regional Monitoring, Control and Surveillance Strategy (RMCSS) 2018–2023.

However, MFMRD does support a range of MCS-related activities. Apart from primarily being managed within the Licensing and Compliance Division (LCD), these have not yet been coalesced into an integrated strategy. MCS activities are mainly administered as separate functions supporting some, primarily manual, data verification and reconciliation procedures that use several of LCD's data sources. At-sea surveillance is undertaken by the committed, but resource-limited, Police Maritime Unit, in consultation with MFMRD. The apparent operational strategy within MFMRD is to support as many of these activities as possible with the resources available so that i) revenue from the fisheries sector is maximised, and ii) Kiribati's various regional treaty-related obligations are satisfied. Key findings in relation to MFMRD's MCS capacity include:

a. Tarawa and Kiritimati MFMRD staff are generally informed, committed, diligent and proud of being involved in a sector that is critical to the Kiribati economy;
b. working conditions are sub-standard and crowded - the offices are in serious need of refurbishment/replacement;
c. the limited functionality of information management systems impedes effective performance as does the lack of systems and skills to support data integration and analytics;
d. monitoring, assimilating and responding to obligations and requirements associated with numerous international and regional obligations are institutionally demanding. Given current MFMRD capacity and resources these demands arguably impact operational services;
e. market State pressure is resulting in significant legislative and procedural reform but capacity to achieve and sustain expectations remains challenged, and
f. there is a need for capacity building and human resource development across MFMRD.

Recommendations to address many of these issues are included.

The overarching conclusion is that, despite the importance of fisheries to overall national welfare, the significance of the sector is not currently reflected in the resources required for MFMRD to efficiently manage and administer this sector. For 2014-2016, the period for which complete

figures are available, the MFMRD budget represented 1.5-3.1% of Government revenue from the fisheries sector.

Risk analysis

MCS strategies and operational plans should primarily be informed by a robust and up-to-date assessment of compliance risks to meeting fisheries management objectives. Such an assessment assists with identifying gaps in existing capacity so that capacity building needs can be assessed. Kiribati does not currently have a national level compliance risk assessment. A long-term goal for MFMRD should be to prepare and maintain such an assessment. In the absence of that, this analysis focuses on an examination of Kiribati's capacity to deliver on key regional and national MCS obligations. Obligations that are unable to be effectively addressed within existing resources, capacities and skills suggest areas of possible need.

A risk analysis and needs assessment also provides guidance on the assignment of limited MCS resources to areas of most need. In a resource-constrained environment, decisions will be required about how best to allocate limited resources. The amount of resources that are available will not necessarily determine the effectiveness of MCS efforts; it is how those resources are utilized and deployed.

In this instance, a risk analysis methodology was applied at two scales. The first was to analyse the risks to MFMRD's effective conservation and management of Kiribati's oceanic fisheries sector associated primarily with regional factors. The second application was focussed on national factors associated with MFMRD's institutional and policy environment and the services it supports for the administration and management of the oceanic fisheries sector in Kiribati.

Although not possible to assess all risks, a total of 128 risks were analysed. The regional analysis was applied to 53 separate risks four of which were rated as 'severe' and a further 16 were rated as 'high' risks. The nationally-focussed analysis was applied to 75 risks with the following identified as requiring priority attention:

a. systems for the acquisition, storage, analysis and sharing of MCS data and information;
b. legislative review;
c. surveillance;
d. port inspection and transhipment monitoring; and
e. FAD management.

Information management and new technologies.

MFMRD's information management systems are currently managed as independent, relatively unsophisticated systems with little integration or sharing of reference data. Application of industry standards are limited, and available documentation is minimal and dated. Desktop applications

introduced by regional agencies are under-utilized and there is a skills gap in terms of being able to use regional systems or develop bespoke national systems. Connectivity to support data transfer and communications is impacted by relatively poor bandwidth and power disruptions are regular.

There is an under-investment in MFMRD's information management capability in terms of both personnel and financial resources. The rapidly emerging information and communications technology environment creates both opportunities and challenges for an administration such as MFMRD where costs and access to appropriately skilled data and information professionals are key considerations in determining future development strategies. Even if international data management standards are applied, potential benefits from a recent initiative to design and develop a Fisheries Management Project (FMP) will not be achieved without a parallel commitment to capacity building in both information and database systems development and management and a co-commitment to building capacity in MCS data analytics.

The projected arrival of fibre optic connectivity in 2021 offers significant opportunities for MFMRD. A review of new and emerging technologies with potential application to MCS in the fisheries sector is included.

Electronic monitoring (EM) is one technology that is receiving increasing attention among both FFA member countries and in WCPFC. EM is a rapidly evolving technology in terms of costs and capability. It has potential to address perennial challenges in the longline fishery where small vessels, and lengthy trips, means human observer deployment is problematic. A review of EM developments in the region and institutional needs to support an EM programme at MFMRD are summarised.

MCS and coastal fisheries

Coastal habitats and their associated resources are critically important to community food security and to livelihood improvements in Kiribati. In remote coastal and island communities, where the regulatory capacity and influence of centralized, under-resourced government agencies is generally low, there is significant potential for more effective management of nearshore reef and lagoon resources through the reinvigoration and mobilization of community-based fisheries management (CBFM) initiatives. MFMRD is now partnering CBFM initiatives with nine Island Councils.

Although seriously under-resourced, the staff of the Coastal MCS Unit, which was established in early 2019, are receiving coastal MCS training and capacity building through a programme offered by the SPC. While this is a positive development and positive relationships exist with Island Councils (including potential for using Island Council wardens as

authorised officers to assist with coastal fisheries management initiatives), the following issues apply to the Coastal MCS Unit:

a. very poor working conditions at the Tanaea office including in relation to internet and communications;
b. prosecurial processes need strengthening to make better use of Island Council wardens and police, to empower Coastal MCS staff and avoid lengthy, and often unsuccessful court proceedings;
c. challenges for coastal enforcement arising as a result of nepotism in communities;
d. urgent need for information management systems development and training, and
e. seriously under-staffed with the need for a long-term capacity building initiative.

The analysis determined that MCS effectiveness is currently either low or moderate across all business functions for coastal fisheries. The primary factors, and associated gaps, that provide evidence for critical needs to strengthen institutional capacity to be able to effectively manage coastal resources in Kiribati, including through building MCS capacity, are described. A long-term commitment to capacity building is necessary.

RECOMMENDATIONS

24 recommended action items across offshore and coastal MCS services in MFMRD include:

Institutional

1. To enhance divisional performance, the critical office-related needs include:
   a. a long-term strategy for professional and technical human resource capacity building;
   b. urgently provide LCD with a new, modern, office environment that can comfortably accommodate at least 30 staff, and
   c. ensure that the new facility can accommodate observers and transhipment monitoring personnel so they can prepare their reports and for observer de-briefing.
2. Implement a strategic budget planning initiative to, among other objectives, increase the recurrent budgetary allocation to:
   a. build capacity to prepare and maintain a compliance risk assessment, in the form of a national MCS strategy, to serve as a key LCD corporate guiding tool;
   b. strengthen the observer programme by appointing three mid-level professional staff to coordinate the programme (L6), coordinate observer and de-briefer training and standards (L7-8) and coordinate de-briefing (L7-8);
   c. maintain the number of observer de-briefers so there is one de-briefer for every 10 observers;
   d. strengthen port and transhipment monitoring, including operating procedures, by appointing a mid-level professional transhipment coordination officer (L7-8);
   e. establish a LCD presence in Kiritimati with the appointment of an observer/ transhipment monitoring officer (L9), and
   f. build MCS data analytical capacity in LCD by i) strengthening information management systems, ii) recruiting data analytic professional staff (2xL6).

Legal and policy

3. Develop, implement and resource a capacity building programme in fisheries law and policy in MFMRD and the Attorney General's Office.
4. Commission a comprehensive review of marine and fisheries legislation, including associated regulations, policies and plans to identify gaps and propose, with justification, rationalisation, consolidation and refinement.
5. Coordinate an inter-departmental review of institutional roles and responsibilities with the objective of achieving synergies and optimising the efficient use of institutional resources.
6. Develop web resources that maintains a compendium of Kiribati's current marine and fisheries law and associated policy.
7. Create a mid-level policy officer (L6) position within LCD to monitor and coordinate reporting on Kiribati's international commitments, including WCPFC's CMS, and advise on international fisheries policy.

Information management

8. Once mapped and documented by the Tabwan waara project, maintain, MFMRD IMS documentation.
9. Adopt a strategic approach, by applying industry standards, to the conceptualization, design (based on functional and specifications), development and maintenance of MFMRD IMS.
10. Develop, resource and implement a capacity development strategy for IT staff in systems and database design and development. Consider the phased appointment of two MCS data analysts.
11. Develop, resource and implement a capacity development strategy for MCS-specific data analytics and cross-verification of multiple data sources.

Coastal

12. Improve the office environment for MCS staff in terms of both accommodation, amenities and access to technology.
13. Recruit additional Tarawa- and Island-based staff. It is unreasonable to expect a MCS Unit of three staff to service current national expectations.
14. Develop and resource a long-term capacity building for CBFM strategy that includes appropriate MCS systems and methodologies, including appropriate community-based voluntary compliance mechanisms.
15. Resource best-practice information management systems design that is appropriately staffed.
16. Review the inspection and monitoring program associated with pet fish exports from Kiritimati, including associated data management.
17. Increase resources to support communications, outreach and awareness raising.

Monitoring, Control and Surveillance (MCS) Gap Analysis and Needs Assessment: Kiribati Offshore and Coastal Fisheries

1. INTRODUCTION

1. A key component of an effective fisheries management system for securing sustainable oceanic fisheries that optimize national benefit for Kiribati is an integrated monitoring, control and surveillance (MCS) scheme that:

a. ensures the integrity of fisheries management arrangements; and
b. delivers information necessary for the effective management of the fishery.

Given the regional nature of key oceanic fish stocks in the Western and Central Pacific Ocean (WCPO), MCS arrangements at the national level should integrate with, and optimise the use of, compatible regional systems and processes.

2. In coastal areas, geographically widely dispersed small-scale artisanal and subsistence fisheries are particularly challenging for Government agencies to regulate. As a result, there is increasing reliance on local governance and community-based arrangements for the conservation and management of coastal resources. This report reviews gaps and needs in relation to MCS resources and capabilities for oceanic and coastal sectors in Kiribati as a basis for considering MCS-related interventions under Phase II of the World Banks' Pacific Regional Oceanscape Program (PROP).

3. With few alternatives to support economic development, revenue from fisheries is an important source of Government income for Kiribati, accounting for 75 percent of total Government revenue in 2016[2]. Most of that revenue was generated by selling fisheries access to foreign purse seine fishing and supporting fleets under bilateral and multilateral access arrangements[3] (Figure 1).

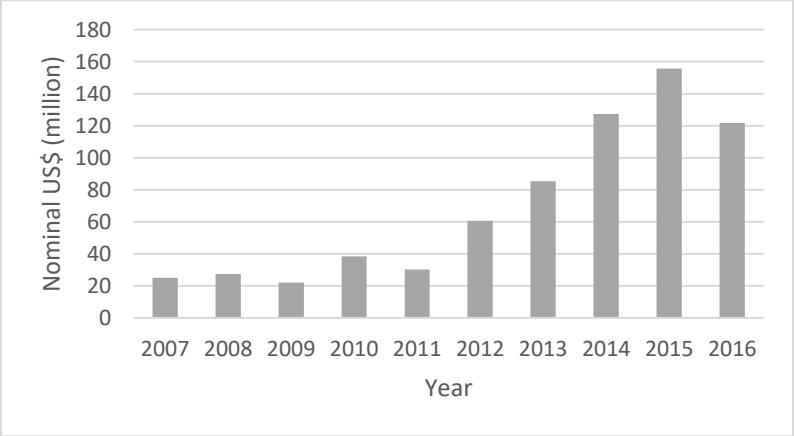

Figure 1. Fishing-related Government revenue (2007-2016)[1]

[2] The most recent review was completed in 2017: Ministry of Fisheries and Marine Resource Development (MFMRD) and Ministry of Finance and Economic Development (MFED). 2017. Fishing license revenues: 2017 Report. 16 pages.
[3] The Government recognises the fluctuations in the regional dispersal of fishing effort in the purse seine fishery results in some volatility in fishing revenue which is a key fiscal consideration (MFMRD and MFED, 2017).

4. In an effort to stimulate domestic participation in the tuna industry, Kiribati has also supported investment in domestic tuna fisheries. This investment includes 100% ownership of a fishing company that operates three small longliners based at Betio. This entity's, Central Pacific Producers Ltd (CPPL), main business is the development of fishery activities and marketing of marine resources and includes shipping, agency services and crewing for the foreign fishing vessels. It has a subsidiary office in Kiritimati offering similar services to purse seine fleet that tranships there and, occasionally, exports fish and crayfish to US and European markets. In Betio, CPPL sells the catch from its longline operations to a second company, Kiribati Fishing Limited (KFL). The Government has a 40% share in KFL. KFL is also based in Betio where it supports the operations of a chartered longline fleet. KFL is in the process of establishing operations in Kiritimati.

5. The management and conservation of regionally-shared tuna stocks in Kiribati is governed by a combination of complex multi-national regional arrangements and Kiribati domestic policy and legislation. Consistent with the United Nations Convention on the Law of the Sea (UNCLOS) and its Implementing Agreement for Highly Migratory Fish Stocks (UNFSA), the overarching arrangements for MCS in the WCPO are established by the Western and Central Pacific Fisheries Commission (WCPFC). In addition to its active participation in the WCPFC, Kiribati is also a member of the Parties to the Nauru Agreement for Cooperation in Fisheries of Common Interest (PNA), the Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery and the Forum Fisheries Agency, all of which have a role in regional policy and operational arrangements for the principal MCS-related programmes in the region[4]. In conjunction with these activities, the Secretariat of the Pacific Community (SPC) provides data assimilation and dissemination services and scientific advice for the purposes of resource management decision-making.

6. Two significant developments during the last 10 years continue to shape Kiribati's oceanic fisheries sector including in respect to MCS. The first was the implementation of the Vessel Day Scheme (VDS) by the PNA from the mid-2000s and the second was the award of a yellow card by the European Commission (EC) in 2016.

7. The PNA commenced considering options for managing tuna catch in the WCPO in the early 1990s when they agreed to flag-based purse seine vessel numbers under the Palau Arrangement. Over 10 years through to the early 2000s, as purse seine numbers continued to expand and concerns over the status of yellowfin and bigeye resources increased, management arrangements were refined and consolidated in an effort-based arrangement, based on fishing activity during any 24-hour period. Full implementation of the VDS, through the setting of a collective total, and individual Party, effort commenced in 2007/2008.

[4] The Parties to the 1992 Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery are also Parties to the 1982 Parties to the Nauru Agreement (PNA) for Cooperation in the Management of Fisheries of Common Interest: Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu. Collectively they regulate access to approximately 50% of the global tuna supply. Regulation is achieved through three Implementing Arrangements to the PNA. A Vessel Day Scheme (VDS), established under the Palau Arrangement, is implemented for the management of effort in the purse seine fishery within the collective EEZs of Parties. The eight countries are also members of FFA and SPC and Tokelau routinely associates with PNA processes and decisions.

8. The Scheme makes provision for vessels operating under preferential arrangements to promote domestic fisheries development under the Federated States of Micronesia (FSM) Arrangement and obligations associated with the multilateral Treaty on Fisheries which is the basis for the operations of US-flagged vessels fishing the zones of the PNA members. The Party Allocated Effort (PAE) is transferable between PNA countries which provides opportunities for the trade of fishing days among the Parties. Although implementation took some time, the VDS has resulted in significant increases in fisheries access revenue for PNA members, Kiribati included (Figure 1).

9. In 2016, the EC invoked European Council Regulation 1005/2008 and issued Kiribati with advice ("a yellow card") that its efforts to combat illegal, unreported and unregulated (IUU) fishing were assessed as inadequate and that remedial action was necessary to assure access for Kiribati-sourced fisheries products to EU markets. Failure to address the issues identified by the EU could result in access to EU markets being denied - a determination known as a "red card". Kiribati's subsequent response is reflected in the 2017 Amendments to the Fisheries Act 2010. In addition, in May 2017, Kiribati was added to the list of third countries or territories, provided for under the EU's Regulation 854/2004, which are permitted to export certain fishery products for human consumption to the EU. This was achieved after Kiribati was able to demonstrate that its sanitary processes and systems supporting its seafood exports were equivalent to those of an EU member State. This involved the certification of a Competent Authority (CA) that provides assurances that exports by a country or territory's vessels or processing establishments comply with, or are equivalent to, the relevant EU (health) regulations for seafood sanitary controls. Nevertheless, the yellow card remains in place and Kiribati continues to work through the requisite EU processes to reduce IUU risk for it to be removed (see Section 6.6).

10. Since 2013, the World Bank, under Phase I of PROP, has been supporting four Pacific Island countries (Federated States of Micronesia, Marshall Islands, Solomon Islands and Tuvalu), plus FFA, in their contributions to regional goals of sustainable offshore and inshore fisheries management. The Bank is currently preparing for a second phase for the PROP which will include Kiribati. To inform the design of the second phase, a gaps and needs assessment for MCS programmes in Kiribati was commissioned in late 2019.

2. ABOUT THIS DOCUMENT

11. This report consists of nine sections with nine supplementary appendices.

12. An outline of the terms of reference supporting a gaps analysis and needs assessment is followed by a brief summary of the strategic context for the Bank's Phase II interventions. An overview of Kiribati geographic and ocean features and a summary of recent information for activity in the coastal and oceanic fisheries sectors is presented.

13. An assessment of the current situation in relation to MCS for oceanic fisheries in Kiribati is then described. It includes an appraisal of facilities and resources available for MCS-related business functions and capacity building needs for MFMRD in MCS in an endeavour to enhance divisional performance in a cost-effective manner. An appraisal of compliance with international

obligations, based on commitments and obligations included in WCPFC's Compliance Monitoring Scheme (CMS), and the capacity of Government of Kiribati to effectively implement legal measures to combat IUU fishing consistent with expectations of market States, is included. A brief summary of relevant Kiribati legislation and regulations is appended together with a listing of WCPFC reporting obligations.

14. A review of MFMRD's information management situation includes a summary of regional systems supported by FFA, SPC and the PNAO. A MFMRD initiative to strengthen and modernise its information systems is assessed as being positive provided industry standards for planning, design, implementation and documentation are applied. Optimal benefits of the system will not be achieved without significant capacity building in both information systems management and administration and data analytics. Current information management capacity, and projected future needs are also assessed.

15. The final section presents a similar risk assessment for coastal fisheries MCS. It profiles relevant legislation and regulations and current, or preferred, strategic relationships with other government agencies for MCS-related activities in the coastal fisheries sector. An assessment of current capacity is included as a basis for identifying needs that are required to enhance coastal MCS services in Kiribati.

16. **Appendix A** provides a list of people consulted during the assignment. References, publications and additional reading are at **Appendix B**.

3. Objectives

16. To assist in identifying PROP-related MCS investments in both offshore and coastal fisheries, a gap analysis and needs assessment to enhance and implement Kiribati's national MCS capacity was commissioned to review, *inter alia*:

a. necessary MCS facilities and systems in Betio (Tarawa) and Kiritimati;
b. facilities and equipment for the collection, storage, analysis and distribution of national MCS related information (National Fisheries Information Management Systems);
c. equipment and capacity-building services to implement e-monitoring and e-reporting in offshore fisheries, and
d. capacity-building services to enhance MCS and enforcement in offshore and coastal fisheries.

17. The primary focus of the review was to consider current and projected MFMRD Offshore and Coastal Fisheries Division's MCS needs, highlighting:

a. existing capacity and strengths, needs and concerns of MFMRD Offshore Division MCS staff;
b. existing limitations in resources and work program delivery;
c. the nature of institutional structures and steps that may be taken by MFMRD to leverage opportunities for enhanced divisional performance.

18. The objective of the review was to perform a systematic gap analysis of the Government of Kiribati to effectively implement IUU fishing countermeasures in order to minimize the risks from IUU fishing occurring within the Kiribati EEZ. This required an assessment of, *inter alia*:

a. the relevance and effectiveness of current MCS capacity, in particular, the capacity of the MFMRD offshore division for effective implementation of national MCS strategies;
b. compliance with relevant national and international laws, policies and standards relating to MCS activities, and gaps in relation to the implementation of these laws, policies and standards;
c. risk-based assessment of whether current MCS programs are delivered in an efficient, cost-effective and strategic manner;
d. an assessment of needs and associated features a national fisheries information system [with respect to operation, maintenance, data security and information sharing and distribution to relevant Regional Fisheries Management Organisations (RFMOs). This includes identification of specific requirements that will contribute to the development of Fisheries Management Platform];
e. opportunities for the adoption and use of new technologies (electronic monitoring (EM) and electronic reporting (ER)) in offshore and coastal fisheries including capacity building and training needs);
f. the legal capacity of Government of Kiribati to effectively implement legal measures to combat IUU fishing in line with the requirements of the market States;
g. resourcing and capacity gaps in the delivery of MCS outputs (as a corollary of the current institutional setup, including absence of appropriate facilities, information systems, equipment and tools to address identified resourcing and capacity needs within MFMRD);
h. recommendations on state-of-the-art facilities and equipment [investments to consider as part of the PROP Project], and
i. recommendations for MCS capacity building through to 2025.

19. The Terms of Reference are at **Appendix C.**

4. STRATEGIC CONTEXT

20. The World Bank commenced the PROP in 2013 as a Series of Projects (SOP) to be implemented in three phases over six-years. Phase 1 began in 2014 and is under implementation in four countries (Federated States of Micronesia, Republic of Marshall Islands, Solomon Islands, Tuvalu) and one regional institution, FFA. Phase II Projects, which includes Kiribati, are generally aligned with the objectives of the original PROP SOP and so contribute to the regional goals of sustainable offshore (oceanic) and inshore (coastal) fisheries management.

21. The PROP is aligned with the World Bank's FY17-21 Regional Partnership Framework (RPF) for nine Pacific Island nations (the PIC9[5]) that outlines the strategic development program for Kiribati. The RPF focuses support on exploiting available economic opportunities, enhancing access to employment opportunities, protecting incomes and livelihoods and strengthening

[5] Pacific island countries (PICs): Kiribati, the Republic of the Marshall Islands, Federated States of Micronesia, Republic of Nauru, Republic of Palau, Independent State of Samoa, Kingdom of Kiribati, Tuvalu, and Vanuatu.

enablers of growth. The proposed Project reflects key elements of the Government's Kiribati Vision 2020 (KV20) which is structured around four pillars:

a. wealth – natural, human and cultural capital;
b. peace and security;
c. infrastructure for development, and
d. governance.

22. The two crossing-cutting issues are:

a. gender, youth, vulnerable groups, equity, and
b. environment, climate change and sustainable development.

23. Maximizing returns from the sustainable exploitation of fisheries and marine resources is fundamental to achieving KV20.

24. The PROP will build on Kiribati's 2016-19 Development Plan that identified six key priority areas for the medium term:

a. human resource development;
b. economic growth and poverty reduction;
c. health;
d. environment;
e. governance, and
f. infrastructure.

25. Strategies under the economic growth and poverty reduction priority include providing for the sustainable development of the fishing industry, maximizing economic returns from marine resources and ensuring that that the most vulnerable groups in the population are cared for.

26. The Project also supports Kiribati's National Fisheries Policy (2013-2025) and Integrated Environmental Policy (2013). The National Fisheries Policy covers five overarching goals and strategic objectives:

a. contribute to economic growth and employment through sustainable fisheries, aquaculture and marine resources development;
b. protect and secure food security and sustainable livelihoods for I-Kiribati;
c. ensure long-term conservation of fisheries and marine ecosystems;
d. strengthen good governance, with a focus on building the capacity of MFMRD and relevant sectors to implement and support fisheries management, development and monitoring, control and surveillance, and
e. build climate change resilience for fisheries and marine resources in Kiribati.

27. An integrated fisheries master plan for Kiritimati was also developed for the period 2014–2017 to improve management and sustainable development of the island's fisheries. Its five main priority areas are:

a. coastal fisheries;
b. offshore fisheries;
c. aquaculture;
d. tourism, and

e. environment.

28. In addition, the Kiribati Integrated Environmental Policy recognizes that the underlying environment that support these and its coastal fisheries resources are fundamental building blocks for its sustainable development.

5. KIRIBATI CONTEXT

29. The Republic of Kiribati is a sovereign small-island developing State in the mid-Western and Central Pacific Ocean (WCPO) (Figure 2). It comprises 32 atolls and one raised coral island which have a total land area of 800 square kilometres (km^2). Kiribati is comprised of three island chains: the Gilbert Islands in the west, the Phoenix Islands in the centre and the Line Islands in the east all of which straddle the equator.

30. Kiribati's ocean space is large by global standards. Kiribati declared its Exclusive Economic Zone (EEZ) in 1978. Between 2010 and 2014, with the support of various development assistance partners and international agencies[6], an EEZ was mapped and declared for the Gilbert Island Group, Line Island Group and the Phoenix Island Group.

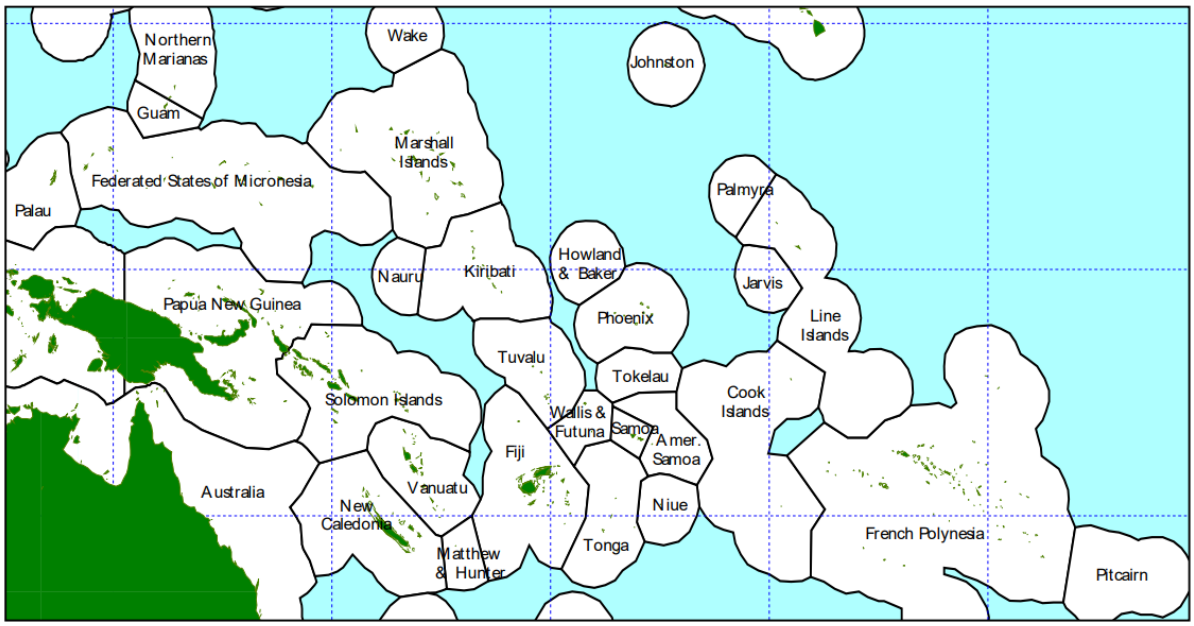

Figure 2. Exclusive economic zones of the WCPO: Kiribati – depicting non-contiguous EEZs associated with the Gilbert Islands, Phoenix Islands and Line Islands (Source: Secretariat of the Pacific Community (SPC)).

31. The maritime zones of Kiribati consist of an EEZ (3.44 million km^2), a Contiguous Zone of 44.4km (24 nautical miles (nm)) and Territorial Seas of 22.3km (12 nm). Maritime boundaries

[6] Kiribati Marine Zones (Declaration) Act 2011 and the Exclusive Economic Zone Outer Limit Regulations 2014. https://www.un.org/Depts/los/LEGISLATIONANDTREATIES/STATEFILES/KIR.htm [Accessed 2 November 2019].

have been negotiated with New Zealand, in respect of Tokelau (2015), Cook Islands (2012) and Tuvalu (2012)[7].

32. Kiribati supports a population of 118,000[8] with approximately half the population resident in the administrative centre of South Tarawa[9]. The distance between the two major population centres, Tarawa and Kiritimati (population estimated to be 6,400 in 2015) is 3,200 kms.

5.1 Oceanic fisheries[10]

33. The Kiribati oceanic tuna fishery includes a coastal small-scale artisanal fishery using small wooden or fibreglass skiffs (<7m) within 22km of the shore. There are approximately 4,000 vessels in this fishery operating troll gear and vertical droplines and occasionally fishing anchored coastal fish aggregating devices (FADs)[11]. The offshore fishery includes domestic large-scale purse seiners and longliners operating under joint-venture and charter arrangements or purse seiners licensed to fish inside Kiribati's EEZ under domestic or bilateral and multilateral access agreements. No pole-and-line vessels have fished the Kiribati EEZ since 2015.

34. As with WCPO tuna fisheries generally, the target species for artisanal tuna fishery is skipjack (*Katsuowonus pelamis*) and yellowfin (*Thunnus albacores*). These are also the target species for purse seiners with most of the catch processed by foreign canneries. Purse seiners also fish smaller quantities of juvenile bigeye (*Thunnus obesus*). Domestic longliners target sashimi-quality adult yellowfin and bigeye for processing and export. They also catch South Pacific Albacore (*Thunnus alalanga*) as by-catch.

35. In 2012, the Government established Kiribati Fish Limited (KFL), a joint-venture tuna processing plant based in Betio[12]. Catch from the company's vessels are landed and processed at the Betio fish plant and exported to the United States and Japan. In 2019, the Government purchased three 23m longline vessels. These vessels are managed by the Kiribati Central Pacific Producers Limited (CPPL) and land their catch to KFL.

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[7] The remaining boundaries, with the United States (in respect of Howland and Baker, Jarvis and Palmyra), French Polynesia, Nauru, Republic of Marshall Islands and French Polynesia have all been finalised. An exchange of Diplomatic Notes is required to complete the process.

[8] http://worldpopulationreview.com/countries/kiribati-population/ [Accessed: 2 November 2019]

[9] Government of Kiribati. 2016. 2015 Population and Housing Census. Volume 1: Management Report and Basic Tables. National Statistics Office, Ministry of Finance, Bairiki, Tarawa. 197 pages.

[10] Summarised from: Government of Kiribati. 2019. Annual Report to the Commission Part 1: Information on Fisheries, Research and Statistics. WCPFC-SC15-AR/CCM-11 (Rev.01). Ministry of Fisheries and Marine Resources Development. Western and Central Pacific Fisheries Commission, 15th Regular Session of the Scientific Committee, Pohnpei, Federated States of Micronesia, 12-20 August 2019. 17 pages. Supplementary information provided during consultations associated with this assignment is included.

[11] The 2015 household survey undertaken for the Kiribati National Statistics Office, which is undertaken every 5 years, recorded 3,433 wooden, aluminum and other types of small craft associated with Kiribati households. Since then, the Government has supported a small canoe construction programme. This initiative has resulted in at least 850 small canoes being constructed and sold, for A$250 each, throughout the islands.

[12] The Kiribati Government holds 40% in the joint-venture, a Chinese company, the Shanghai Deep Sea Fishery 20% and a Fijian company, Golden Ocean Fish Ltd, 40%.

36. CPPL is a company wholly owned by the Government of Kiribati through MFMRD. Its main operations are based out of South Tarawa. It also maintains a facility on Kiritimati. It was incorporated in 2001 to support national development policy in the fishery sector including promoting fisheries activities and the marketing of marine resources. In addition to managing the three domestic longliners, the company now provides shipping agency services, including in relation to port transhipment and crewing for the foreign fishing vessels.

37. The domestic tuna industry is based on charter or partnership arrangements with other countries and commercial entities. In 2018, 42 industrial longline vessels were registered to fish in Kiribati waters including chartered longliners flagged to China (37) and Fiji (2) and the three Kiribati flag vessels (Table 1). The Kiribati EEZ was reserved for domestic longliners in 2017 when Kiribati closed its EEZ to longliners licensed under bilateral arrangements with distant water fishing nations. This had a significant impact on the longline catch in 2018 (see Table 2).

Size class	2014	2015	2016	2017	2018
0–50	0	0	0	0	1
51–200	0	1	5	1	8
201-500	1	8	9	6	0
500+	5	5	3	0	0
Total	**6**	**14**	**17**	**7**	**9**

Table 1. Kiribati-flag longline vessel numbers (2014-2018)[13]

Species	2014	2015	2016	2017	2018
Albacore	7.29	358.00	470.00	691.40	210.08
Bigeye	267.50	556.00	434.00	267.40	323.78
Skipjack	0.00	8.00	0.00	48.70	8.61
Yellowfin	108.10	405.00	395.00	358.60	21.51
Black Marlin	0.00	405.00	54.00	0.00	0.00
Blue Marlin	0.00	27.00	27.00	0.00	0.00
Striped Marlin	7.00	0.00	1.00	95.20	1.36
Swordfish	20.00	9.00	18.00	54.41	1.41
Blue shark	1.00	0.00	0.00	0.00	0.00
Mako Shark	6.00	0.00	0.00	0.00	0.13
Oceanic whitetip shark	0.00	0.00	0.00	0.00	0.00
Silky shark	0.00	0.00	0.00	0.00	0.01
Thresher shark	0.00	0.00	0.00	0.00	0.00
Total	416.89	1768.00	1399.00	1515.71	566.88

Table 2. The longline catch (mt) for Kiribati-flag vessels (2014-2018)

38. The three CPPL-managed 24m longline boats are operational, but their economic viability is fragile[14]. Of the 42 industrial longline vessels operating in the EEZ, 24 are scheduled to land their catches into the fish processing facilities at Kiritimati that is currently being transitioned from CPPL management to KFL. The fate of the CPPL operations at Kiritimati following the loss of their facility to KFL is currently under discussion in the Government.

[13] From Kiribati's 2019 Annual Report to the Commission Part 1: Information on Fisheries, Research and Statistics. WCPFC-SC15-AR/CCM-11 (Rev.01). Report text reflects numbers of longliners reported during in-country consultations in October 2019.

[14] CPPL Manager, Robert Lee, *pers. comm.*

39. The domestic purse seine fleet consists of 10 chartered purse seiners that operate under a joint-venture arrangement between Kiribati and Korean fishing companies, 10 Chinese-flag purse seiners chartered by KFL and one Kiribati flag vessel. Purse seiners from distant water fishing nations such as Korea, Taiwan, Japan, the United States and other Pacific Islands' flagged vessels operate within the EEZ under bilateral or multilateral (the US-flagged fleet and vessels flagged to other FFA member countries operating under the regional Federated States of Micronesia (FSM) Arrangement) arrangements. Although most licensed vessels offload in foreign ports licensing conditions oblige some vessels to offload a proportion of their catch in Kiribati.

Size class	2014	2015	2016	2017	2018
0–500	0	0	0	0	0
500–1,000	1	3	2	0	0
1,000–1,500	8	10	15	7	9
1,500+	5	8	10	12	12
Total	**14**	**21**	**27**	**19**	**21**

Table 3. Kiribati-flag purse seine vessel numbers (2014-2018)

40. Climate variability is predicted to have significant implications for Kiribati as a whole in the 21st Century, including in terms of the distribution and availability of tunas. Lehodey *et al.* (2011) modelled skipjack and yellowfin distributions associated with predicted IPCC warming scenarios through to mid-Century to forecast increases in tuna biomass for countries east of 170˚E as tuna distribution gradually moves east towards the central and eastern Pacific. Such a change will have positive implications for tuna-related revenue for Kiribati.

Species	2014	2015	2016	2017	2018
Albacore	0.00	0.00	0.00	0.00	0.00
Bigeye	4,237.00	2,937.00	8,045.00	7,152.00	5,072.00
Skipjack	86,354.00	118,210.00	132,451.00	118,119.00	167,353.00
Yellowfin	18,583.00	15,550.00	22,994.00	26,867.00	15,751.00
Black Marlin	18.00	21.00	7.00	12.00	9.00
Blue Marlin	37.00	51.00	28.00	18.00	14.00
Stripped Marlin	0.00	0.00	10.00	19.00	0.00
Swordfish	0.00	0.00	2.00	1.00	1.00
Blue shark	0.00	0.00	0.00	0.00	0.00
Silky shark	0.00	0.00	0.00	0.00	107.00
Great hammerhead	0.00	0.00	0.00	0.00	0.00
Oceanic whitetip shark	0.00	0.00	0.00	0.00	2.00
Thresher shark	0.00	0.00	0.00	0.00	5.00
Total	109,229.00	136,769.00	163,537.00	152,188.00	188,314.00

Table 4. The purse seine catch (mt) for Kiribati-flag vessels (2014-2018).

5.2 Coastal fisheries

41. Effective management of coastal fisheries remains challenging. Under the Fisheries Act 2010, and 2015 and 2017 Amendments, MFMRD's Coastal Fisheries Division (CFD) is charged with securing the sustainable management, development and conservation of coastal fisheries resources in Kiribati. In parallel, under the Local Government Act 1984, Island Councils have the authority to regulate management of their adjacent waters extending out to three nautical miles, including for fishery activities through a warrant which defines the limits of their area of authority.

42. Compliance with coastal fishery conservation and management measures is generally inadequate due to limited institutional capacity, lack of clarity concerning access rights, limited community participation in decision-making and lack of integration between top-down and bottom-up approaches. Introduction of an open access regime over customary access rights has caused conflict over management and control of coastal fisheries, particularly around urban areas that have experienced significant population growth in recent years.

43. Recognizing these issues, in October 2018 CFD initiated a planning process to formulate a vision and roadmap for coastal fisheries development that seeks to achieve four strategic objectives:

a. empowered communities;
b. effective and conducive coastal governance;
c. healthy and productive coastal fisheries, and
d. vibrant, healthy, wealthy and responsible people[15].

44. The recently adopted Kiribati Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019[16] provides the legal basis for improved coastal fishery management and embraces community participation.

45. The number of artisanal boats based on the 2015 artisanal fisheries survey was more than 4,000[11]. The provisional catch estimate (mt) for the period 2014-2018 is presented in Table 5.

Species	2014	2015	2016	2017	2018	Average
Skipjack	2,190.00	2,190.00	2,190.00	2,190.00	2,190.00	2,190.00
Yellowfin	2,169.00	2,169.00	2,169.00	2,169.00	2,169.00	2,169.00
Bigeye	0.00	0.00	0.00	0.00	0.00	0.00
Wahoo	574.00	574.00	574.00	574.00	574.00	574.00
others	65.00	65.00	65.00	65.00	65.00	65.00
Total	4,998.00	4,998.00	4,998.00	4,998.00	4,998.00	4,998.00

Table 5. The provisional artisanal small-scale catch (mt) (2014-2018[13, 17]

46. As pressure mounts on shallow water lagoon species, efforts to increase landings through further development of the small-scale nearshore FAD fishery and landings of oceanic tunas, catches from this sector are expected to increase. It is anticipated that the management of small-scale oceanic fisheries (vessels, gears and FADs) will need to be significantly enhanced to secure the viability of the sector in the coming years as demand for domestic tuna landings increases.

6. MCS IN KIRIBATI

47. Effective implementation of MCS and enforcement in Kiribati offshore and coastal fisheries is planned as a significant component of the Kiribati PROP. To this end, a gaps analysis and needs assessment to enhance and implement Kiribati's oceanic MCS programmes is presented.

[15] A Roadmap for Coastal Fisheries for Kiribati: 2019-2036. 32 pages.
[16] Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019. Ministry of Fisheries and Marine Resources Development. 18 pages.
[17] Data for artisanal fishery is mainly for domestic consumption with minor exports. Figures are subject to review.

The primary focus was to consider the current status, and projected requirements, highlighting existing capacity and strengths, needs and concerns, existing resource limitations impacting work programme delivery, the nature of institutional structures and steps that may be taken by MFMRD to leverage opportunities for enhanced divisional performance delivery.

6.1 Legislative environment

48. A significant body of legislation, regulations, policies and plans govern the functions of MRMFD in both coastal and oceanic sectors. A summary of the main components is presented at **Appendix D.**

49. Apart from the overarching Fisheries Act 2010 and the Kiribati National Fisheries Policy (2013-2023), most regulations are specific to either oceanic or coastal fisheries. MFMRD is solely responsible for much of this legislation. The responsibility for other instruments may primarily be with another Government agency but with consultative, cooperative obligations, or expectations, for MFMRD.

50. In addition to subsidiary regulations that relate to matters such as the Vessel Day Scheme, FAD Management, Sharks and the Phoenix Islands Protected Area (See Appendix D), the main instruments currently governing MFMRD's domestic responsibilities for the oceanic sector are:

a. the 2015 and 2017 Amendments to the Fisheries Act 2010, and
b. Kiribati's Tuna Management Plan, 2019.

51. In addition to the Fisheries Act, 2010, the primary instruments governing the coastal fisheries sector, profiled at Attachment D, include the:

a. Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019;
b. Local Government Act 1984, and
c. Environment Act 1999 as amended in 2007.

52. Oceanic MCS functions of MFMRD are the responsibility of the Licensing and Compliance Division (LCD). For the coastal sector, a MCS Unit was established in early 2019 to take on this responsibility (See section 9).

6.2 Domestic instruments

53. A detailed comparative analysis of legislation, regulations and associated institutional roles and responsibilities was not possible within the time frame for this assignment. A preliminary appraisal suggests that a thorough audit and analysis is overdue and would be beneficial. Examples of issues identified for further analysis are in Table 6.

54. While there is potential for conflict and tension regarding agency roles and responsibilities, it is possible that, if the relative strengths of the agencies concerned are marshalled effectively, and meaningful coordination and collaboration is achieved, apparent overlaps in responsibility can be beneficial for securing optimal services for the coastal and oceanic sectors in Kiribati. However, evidence suggests this generally remains an area that all Kiribati government agencies could give

attention to. This is a consequence of, for among other reasons, limited institutional capacity and some entrenched views regarding collaboration, for example between Environment and Fisheries.

55. As is often the case, the key concerns are not necessarily in relation to the state of legislation and supporting instruments, although some general housekeeping would be beneficial. The key concern is in relation to the capacity of the responsible agency, or agencies, to service the obligations and responsibilities conferred under the instruments each agency is responsible for. An example is the 2014 FAD Management Regulations and associated Plan. Much of those Regulations and the Plan's requirements, such as a FAD Registry, markings, and reporting, including incorporation in licence conditions, have not yet been implemented.

6.3 Regional obligations

56. Kiribati's regional obligations are significant. The majority are associated with:

a. Harmonised Minimum Terms and Conditions for Access (HMTCs), as revised from time to time;
b. the Parties to the Nauru Agreement and its Implementing Arrangements;
c. the Parties to the Palau Arrangement and its Implementing Arrangement, and
d. the Western and Central Pacific Fisheries Convention and associated CMMs.

57. Although not all provisions were assessed, major obligations associated with the HMTCs were included in the assessment of compliance gaps and needs in Section 7. A profile of the majority of Kiribati's obligations associated with WCPFC decisions, most reflected in CMMs, is included at **Appendix D (Annex 1)**. Each session of the Commission means that many of these obligations are revised and updated on an annual basis.

58. In addition, although not imposing compulsory obligations, the 2001 International Plan of Action to International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPoA IUU) provides significant guidance to assist States implement effective MCS programmes and measures. Kiribati has drafted a national response, a National Plan of Action (NPoA IUU), with associated proposed strategic actions, but there is little evidence that significant elements of it are being actively implemented.

59. Other useful guidance for strengthening MCS in Kiribati is provided in numerous FFA reports. In 2009, FFA produced a report on analytical projects to support the development of a Regional Monitoring, Control and Surveillance Strategy (RMCSS) for the Pacific Islands region (MRAG Asia Pacific. 2009a). Appendix 3 of that report was a compliance review which included an assessment of MCS gaps and needs for Kiribati. Some of the methodology used in the preparation of that report has been used in the current gaps and needs assessment for MCS in Kiribati (see section 7). And in 2017 FFA undertook a gaps analysis of port State controls against the FAO Port State Measures (PSM) Agreement for Kiribati (MRAG Asia Pacific, 2017). Kiribati is yet to ratify the FAO PSM Agreement. If the recommendations in these reports had been actioned it is quite possible that Kiribati would have avoided the EU's award of a yellow card (see section 6.6).

Table 6. Provisional identification of areas of common interest, and potential gaps, for selected Kiribati law relating to coastal or oceanic fisheries resources.

Instruments or authority	Provisions related to MFMRD functions
Local Government Act 1984	The Schedule lists the functions of Island Councils to include: *the improvement and control of fishing and related industries.* A 2006 amendment defines 'waters adjacent' as 3 nautical miles seaward of the low water mark, as defined under the Maritime Zones Act.
The Environment (Amendment) Act 2007	Provides that, to the extent of any inconsistency between this Act, and any other Act, the Acts shall be construed so far as is possible so that the objects of this Act are fulfilled. Schedule 4 lists pet fishing as a prescribed development. Therefore, any existing (unless exempted) or proposed development, requires an environmental impact assessment, under Part 3.
Fisheries Processing and Export Regulations 1981	It is not stated that the 2012 Fish Export Regulations repeal the Fisheries Processing and Export Regulations 1981.
Fisheries Act 2010 and Amendments	Tuna does not appear to have been formally declared a Designated Fishery. The Act requires the Director to establish a Record of Fishing Vessels. There are several 'registers' or 'records' of fishing vessels provided for under different instruments in Kiribati. They include the aforementioned, for local offshore tuna fishing vessels, the Draft Maritime (Small Craft) Regulations 2019 and the Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019, both of which provide for the establishment of a small craft register. Administrative coordination and collaboration would resolve any potential overlaps and difficulties in implementing these provisions.
Fish Export Regulations 2012	Fish Export Regulations 2012 do not appear to repeal the 1981 Fisheries Processing and Export Regulations.
Fish Aggregating Device Management Regulations 2014	Apart from the submission of a FAD Management Plan to WCPFC, few provisions of the Regulations (Register, monthly reporting, etc.) have been implemented. The Regulations have been drafted for the commercial tuna purse seine fishery. However, FADs are also deployed in nearshore areas to support small-scale coastal fishing operations. The current Regulations make no distinction for operations in these two sectors.

Shark Sanctuary Regulations 2015	The following provision would benefit from clarification "……does not apply to a foreign fishing vessel that has entered Kiribati fisheries waters for a purpose recognised by the United Nations Convention on the Law of the Sea"
Tuna Management Plan 2019	Management Plans are required for 'designated fisheries' under the Fisheries Act. Evidence that tuna has been designated was not available to this review. The 2019 revision updates operational and catch details for the fishery, incorporates encouragement for e-reporting and introduces the longline VDS, among other provisions. Several significant points raised by the EU in their assessment of Kiribati's capability to combat IUU remain to be addressed. These include, but are not limited to, a reflection of the provisions of UN FSA (Article 5) relating to, *inter alia*, the precautionary approach, the maximum stainable yield or the avoidance of excess fishing capacity and overfishing,
Licence Conditions	Licence Condition 7 for both purse seine and longline requires vessels to be marked in accordance with WCPFC CMM 2004-03. The requirement is to ensure vessels are marked to the required standard. The Licence Condition provides that vessels will be "…marked and identified as far as possible in accordance…….". "As far as possible" is not "ensure".
	Licence Condition 29 requires the Master "to ensure to undertake cleaning of the hull……..." This is almost impossible to enforce.
	A Schedule of WCPFC CMMs is appended to the Licence Conditions of purse seiners and longliners. The Licence Conditions have not been updated to reflect new CMMs adopted at the 2018 meeting of the Commission for example CMM 2018-01, 2018-03, 2018-05 and 2018-06. Some, such as CMM 2013-03 relating to the deployment of Observers on vessels fishing north of 20˚N, have no application to Kiribati-flag vessels. Many CMMs referenced in the longline Schedule have no application to longliners. The Licence Conditions do not implement the provisions of the Kiribati 2014 FAD Management Plan, including with respect to paragraph 7 relating to the details required to establish and maintain a FAD Register. Licence Condition 13 for longliners obligates the owner or charter and master to ensure the vessel has 5% observer coverage. This metric is applied to Kiribati-flag longliners as a collective. As a consequence, and there is no indication that this is the actual practice, but one

	vessel could carry an observer for 100% of trips and the coverage for the fleet could attain 5%. This would not provide representative and relatively unbiased observer data. The metric for the Kiribati national observer programme is sea-days.

6.4 The IATTC/WCPFC overlap area

60. There are currently no Kiribati-flag vessels registered on the IATTC Regional Vessel Register. They are registered and authourized to fish on the high seas within the WCPFC Convention Area, including the overlap area (Figure 3). As a formality, if it has not already done so, Kiribati should write to the Executive Director of WCPFC and to the Director of IATTC advising that Kiribati has elected to adopt WCPFC obligations when its flag vessels are operating in the overlap area. An example of such a communication, from France in respect of French Polynesia, is posted on the WCPFC website (https://www.wcpfc.int/node/33296).

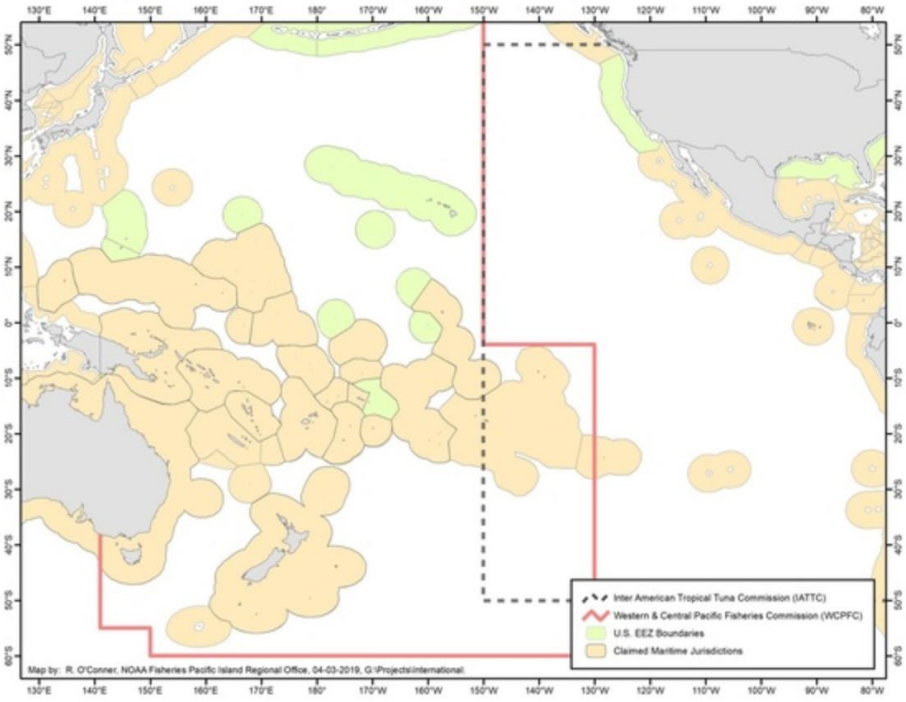


Figure 3. WCPFC-IATTC Convention Area illustrating the area of overlap

61. As an IATTC Contracting Party (CPC[18]), and a port State for IATTC-registered vessels transhipping their catch, predominantly in Kiritimati, there are some IATTC-related obligations Kiribati is required to comply with. They include, in relation to Annex 1 of Resolution 12-07 Amendment to Resolution C-11-09 on Establishing a Program for Transhipments by Large-scale Fishing Vessels (Resolution C-12-07), notifications to be received from:

a. vessels on the IATTC Regional Vessel Register at least 48 hours in advance of an intended transhipment, and
b. the master of the receiving vessel not later than 24 hours before the beginning and at the end of the transhipment regarding *inter alia*, the quantities of catches of tuna and tuna-like species and sharks transhipped to the carrier vessel.

[18] As a result, Kiribati is obliged to contribute to the annual approved budget of the Commission. For fiscal year 2018, IATTC's accounts show that, as of 31 December 2018, Kiribati was in arrears by an amount of US$41,441 on its 2018 contribution.

62. Under C-12-07, port States are required to take the appropriate measures to verify the accuracy of the information received and shall cooperate with the flag State IATTC member of the large-scale tuna fishing vessel (LSTFV) to ensure that landings are consistent with the catches reported by the vessel. This verification shall be carried out so that the vessel suffers the minimum interference and inconvenience and that degradation of the fish is avoided.

6.5 Market State requirements

63. Pacific Island country exports of marine resource commodities to several major markets are subject to traceability systems which detail obligations required of market States. Two such markets are the EU and US markets. The EU Catch Certificate[19] governs imports to EU markets and the International Fisheries Trade Permit (IFTP) applies to imports to US markets[20].

64. The IFTP governs the import, export, or re-export of fishery products subject to the NOAA Fisheries trade monitoring programs. The IFTP replaced the Highly Migratory Species International Trade Permit and made the IFTP a requirement for two other trade monitoring programs:

a. the Tuna Tracking and Verification Program (the 370 program), and
b. the Seafood Import Monitoring Program.

65. EC Regulation 1005/2008 to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing establishes the EU Catch Certification Scheme aimed at improving traceability of all fishery products traded with the EU and facilitate the control of their compliance with conservation and management rules. The Regulation provides for measures supporting port State control, mutual assistance, the establishment of a Community alert system, an EU IUU vessels list and a list of non-cooperating third countries. To encourage effective enforcement, the Regulation also includes a harmonised system of proportionate and dissuasive sanctions for serious infringements.

66. The objectives of the Scheme are to:

a. ensure product traceability at all stages of production, from catch to processing and marketing; and
b. provide a tool for compliance with conservation and management rules, and
c. support cooperation between flag States - country of processing and – country of marketing (which facilitate controls and compliance with conservation and management rules).

67. In April 2016, in Commission Decision 2016/C 144/05, invoking the provisions of Council Regulation (EC) No 1005/2008 of 29 September 2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing, Kiribati was formally advised of the possibility of being identified by the Commission as a non-cooperating third country in fighting IUU fishing (a yellow card). The EU's assessment was based on concerns about the country's capacity to control fishing activities by foreign fleets and to minimize the risks that

[19] https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/technical_note_en.pdf
[20] https://www.fisheries.noaa.gov/permit/international-fisheries-trade-permit

illegally caught fish could be laundered through the ports of Kiribati because robust traceability systems were not in place. The Commission noted that Kiribati's unwillingness to share information on third country vessels operating in Kiribati waters undermined the work of WCPFC to improve transparency and sustainability of tuna resources in the WCPO.

68. The EC's decision was based on, *inter alia*:

a. Kiribati's inability to provide information on the characteristics of the highly migratory species caught by its fishing fleet or the fishing products landed or transhipped in its ports and what were the trade flows of those products;
b. the lack of procedural rigor and physical attention to port inspections, port control, landings and transhipments;
c. the absence of a traceability system for fishery products caught by Kiribati-flag vessels or for third country vessels fishing and transhipping in its waters and ports;
d. assessing that Kiribati was not to be in a position to guarantee the transparency of its markets to allow the traceability of fish or fish products as provided for in the FAO IPOA IUU;
e. the inability of Kiribati to ensure that trade of fishery products conducted in this country do not stem from IUU fishing. In that regard, Kiribati was not able to demonstrate that it complied with the port State obligation to take action to promote the effectiveness of international conservation and management measures, including port inspections of documents, gears or catches and the prohibition of landings and transhipments where it has been established that the catch has been taken in a manner which undermines the effectiveness of those international conservation and management measures, as established in Article 23 of UNFSA;
f. Kiribati's lack of a comprehensive and effective monitoring, control and surveillance of fishing, through the point of landing to final destination, as provided for in point 24 of the IPOA IUU;
g. the omission of a definition of IUU in the 2015 amendment to the Fisheries Act 2010 and the inadequacy of penalties that are applied to repeat offenders;
h. the Tuna Management Plan updated in 2014 fails to propose concrete management actions with clear benchmarks, objectives and principles as provided for in Article 5 of UNFSA, and
i. concerns regarding the genuine link Kiribati and the vessels registered on the Kiribati Ships Registry.

69. With the support of regional agencies such as SPC and FFA, and bilateral development assistance partners such as New Zealand, Kiribati has expended considerable effort to address these concerns. In May 2017 this support resulted in Kiribati being added to the list of third countries or territories, provided for under the EU's Regulation 854/2004, which are permitted to export certain fishery products for human consumption to the EU. This was achieved after Kiribati was able to demonstrate that its sanitary processes and systems supporting its seafood exports were equivalent to those of an EU member State. It involved the certification of Kiribati's Competent Authority that provides assurances that exports by that country or territory's vessels or processing establishments comply with, or are equivalent to, the relevant EU health regulations for seafood sanitary controls. Nevertheless, the yellow card remains in place and Kiribati continues to work through the EU process to have it removed.

70. In its latest monthly report to the EU (September 2019), Kiribati provided updates in relation to:

a. concerns relating to minimum penalties through the drafting of a Bench Book to provide guidance to the judiciary on fisheries-related penalties;
b. commentary explaining the reduction in recorded sanctions;
c. the drafting of new Export and Import Regulations to cover imports and Catch Certification as provided for in Part 13 of the Act;
d. the preparation of a Fisheries Port State Transhipment Regulation including minimum provisions to implement the FAO PSMA;
e. supporting broad consultations to understand the obligations associated with the PSMA and to consult with relevant stakeholders regarding possible accession to the PSMA;
f. revise current standards of operations for inspection to reflect the changes in the objective and to develop guidelines that allows for effective and efficient inspection of vessels arriving at Kiribati's ports. Kiribati's current boarding and inspection policy provides that all vessels visiting Kiribati's ports shall be boarded and inspected by Fisheries, Immigration, Custom, Health, Quarantine officials to ensure compliance with applicable laws and regulations, including license conditions. A vessel cannot be cleared to conduct transhipment until it is cleared by the boarding parties. Currently Kiribati only as six boarding officers. As a result, the objective is to achieve inspections for 60% of vessels. Vessel selection is based on historical compliance;
g. transhipment monitoring which will be maintained at 100%. In August 2019, 34 new observers were certified to observe on fishing vessels and to conduct transhipment monitoring;
h. the preparation of a national plan for control and inspection;
i. the implementation of automated VMS alerts for entry to Kiribati's EEZ, closed areas and designated ports, capacity building for VMS officers and data and information systems management, and
j. the development of Memoranda of Understanding with DWFN partners which will include Kiribati providing status reports on VDS usage for vessels licensed to fish in Kiribati.

71. Kiribati is waiting on the EU's response to this update.

72. Kiribati's adoption of international plans, and the development and publication of national strategies and plans, including the response to the EU, is commendable. The actions proposed by the EU are not unreasonable in terms of securing Kiribati's reputation as a coastal, port and flag State firmly committed to enforcement of obligations associated with the responsible management and conservation of the WCPO's shared tuna resources, and in combating IUU fishing. However, the burden associated with the implementation of most of these actions, individually and collectively, seriously challenges MFMRD LCD's capacity, in terms of both human resources and budgetary resources.

6.6 Institutional arrangements

73. The Ministry of Fisheries and Marine Resources Development (MFMRD) is the Kiribati Government agency responsible for developing and managing the nation's fisheries as well as other marine resources (marine aggregates, deep-sea minerals).

74. MFMRD engages with at least ten other government agencies. They include:

- The Ministry of the Environment, Lands and Agriculture Development (MELAD) which is responsible, *inter alia,* for evaluating the environmental impacts of marine resource export developments, the protection of subsistence fisheries, marine habitats and marine life.
- The Ministry of Communications, Transport and Tourism Development (MCTTD) which maintains the register of the operators of vessels flying the Kiribati flag, including their nationality, and, through the Kiribati Ports Authourity, the clearance of vessels entering port.
- The Ministry of Commerce, Industry and Cooperatives (MCIC) which is charged with evaluating foreign investment in the marine resources sector and with supporting private sector development.
- The Ministry of Health regulates food safety and food imports, including fish.
- The Ministry of Line and Phoenix Islands Development (MLPID) coordinates fishing activities in these islands.
- The Ministry of Justice (MOJ), which houses the police and maritime services. The Police Maritime Unit (PMU) plays an important role in fisheries compliance and enforcement.
- The Ministry of Finance and Economic Development (MFED) assimilates fisheries statistics, such as from the household income and expenditure surveys and fisheries exports. It is also the recipient agency of fisheries access fees.
- The Ministry of Internal Affairs (MIA) liaises with Island Councils on local fisheries bylaws and outer-island development activities.
- The Public Service Commission is responsible for whole-of-government policy development, human resources management, public service performance and planning.
- The Office of the Attorney. This Office is responsible for criminal prosecutions, providing legal advice to Government including to legal staff at MFMRD in respect of domestic and international fisheries and maritime affairs, legislative drafting, law review and law reform.

6.7 MFMRD's Fisheries Policy and Strategic Plan

75. Kiribati National Fisheries Policy (2013-2025) identifies that:
While Kiribati has a strong record in prosecuting blatant illegal fishing, there is still the need to strengthen existing fisheries laws and related legal frameworks, including management measures/procedures to identify misreporting and prosecute accordingly.

76. The Policy includes five overarching goals:

a. Contribute to economic growth and employment through sustainable fisheries, aquaculture and marine resources development.
b. Protect and secure food security and sustainable livelihoods for I-Kiribati.
c. Ensure long-term conservation of fisheries and marine ecosystems.
d. Strengthen good governance, with a particular focus on building the capacity of MFMRD and relevant sectors to implement and support fisheries management, development and monitoring, control and surveillance.
e. Build climate change resilience for fisheries and marine resources in Kiribati.

77. Four strategic actions relate to MCS:

Strategic Action	Description
10	Strengthening of the competent authority. The use of expertise and resources to develop and certify chain of custody processes is of critical importance to the development of the domestic tuna industry and other related fisheries development activities that aim to export seafood products to foreign markets.
13	Establish on-going training programme in fisheries boarding and inspection, monitoring, control and surveillance
14	Register for WCPFC High Seas, Boarding and Inspection as and when appropriate.
18	Maintain and strengthen implementation of existing fisheries responsibilities as required under the act (i.e. licensing, management, implementation of international treaties, monitoring and compliance, reporting, etc.).

78. The Policy was to be subject to review every four years. The 2017 review has been delayed awaiting the development of the revised Strategic Plan (2020-2030) which is currently in preparation.

79. The situational analysis supporting MFMRD's Strategic Plan (2016-2019) recognizes opportunities provided by the 2015 amendments to the Fisheries Act 2010, and associated regulations but also acknowledges needs in relation to:

a. financial resources;
b. capacity strengthening at the Ministry level to strengthen the effective implementation of surveillance and enforcement;
c. the organization and management of information (inadequate library organization, outdated statistics collection protocols and poor reporting), and
d. collaboration with other sector Ministries on food security, economic development, monitoring and surveillance, environment, conservation and climate change, for example.

80. The Strategic Plan responds to these needs by describing six goals and 19 objectives accompanied by performance indicators. In relation to MCS, for both coastal and oceanic fisheries, the Plan provides for, among other activities:

a. the development of a framework for a FAD sustainability plan;
b. the declaration of Kiribati maritime boundaries to UNCLOS;
c. reviewing, updating and implementing access agreements, license conditions and other regulations, as required;
d. monitoring compliance of licensed fishing vessels to strengthen oceanic fisheries management and combat illegal, unregulated and unreported (IUU) fishing;
e. establishing ongoing training programme in fisheries boarding and inspection, auditing, monitoring, control and surveillance;
f. development of a management policy for Kiribati flagged vessels;
g. finalization of Fisheries Management Plans for key commercial species, and
h. strengthen compliance and quality assurance.

81. The Plan is supported by a proposed budget, identification of key responsibilities and performance targets through to 2019.

82. Kiribati's Fisheries Act 2010 provides general guidelines for fisheries management through the development of fisheries management plans with management objectives (See **Appendix D**). Although tuna appears to have not been formally declared a 'designated fishery, as provided for under the Fisheries Act 2010, in 2014 MFMRD produced a Tuna Management Plan (TMP). A summary of the Plan, as revised in 2019, is included at **Appendix D**.

83. The stated purpose of the TMP is to *sic.* establish a sound management framework for the tuna resources of Kiribati to support the sustainable utilization of tuna fisheries in the non-contiguous waters of Kiribati's EEZs. It applies to all registered tuna fishing vessels flying the Kiribati flag, to foreign fishing vessels and joint-venture fishing vessels licensed to fish in Kiribati including locally-based fishing companies fishing in any of the non-contiguous EEZs. Vessels flying the Kiribati flag fishing on the adjacent high seas are also covered by the Plan.

84. The Plan supports three goals and six associated strategies. The elements specific to MCS are:

Goal 1: Ensure appropriate Consultation and Collaboration
- Strategy 2: Ensure national tuna interests are protected and reflected at the sub-regional, regional and international tuna fisheries management fora.
- Strategy 3: Ensure appropriate collaboration at the sub-regional, regional and international level for the proper management and sustainable use of tuna resources.

Goal 3: Ensure proper Conservation and Protection of Tuna Resources
- Strategy 6: Ensure tuna stocks are maintained at or above levels necessary to ensure their continued productivity.

85. A series of objectives, and associated actions, designed to contribute to each strategy, are identified.

86. The Plan refers to the National Register of Licensed Fishing Vessels, National Register for Authorized Vessels to Fish on the High Seas, Fishing Licenses, the VDS, longline vessel number limits, protected and species of special interest (including in respect of whale sharks), catch retention, observer coverage, FAD closure provisions for both foreign-licensed and Kiribati-flag

fishing vessels, closure of archipelagic waters and territorial seas, a prohibition of fishing on anchored FADs and fishing within one nautical mile of identified seamounts in the Gilbert, Phoenix and Line Islands Groups. It also describes reporting and monitoring requirements, including logsheet e-reporting, where possible, port monitoring and transhipment.

87. The Plan is to be reviewed from time to time, as considered necessary.

6.8 MFMRD structure and function

88. Although not yet formally adopted, the proposed structure of the Ministry is presented at Figure 4. The Ministry's staff complement is approximately 162 with 46% in the Coastal Fisheries Division, 14% in LCD and 7% in the Seafood Verification Division's (SVD) Competent Authority. A legal officer is seconded permanently from the Attorney General's Office for drafting and supporting prosecutions and a HR Officer is seconded from the Public Service Commission to assist with human resource planning, development and administration.

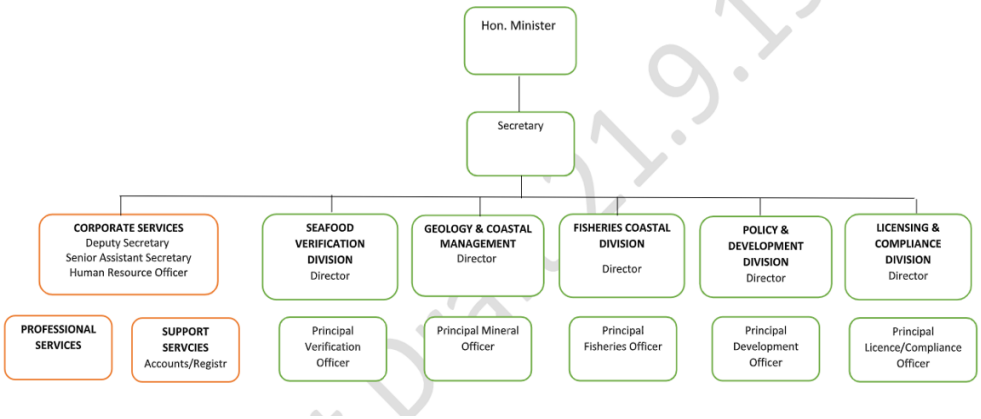


Figure 4. The proposed organizational structure of MFMRD.

89. Of the 22 staff posts provided for in the current LCD establishment, two are vacant. 57% of current staff are females and the average age of all staff is 33 years. The average length of employment for current staff is 6.4 years with three staff currently completing their probationary period. One staff member has a Masters' degree and there are four with graduate degrees in science or marine affairs.

90. LCD supports seven administrative business functions:

a. Licensing
b. VMS
c. Data
d. VDS
e. Compliance
f. Transhipment monitoring
g. Observer programme

91. A summary of activities for boarding and inspection, transhipment monitoring, VMS and the observer programme is presented in **Appendix E.**

92. LCD's structure is headed by a Director-level (L4) appointment. There are two L5's (Principal Fisheries Officers) and one L6 (Senior Fisheries Officer). The remaining staff are appointed across Levels 9 to 18 with 13 LCD staff appointed between L10 and L18.

93. MFMRD's surveillance and compliance monitoring activities are supported by the Police Maritime Unit (PMU). The unit has a staff of 36 personnel under three sections: the marine platform (the Pacific Patrol Boat, the *RKS Teanoai*) operating with a crew of 19, maintenance and workshop and an Operations Unit. One of the posts at the PMU is termed a VMS Watch Officer.

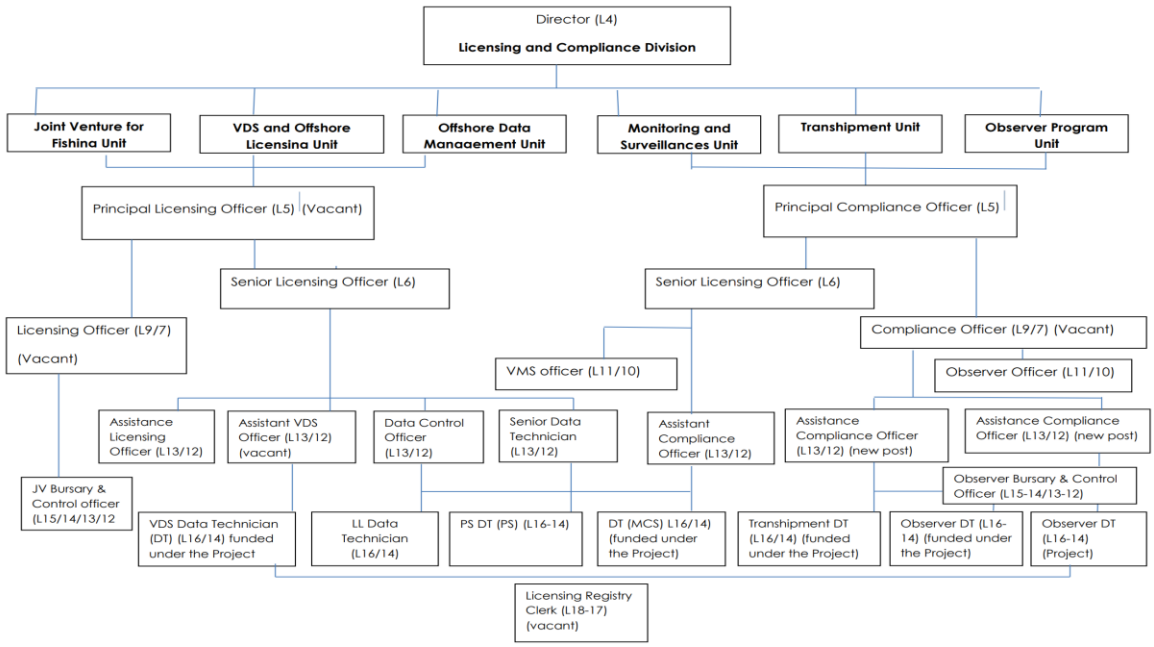


Figure 5. The structure and function of MFMRD's LCD.

6.9 MFMRD budget

94. The actual and projected budgets for MFMRD for the period 2014-2021 are presented at Figure 6. Considered against revenue from the fisheries sector for the period 2014-2016 (Figure 1), the MFMRD budgets represent 1.5-3.1% of fisheries revenue. Although it varies between years, the annual MFMRD budget is projected to increase 146% over the 8-year period between 2014 and 2022. In addition, over that period, the support for the MFMRD work programme will be supplemented, in cash or in kind, as a result of activities supported by development assistance partners.

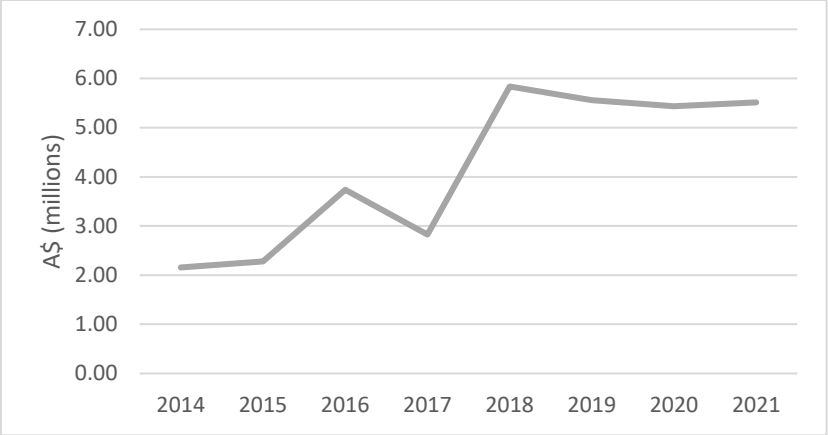


Figure 6. MFMRD budget 2014-2018 with 2019-2021 projections[21, 22])

95. As fisheries revenue continues to account for increasing proportions of Government revenue as a result of the successful management of the VDS, it is in the Government's interest to ensure that MFMRD is adequately resourced to be able to extract optimal sustainable economic benefit in an efficient manner. The size of the budget is not necessarily a reflection of this importance. It is the efficiency of the use of funds that is the key consideration.

96. There are numerous indicators, across both coastal and LCD, borne out in this review and supported by a strengths, weaknesses, opportunities and threats (SWOT) analysis and a risk analysis, the outcomes of which are presented below, that confirm that in order to optimise returns from the fisheries sector there are opportunities for improved efficiencies across MFMRD. These improvements will involve a combination of:

a. improved working environment;
b. recruiting additional competent staff, and
c. achieving efficiencies associated with systems and processes.

6.10 LCD 2019 priorities

97. LCD staff identified priorities for 2019 included:

a. satisfactory resolution of the EU yellow card issue;
b. develop mechanisms to more efficiently service annual reviews of WCPFC, PNA, HMTC and national developments and update legislation as necessary (through flexible approaches that minimise time required for adoption and/or endorsement);
c. develop coordination processes and systems for briefings, information sharing/storage/analysis, operational planning and joint risk-assessment between MFMRD and all relevant agencies (i.e. police, Attorney Generals, etc.);

[21] The 2019 forecast MFMRD income, principally from license and transhipment fees, is a 38% increase on the 2018 income. The proposed budget is a 38% increase on the 2018 budget and represents 6% of income. Licensing and Compliance activities account for 99.8% of projected income with the balance generated from coastal fisheries-related activities. Expenditure in Licensing and Compliance is forecast to be 19.5% of MFMRD's budget. That of the Coastal Division is projected to be 18.7% in 2019. A analysis of trends in MFMRD's budget allocation, relative to fisheries income for Kiribati over the last 5-10 years, was not undertaken but could be informative in terms of understanding the Government's support for MFMRD's critical role and services as fisheries revenue has grown.

[22] http://www.mfed.gov.ki/sites/

d. develop a MCS manual that includes standard operating procedures;
e. establish a comprehensive MCS data management system supporting quality-assured data that enables automated cross-checking (verification) of different MCS datasets;
f. through cooperative arrangements with neighbouring ports, implement pre-fishing inspections for all fishing vessels before a license is issued. Pre-fishing inspection is an MTC. Vessels should be inspected annually at one of the key regional ports for: MTU, vessel gear, storage/freezer capacity, markings, mitigation measures, wire trace, master and crew docs, safety, etc., and
g. finalize the EEZ boundary delimitation process with neighbouring countries and incorporate the agreed boundaries into the FFA VMS system[23].

6.11 SWOT

98. To assist with understanding challenges and rewards, frustrations and motivating factors associated with the LCD workplace, staff undertook a SWOT exercise. A consolidated summary is at **Appendix F**. The key outcomes were:

a. universal dissatisfaction with the office working conditions which are cramped and untidy. Staff consider they are working in an environment unfit for occupation;
b. common view that, in spite of the work environment, staff are committed, hard-working and that senior staff are well qualified. However, lengthy absences of senior staff on overseas travel is de-stabilizing;
c. staff are proud of being involved in the area that makes the largest contribution to the Kiribati economy. They have confidence in the systems they are responsible for to ensure data is current (e.g. licensing);
d. internet connectivity and power disruptions adversely impact productivity, and, within MFMRD, there is a slow uptake of new technology (mainly due to budget limitations);
e. there are concerns that inter-government agency coordination and collaboration is poor (Island Councils, MELAD, etc.) and that there is some overlap in departmental responsibilities that should be addressed;
f. LCD needs to establish a presence in Kiritimati, and
g. there is a need for capacity building in MCS&E in the form of short courses and workshops and longer-term professional development opportunities.

[23] All maritime boundaries Kiribati shares with neighbouring countries have been negotiated and agreed. An exchange of Diplomatic Notes is required to be completed with Marshall Islands, French Polynesia, Nauru and the United States before the boundaries concerned can be registered with UN DOALOS. Boundaries with New Zealand (Tokelau), Tuvalu and Cook Islands have already been registered.

7. GAPS AND NEEDS ANALYSIS

7.1 Risks

99. MCS strategies and operational plans should primarily be informed by a robust and up-to-date assessment of compliance risks to meeting fisheries management objectives. Such an assessment, in combination with implementation monitoring and review, assists with identifying gaps in existing capacity so that capacity building needs can be assessed (Figure 7). Kiribati does not currently have a national level compliance risk assessment[24]. A long-term goal for MFMRD should be to prepare and maintain such an assessment. In the absence of that, this analysis and assessment focuses on an examination of Kiribati's capacity to deliver on key regional and national MCS obligations. Obligations that are unable to be effectively addressed within existing resources, capacities and skills will suggest areas of possible need.

100. A risk analysis and needs assessment also provides guidance on how to target limited MCS resources to areas of most need. In a resource-constrained environment decisions relating to the best allocation of limited resources are necessary. For example, resources may only be sufficient to achieve 70% of a recommended regional benchmark. However, if the resources available are strategically targeted in the area of most need, such as where data analytics suggests the incidence of IUU is high, 70% of the required surveillance effort may be enough to detect the majority of non-compliance. It is not always the resources that are available that will determine the effectiveness of surveillance but how those limited resources are utilized and deployed. Methodologies such as risk analysis assist in decision-making regarding the most efficient allocation of limited assets.

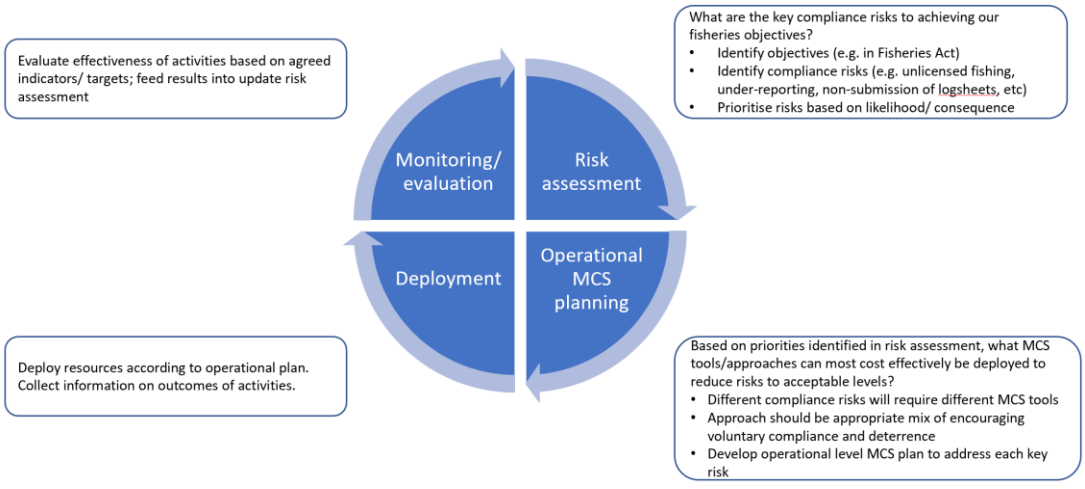


Figure 7. Risk assessment and MCS strategic planning (From Souter, *pers comm.*)

[24] Numerous reports have been prepared for Kiribati that contribute to a compliance risk assessment. They include a NPoA for IUU fishing, a gaps analysis in relation to port State measures and the exchanges with the EU. However, these have not been consolidated into a comprehensive assessment of compliance risk to Kiribati achieving its fisheries management objectives in a form that strategically informs day-to-day decision-making regarding allocation of MCS resources including the identification of MCS institutional strengthening needs. MFMRD needs to develop the capacity to maintain a current compliance risk assessment as a key institutional guiding tool.

101. A risk analysis methodology used to support the preparation of the Regional MCS Strategy in 2009 was adapted to assess risk for Kiribati MCS services[25]. Although the Report is now 10 years old, and that the original assessment was regionally-focussed, the methodology remains sound. It is also adaptable to an assessment of risk for nationally-administered fisheries.

102. The methodology was applied at two scales. The first was to analyse the risks to MFMRD's effective conservation and management of Kiribati's oceanic fisheries sector associated primarily with regional factors. This involved re-visiting the risks presented in the 2009 analysis and updating the risk assessment based on i) new or persisting risks, or ii) the adoption and implementation of measures since 2009 that have addressed the risks identified in that analysis.

103. The second application was focussed on national factors associated with MFMRD's institutional and policy environment and the services is supports for the administration and management of the oceanic fisheries sector in Kiribati. This application of the analysis is more identifiable with the day-to-day business functions of MFMRD.

7.2 Methodology

7.2.1 Regional analysis

104. A five-step process involved:
a. identifying risks;
b. scoring risks;
c. assessing the adequacy of existing MCS measures;
d. assessing 'residual risk', and
e. assessing options for mitigating, or removing, residual risks.

105. The sequence for the analysis, and the considerations at each step, are presented diagrammatically in Figure 8. Once risks had been confirmed, they were each assigned an inherent risk rating (low, moderate, high, severe) based on a likelihood-consequence analysis.

106. Assuming no MCS measures exist, each risk was assigned one of five qualitative ratings for 'likelihood' (rare, unlikely, moderate, likely, almost certain) based on the expected frequency of the risk occurring. Associated 'consequence' (insignificant, minor, moderate, major, serious), based on the expected impacts on the integrity of management arrangements and the achievement of fisheries goals if the risk occurred, were also assessed.

107. The inherent risk rating for each risk was then assigned, based on a function of the likelihood and consequence scores using the "inherent risk matrix" (i.e. risks that were rare and insignificant were rated as 'low'; risks that were almost certain and serious were rated as 'severe').

[25] MRAG (Asia Pacific). 2009b. Safeguarding the Stocks: A report on analytical projects to support the development of a Regional Monitoring, Control and Surveillance Strategy for the Pacific Islands Region. Appendix 3: Compliance Review. Forum Fisheries Agency, Honiara, Solomon Islands. 365 pages. The 2009 review identified 10 business areas for assessment. Additional areas appraised in this review included FAD management, VDS monitoring and Transhipment monitoring. Electronic monitoring is included under Observer Schemes.

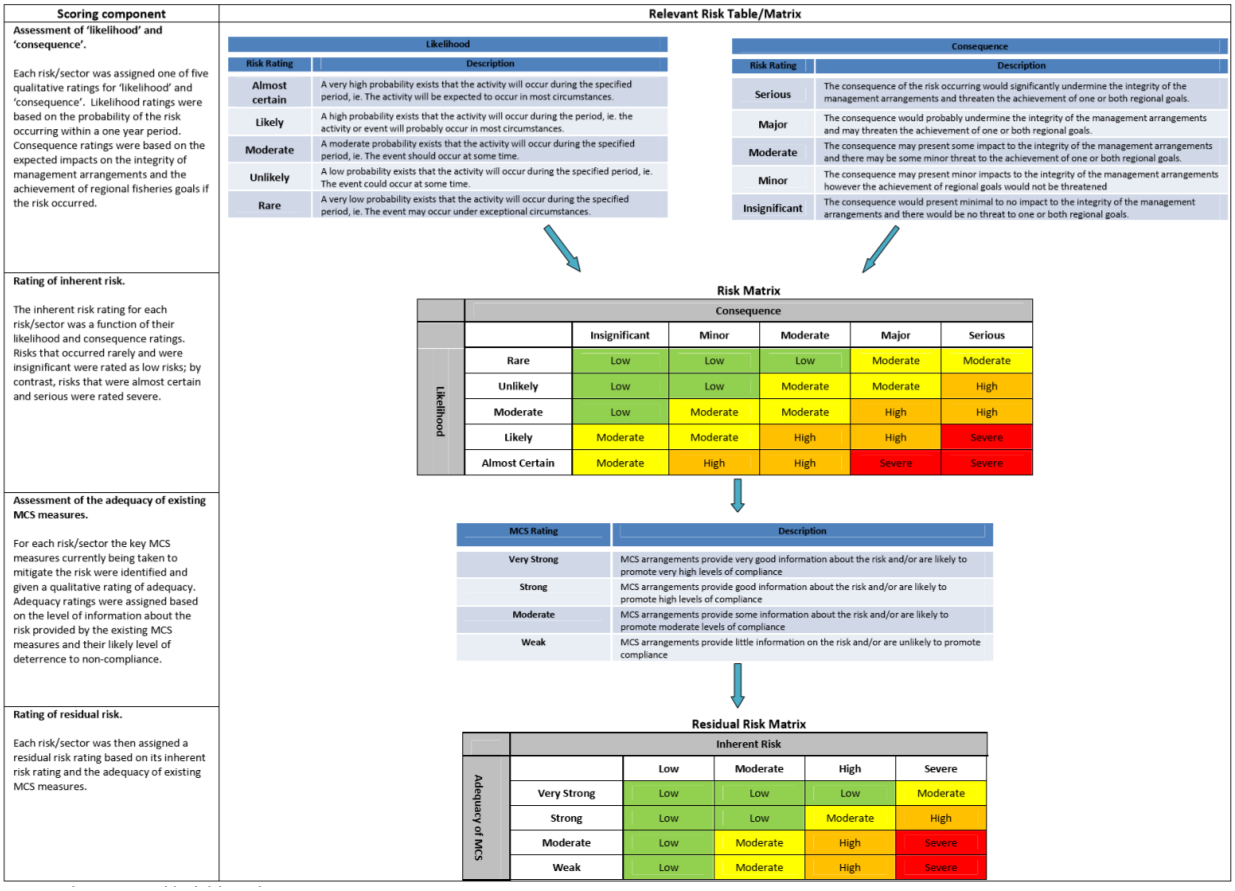


Figure 8. Sequence of considerations (From MRAG (Asia Pacific), 2009b)

108. For each risk the key MCS measures currently being taken to mitigate the risk were identified and given a rating for adequacy (weak, moderate, strong, very strong). Adequacy ratings were assigned based on the degree to which existing MCS measures were likely to promote compliance, as well as the level of information provided about the risk. A residual risk rating was then assigned to each risk based on the inherent risk rating and the adequacy of MCS measures using the "residual risk matrix".

7.2.2 Nationally-focused analysis

109. The same methodology applied to the regional analysis, depicted in Figure 8, was adapted for the national analysis. The nationally-focussed methodology introduced an additional initial step to confirm MFMRD's key MCS-related business functions. Once the identification of the business functions was done, the same 5-step procedure in the regional analysis was applied.

110. A nationally-focussed analysis is primarily concerned with institutional performance. It concentrates on MFMRD's services and operations in respect of national, regional and

international obligations and requirements. In servicing these obligations, MFMRD's LCD supports 13 business areas each of which is a significant MCS function in itself. The business areas are represented diagrammatically in Figure 9.

111. A risk assessment of each of the current MCS business functions was undertaken. It involved identifying five or six key components of each business function. Each component carries an associated risk that, if realised, will adversely influence the performance of that function.

112. The qualitative likelihood-consequence appraisal (Figure 8) was applied to each component and an inherent risk assessment was constructed using a function of these two factors. A subjective assessment of the current MCS service for each component was undertaken to rank existing MCS services as very strong, strong, moderate or weak. The difference between the assessed risk for a component and the existing institutional capacity to manage that risk was then used to assess the residual risk. This, in effect, ranks the needs of those components of the MCS business functions as low, moderate high or severe (Table 7, right column).

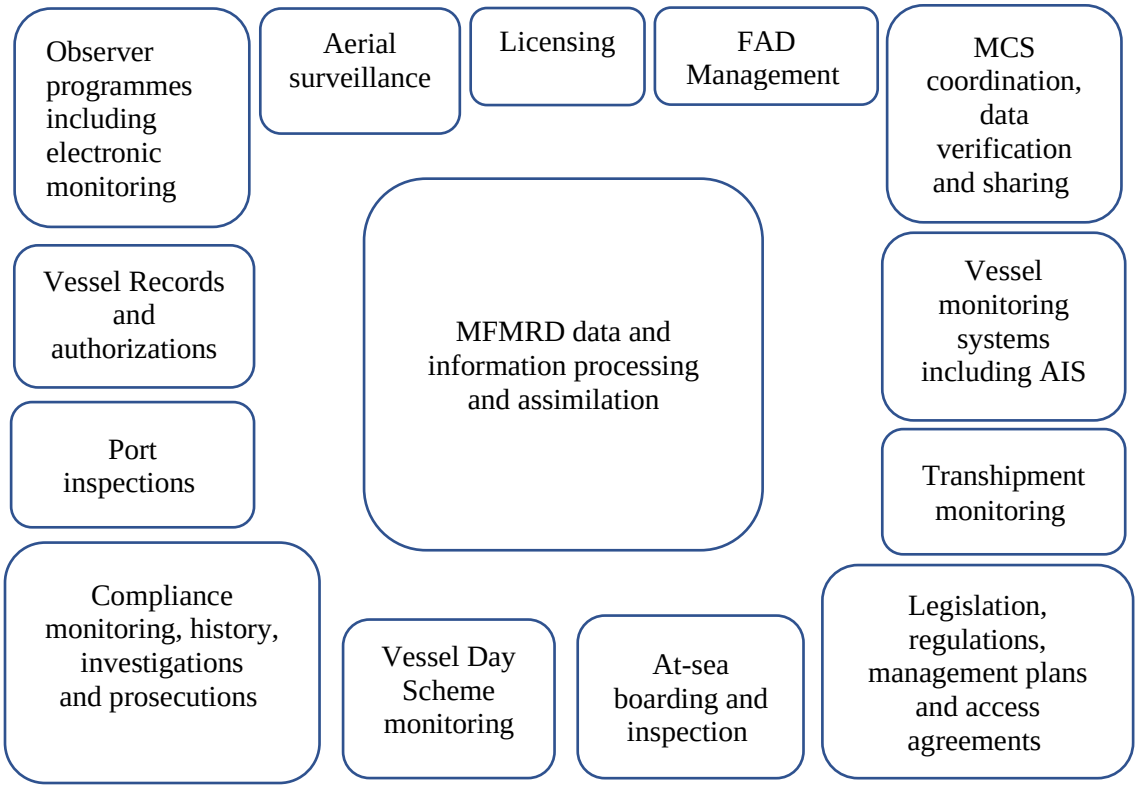


Figure 9. Subject areas for MCS functions administered by MFMRD.

7.3 Risk assessment outcomes

7.3.1 Regional analysis

113. Fifty-three risks were included in the regional analysis covering the longline and purse seine components of the fishery or the WCPO fishery as a whole. The assessment of residual risk, relative to the inherent risk were:

Rating	Inherent Risk	Residual Risk
Low	6	16
Moderate	23	17
High	21	16
Severe	3	4

114. The outcomes for the regionally-focussed risk analysis are presented at **Appendix G.**

115. The regional analysis identified 53 separate risks four of which were rated as 'severe' residual risks, and a further 16 were rated as 'high' residual risks. They include:

a. over-exploitation in areas outside the FFA membership in the western region;
b. non-compliance by licensed vessels;
c. inadequate and mis-reporting:
    i. mis-reporting of target species;
    ii. mis-reporting of bycatch species, and
    iii. in terms of coverage for longline logsheet submission;
d. unlicensed fishing;
e. excess capacity, where MCS is weak;
f. weak traceability through the supply chain;
g. illegal transhipping creating the potential for laundering catch;
h. weak high seas MCS, and
i. reasonably strong MCS arrangements for purse seine fleets but relatively weak arrangements for the longline fleet results in a high relative risk among the longline sector.

116. Within the region, in a separate report for FFA, MRAG Asia Pacific (2016) concluded that the majority of IUU activity in the FFA region is associated with vessels licensed by FFA member countries. Inadequate reporting – particularly of target species – was confirmed as high-risk and it was recommended that catch monitoring and catch validation throughout the supply chain be strengthened.

117. In addition, unlicensed fishing was identified as a risk amongst some fleets and areas. It was projected that, if fleets become increasingly regulated, unlicensed fishing may increase. If in-Zone MCS is strengthened, then it is likely that IUU activity will be displaced into the adjacent high seas. As a result, the strengthening of high seas MCS arrangements through the WCPFC, will be required. This will include addressing the perennial challenge of achieving more than 5% human at-sea observer coverage including through implementation of electronic monitoring (EM).

118. High seas transhipment by longliners is an area of potentially high risk of IUU and where current data acquisition is poor. Observer data for high seas transhipment submitted to SPC or WCPFC is low and there are no standardised forms for the collection of high seas observer data (MRAG Asia Pacific, 2019). While standardisation of data collection requirements is a regional matter, that should be taken up in WCPFC, Kiribati observers are among those engaged to monitor high seas transhipments by longliners. The current issues associated with observing high seas transhipment reflects poorly on the performance of the Kiribati observers engaged for this purpose.

119. Another risk, shared with the national analysis, relates to the quality of available information. Quality assured information is a cornerstone for effective MCS. In the region generally quality of data information available to support MCS is a significant impediment to maximising the application of limited MCS resources to combat IUU fishing within EEZs and on the adjacent high seas.

7.3.2 National analysis

120. A total of 75 components were selected across the 13 business functions supported by MFMRD for inclusion in the risk analysis. The assessment of residual risk, relative to the inherent risk were:

Rating	Inherent Risk	Residual Risk
Low	4	19
Moderate	30	19
High	34	30
Severe	7	7

121. The nationally-focussed analysis (Table 7) identified severe MCS gaps associated with:
a. inadequate systems for the acquisition, storage and sharing of MCS data and information among relevant agencies and without appropriate confidentiality conditions;
b. FAD management, and
c. at-sea and aerial surveillance although aerial surveillance in particular is dependent on he availability of regional assets and resources.

122. Thirty-six high residual risks, suggest gaps in relation to:
a. reviewing and strengthening legislation including to satisfy market State requirements;
b. investigations and prosecutions;
c. license conditions;
d. observer programme support, and
e. port inspection and controls including procedures and systems supporting transhipment monitoring.

123. During subsequent discussion of these outcomes, data and information management (particularly in relation to i) integrating data from multiple sources, ii) monitoring and servicing regional obligations and commitments), and MCS coordination, were considered priority needs

across all 13 functional areas. The planned Fisheries Management Platform (FMP), under development by Satlink, should address the systems support side of this need (See Section 8 – information management)

124. The limited, if any, implementation of management arrangements for FADs across the oceanic purse seine fleet in Kiribati exposes an area of significant risk. This is in terms of regional arrangements and obligations agreed through the PNA and WCPFC and domestic arrangements particularly those relating to the Phoenix Islands Protected Area (PIPA).

125. The PNA is reasonably well advanced with the negotiation of a fourth Implementing Agreement which seeks to establish increased regulation for FAD use among fleets licensed by the PNA. Among other provisions, the Agreement will include mechanisms to support FAD registration and direct communication of FAD details, including position, by satellite service providers who provide satellite-tracked buoys to the FADs deployed by the WCPO purse seine fleet. With the implementation of the Agreement, the PNA Office and PNA members, including Kiribati, will have the capacity to monitor FADs used by vessels they license throughout the region.

126. This capacity will be of significant benefit to MFMRD for several reasons. The first relates to being able to monitor fishing activity within the 24nm contiguous zone of the EEZ particularly to monitor any FAD incursions into the contiguous zone and so breaches of license conditions.

127. The second opportunity relates to monitoring FAD incursions into the PIPA. This is an on-going risk area for MFMRD with numerous incursions reported. As the PIPA is remote, and MFMRD and the PMU have limited capacity to expend significant periods conducting surveillance of the PIPA, continuous FAD tracking provides an opportunity to develop a response to FAD incursions through new provisions in license conditions. Among conditions that could be considered:

a. responsibility for the FAD (including recovery and clean-up of any 'beached' FAD) rests entirely with the FAD owner;
b. a PIPA FAD incursion will result in a fine that is a significant deterrent for any possible future incursions, and
c. failure to pay jeopardises future license opportunities.

128. Kiribati has expended considerable effort building its human at-sea observer programme in recent years. It now supports at least 160 observers and will soon have 30 trained observer de-briefers. While this is a significant improvement relative to the situation reported by Carnie (2013) issues remain in relation to:

a. resourcing and capacity to undertake cost recovery from vessels;
b. efficient financial systems to allow for prompt payment to observers and other service providers;
c. perceptions associated with maintaining impartiality and independence from the vessel. This is difficult when the vessel is paying directly for costs such as flights, accommodation, cash advances etc.;

d. recent obligations for programmes to provide 2-way communication devices and personal locator beacons (PLBs) etc. means there is a need for efficient asset tracking procedures and systems, and
e. the adequacy, or not, of observer insurance and systems to verify the insurance cover provided by vessels.

129. Transhipment monitoring is another area that requires considerable attention. In Kiribati waters purse seiner transhipments are inspected in port[26]. Longliners transhipping at sea are not subject to inspection but have an observer on board if fishing within the EEZ. These observers complete a GEN 3 compliance form.

130. Given the increasing importance of management measures on longliners, and an increase in the number of longliners active in the Kiribati EEZ and adjacent high seas, MFMRD has identified a need for closer scrutiny of activities of longline vessels. This will include building capacity to analyse vessel behaviour and interactions as indicators of transhipment. If longline transhipment at sea was prohibited logistic support associated with monitoring would be significantly reduced.

131. To strengthen transhipment monitoring capacity, it is recommended that a combination of:
a. skills building;
b. increasing the numbers of monitoring personnel available;
c. better equipping monitoring personnel, for example with 2-way radios, and
d. formally advising discharging vessels and receiving vessels of responsibilities and expectations in relation to monitoring personnel including the provision of food and refreshments at reasonable frequency.

132. Addressing these weaknesses would provide supplementary benefits for other MCS components (i.e. improving data management will have direct benefits for licensing through improvements in the quality of information upon which licensing decisions are made).

[26] The comprehensiveness of 'inspections' was not assessed. It is recommended that MFMRD consider undertaking an assessment to evaluate procedures, data acquisition methodology and identify weaknesses for its transhipment monitoring activities.

Table 7. An assessment of the inherent MCS capacity compared to a risk materializing reflecting relative needs (residual risk) for MFMRD MCS business function.

Strategic risk for Kiribati	Risk	Likelihood	Consequence	Risk rating	Adequacy of existing MCS	Residual risk
Legal environment Legislation, regulations and management plans are outdated and not harmonised.	Legislation is inadequate to implement and enforce HMTCs, PNA, WCPFC, relevant IATTC and market State measures.	Unlikely	Major	Moderate	Strong	Low
	Legislation is not routinely made available to relevant fisheries, police, customs and judiciary ministries.	Moderate	Moderate	Moderate	Moderate	Moderate
	Maritime zones and shared boundaries are not formally negotiated and agreed.	Unlikely	Minor	Low	Very strong	Low
	Legislation provisions and implementation do not meet market State requirements.	Likely	Major	High	Moderate	High
	Management plans do not exist and/or are not available on request.	Unlikely	Minor	Low	Moderate	Low
Coordination and information management MCS coordination is ineffective, information management systems are sub-optimal and confidence in data quality is low.	Inadequate systems for the acquisition, storage and sharing of MCS data throughout relevant agencies and without appropriate confidentiality conditions.	Almost certain	Major	Severe	Low	Severe
	100% of catch logbooks are not collected within 45 days of end of trip.	Likely	Moderate	High	Moderate	High
	Processes not established to share data and information with foreign MCS agencies in support of regional MCS operations, with appropriate confidentiality conditions.	Moderate	Major	High	Moderate	High
	Domestic systems not established for coordination of MCS operations between relevant agencies.	Likely	Major	High	Moderate	High
	Automated systems have not been established to cross check and verify MCS and fisheries data.	Likely	Major	High	Weak	High
Authorizations to Fish and Vessel Records	Registered vessels are not specifically prohibited from fishing on HS unless authourised to do so in accordance with WCPFC measures.	Unlikely	Moderate	Moderate	Strong	Low

Authorizations to Fish are not appropriately screened and monitored and Vessel Records are not quality assured.	Details of registered vessels authorised to fish are not recorded and placed on WCPFC record consistent with WCPFC requirements, including a unique vessel identifier.	Unlikely	Major	Moderate	Strong	Low
	Vessels and fishing gear are not marked in accordance with WCPFC and HMTCs.	Likely	Moderate	High	Weak	High
	Catch and effort data from registered vessels is not collected, including via e-reporting, stored and reported to coastal State/SPC and/or WCPFC.	Unlikely	Serious	High	Strong	Moderate
	Vessels that may have breached WCPFC CMMs and/or PNA Implementing Arrangements not investigated and prosecuted.	Moderate	Serious	High	Strong	Moderate
	Vessels are not specifically prohibited from fishing illegally in foreign EEZs.	Unlikely	Serious	High	Strong	Moderate
Licensing Licensing conditions do not reflect agreed obligations and terms and conditions.	License form information does not meet or exceed HMTC. (***Needs to be updated)***	Moderate	Moderate	Moderate	Moderate	Moderate
	License conditions are not consistent with HMTC. ***(inspection prior to licensing)***	Moderate	Major	High	Moderate	High
	License conditions are not consistent with VDS monitoring requirements.	Moderate	Serious	High	Moderate	High
	License conditions are not consistent with PNA Third Implementing Arrangement	Moderate	Serious	High	Moderate	High
	License conditions are not consistent with WCPFC MCS requirements.***(needs 2018 updates)***	Moderate	Serious	High	Moderate	High
	Licenses are issued to vessels not necessarily with FFA approved MTU and on the WCPFC and the FFA Record of Fishing Vessels.	Unlikely	Serious	High	Moderate	High
	Up-to-date vessel license lists are not available to port and at-sea inspection personnel.	Unlikely	Major	Moderate	Weak	Moderate
VMS	Not all licensed foreign fish vessels carry approved MTUs reporting, consistent with HMTCs, via FFA when in EEZ.	Unlikely	Major	Moderate	Strong	Low

Vessel Monitoring Systems are mandatory but VMS is not effectively managed and administered for MCS purposes.	Not all licensed vessels carry MTUs, consistent with HMTCs and report via FFA when in foreign FFA EEZ.	Unlikely	Serious	High	Strong	Moderate
	Not all local fishing vessels report to national VMS where required	Rare	Major	Moderate	Strong	Low
	National VMS office, staff and equipment are not always operational and not adequately trained.	Moderate	Major	High	Moderate	High
	VMS is not monitored and potential violations or malfunctions are not immediately queried.	Unlikely	Major	Moderate	Moderate	Moderate
	Vessels with non-reporting MTUs do not report position details at least every 8 hours until MTU fixed.	Unlikely	Moderate	Moderate	Weak	Moderate
	Port inspection personnel do not have access to VMS data.	Moderate	Major	High	Moderate	High
Vessel Day Scheme National administration of the Vessel Day Scheme is not consistent with regionally agreed terms which undermines the integrity of the Scheme.	Kiribati has not established measures to ensure that the total number of fishing days by purse seine vessels in its EEZ, excluding vessels operating under the Party Allowable Effort (PAE) of Kiribati and by Kiribati-registered FSM Arrangement vessels operating in the EEZs of other Parties (in accordance with Article 3.2 of the VDS), does not exceed Kiribati's PAE or Adjusted PAE in any Management Year.	Unlikely	Major	Moderate	Strong	Low
	Kiribati does not have systems in place to verify fishing day and non-fishing day claims.	Moderate	Serious	High	Moderate	High
	Kiribati does not require, under its licensing conditions, for logsheet catch and effort e-reports to be lodged directly from the vessels to MFMRD.	Moderate	Major	High	Moderate	High
	Kiribati has not established and implemented procedures to report to the VDS Administrator, within 21 days of being advised that 80% on PAE has been achieved, of measures it has implemented to ensure adherence to its PAE or Adjusted PAE, including any arrangements for transfer of PAE pursuant to Article 7 of the VDS.	Unlikely	Major	Moderate	Strong	Low

Transhipment monitoring Weak administrative and monitoring procedures result in incomplete and low-quality transhipments data and inadequate compliance monitoring.	Kiribati has formally designated ports for transhipment.	Unlikely	Minor	Low	Very strong	Low
	Kiribati has not established and implemented measures to ensure that vessels do not tranship to or from a vessel flagged to a non-CCM unless that vessel is authorized by a decision of the WCPFC or IATTC.	Unlikely	Major	Moderate	Moderate	Moderate
	Not all landings and transhipments of fish in port are inspected by trained and certified officials.	Moderate	Major	High	Weak	High
	As provided for in WCPFC CMM 2009-06, a Transhipment Declaration, is not submitted to the WCPFC Secretariat.	Unlikely	Moderate	Moderate	Weak	Moderate
	Kiribati has not established and implemented procedures, as appropriate, to validate information received from vessels undertaking transhipment using all available information such as catch and effort data, position data, observer reports and port monitoring data.	Likely	Major	High	Weak	High
	Kiribati does not ensure that vessels it is responsible for carry observers from the WCPFC Regional Observer Programme (ROP), or equivalent, to observe transhipments at sea.	Likely	Major	High	Moderate	High
	Kiribati does not report all transhipment activity in its Part 1 Report to WCPFC and, as required, to IATTC.	Likely	Major	High	Moderate	High
FAD Management[27] Inadequate administration of the FAD Management Plan and associated regionally-agreed measures results in	Kiribati has not implemented FAD-related management measures agreed at WCPFC (CMM 2018-01) that are consistent with the May 2008 Third Arrangement Implementing the Nauru Agreement.	Likely	Major	High	Weak	High
	Kiribati has not developed and implemented a Management Plan, consistent with the PNA third Implementing Arrangement, and has not notified	Almost certain	Moderate	High	Weak	High

[27] The PNA is in the process of developing a fourth Implementing Arrangement that is intended to address many FAD management-related issues such as registration and tracking.

low quality FAD-related fisheries data and adverse implications for management of regionally-shared tuna resources.	the WCPFC Secretariat of the domestic vessels to which the FAD closure will not apply within 15 days of the arrangement being approved.					
	Inspection and verification procedures are not established and implemented to ensure that FAD design and construction comply with regionally-agreed standards	Almost certain	Moderate	High	Weak	High
	Kiribati has not established, and implemented, procedures to confirm that each of its purse seine vessels shall have deployed at sea, at any one time, no more than 350 drifting Fish Aggregating Devices (FADs) with activated instrumented buoys.	Almost certain	Major	Severe	Weak	Severe
	Kiribati has not established procedures to monitor and verify FAD fishing does not occur in the Phoenix Islands Protected Area (PIPA).	Likely	Major	High	Moderate	High
Observers National observer programme standards, including in relation to coverage, result in low confidence in observer programme data and information.	Trained observers are not carried on 20% of all fishing trips by foreign fishing vessels in EEZ[28].	Likely	Moderate	High	Weak	High
	Kiribati (as a flag State) does not implement 100% coverage on PS vessels (ROP accredited).	Rare	Major	Moderate	Very strong	Low
	Trained observers are not deployed on at least 5% of fishing trips by local fishing vessels.	Moderate	Moderate	Moderate	Moderate	Moderate
	Kiribati does not have access to sufficient numbers of trained, accredited and contracted observers.	Rare	Major	Moderate	Strong	Low
	Kiribati does not have adequately trained and resourced observer coordinator and observer de-briefers.	Likely	Major	High	Weak	High
	Observer reports are not entered into database and/or forwarded to FFA/SPC and WCPFC.	Moderate	Moderate	High	Moderate	Moderate
	Kiribati has not commenced planning and research to support electronic monitoring.	Likely	Minor	High	Weak	High

[28] Purse seiners operating in Kiribati's EEZ have 100% observer coverage. Kiribati has recently offered fishing opportunities to foreign longliners, under a vessel day licensing arrangement. The Kiribati EEZ was closed to foreign longliners in 2017. Observer coverage information for longliners purchasing vessel days is uncertain. More than 20% observer coverage of all trips may be achieved but only as a consequence of the relatively high coverage for the purse seine fishery.

Port controls Port inspections and control procedures and capacity do not satisfy market State requirements	Port inspectors are not adequately trained, certified and resourced.	Likely	Major	High	Weak	High
	Government does not prohibit landings and transhipments where it has been established that the catch has been taken illegally in a foreign EEZ.	Unlikely	Major	Moderate	Strong	Low
	Government does not prohibit landings and transhipments where it has been established that the catch has been taken in manner that undermines VDS, WCPFC or IATTC provisions.	Unlikely	Major	Moderate	Strong	Low
	Pre-fishing inspections are not undertaken for 100% of eligible trips.	Almost certain	Serious	High	Weak	High
	The WCPFC Secretariat has not been formally notified of the Kiribati contact for port inspection-related correspondence.	Unlikely	Minor	Low	Strong	Low
	Reports, detailing evidence from port inspections of illegal fishing (EEZ, HS, foreign EEZ), are not provided to the appropriate domestic or foreign authorities and/or WCPFC Secretariat and/or IATTC.	Moderate	Major	High	Moderate	High
	As provided for in CMM 2017-02, Kiribati designated ports have not been formally notified to WCPFC.	Rare	Major	Moderate	Very strong	Low
At-sea monitoring and surveillance EEZ and high seas patrols and do not achieve sufficient coverage with boarding and inspections to detect	Kiribati has not ratified and implemented the Niue Treaty and its Subsidiary Arrangement. *(Not the NTSA)*	Likely	Major	High	Weak	High
	Surface surveillance intensity does not meet or exceed the suggested regional benchmark of 6 days per 100,000km² of EEZ (i.e. 206 days for Kiribati). *(Kiribati annually achieves approximately 35% of the benchmark)*[29]	Almost certain	Major	Severe	Weak	Severe
	Kiribati does not have the capability to undertake boarding and inspections in EEZs.	Unlikely	Major	Moderate	Strong	Low

[29] The amount of surface or aerial surveillance required by Kiribati is a function of how serious the risks are that require at-sea boarding and inspection (e.g. unlicensed fishing, shark finning, under-reporting, use of non-prescribed gear etc.). It will include an assessment of the amount of surveillance that is required to deter non-compliant behaviour.

and prosecute IUU fishing	Kiribati does not have the capability to undertake boarding and inspections in HS.	Unlikely	Moderate	Moderate	Strong	Low
	Sightings and inspection data is not properly collected, stored and provided (where appropriate) to relevant authorities & WCPFC.	Moderate	Moderate	Moderate	Weak	Moderate
	At sea patrols are not provided with all relevant VMS and fisheries data and planning is not done strategically (i.e. based on a risk assessment).	Moderate	Major	High	Moderate	High
Aerial surveillance EEZ aerial surveillance coverage is low and provides limited added value to at sea surveillance efforts to detect and prosecute IUU fishing.	Aerial surveillance does not meet or exceed benchmarks for assessing use of existing regional assets to meet identified risks.	Almost certain	Major	Severe	Weak	Severe
	Sightings and inspection data is not properly collected, stored and provided (where appropriate) to relevant authorities and WCPFC and FFA.	Moderate	Moderate	Moderate	Moderate	Moderate
	Aerial patrols are provided with all relevant VMS and fisheries data.	Unlikely	Moderate	Moderate	Moderate	Moderate
Compliance monitoring, history, investigations and prosecutions Accessible details for the compliance history of fishing vessels are out-of-date and incomplete, a register of Vessels of Interest leads to	Suspected license violations are not investigated and prosecuted.	Moderate	Major	High	Strong	Moderate
	Suspected VMS violations are not investigated and prosecuted.	Moderate	Major	High	Moderate	High
	Observer reports of violations are not investigated and prosecuted[30].	Moderate	Major	High	Moderate	High
	Fishing violations detected by surface and aerial surveillance operations are not investigated and successfully prosecuted.	Moderate	Major	High	Moderate	High
	Investigation, prosecution and judicial authorities are not adequately trained and resourced (capable	Moderate	Major	High	Moderate	High

[30] Kiribati has established a Fisheries Administrative Penalty Committee (FAPCOM) which can impose administrative penalties for non-compliance. This is positive in that it means lengthy court proceedings are avoided and cases are dealt with in a relatively timely manner. It also means limited MFMRD resources are not expended on lengthy court processes with the result a breach is more likely to be prosecuted than ignored.

inefficient allocation of limited investigative capacity resulting in limited prosecurial success and undermining Kiribati's MCS efforts.	of collecting analysing, presenting and considering technical evidence (i.e. VMS and catch logbooks).					
	Sanctions are not consistent and adequate in severity to be effective and allow for refusal, withdrawal or suspension of authorization to fish.	Likely	Major	High	Moderate	High

7.4 Immediate staff strengthening needs

133. Based on the needs' assessment, LCD's professional and technical capacity requires priority attention. While this should be elaborated in a long-term Capacity Development Strategy[31], the immediate need is for experienced, capable, staff across Levels 9 to 6 to both provide support to senior staff and take some supervisory responsibility for more junior appointments in relation to:

a. regional obligations and engagement;
b. transhipment monitoring and port controls;
c. observer program management; and
d. information management.

134. Subject to securing satisfactory office space for the LCD as a unit, the following recruitments, or re-designation of existing positions[32], are recommended for immediate consideration:

a. L6 Senior Policy Officer responsible for monitoring and coordinating international and regional obligations and reporting including to the WCPFC CMS;
b. L6 Observer Programme Manager[33];
c. L7-8 Observer Programme De-briefer Coordinator;
d. L9 Observer Programme/Transhipment Coordination Officer – Kiritimati;
e. L9 Observer Programme Training and Standards Officer;
f. L7-8 Transhipment Monitoring Coordinator, and
g. L6 MCS data and information synthesis analyst (x2)

135. These appointments would contribute to the following outcomes:

a. release time for senior staff to engage in strategic planning, including overseeing regular compliance risk assessment;
b. enable senior staff to develop and implement programmes to address current areas of weakness including surveillance planning, FAD management and data integration and analytics;
c. result in improved systems and processes supporting the observer programme, transhipment monitoring and port controls;
d. lead to more efficient use of MCS assets through strategic targeting and allocation;
e. lead to improved data and information to support decision-making, and
f. reduced non-compliance and IUU fishing.

7.5 Longer-term capacity development possibilities

[31] The Tabwan Waara Project is in the process of developing a long-term HR strategy based on a comprehensive needs and gaps assessment. This will provide for the period through to 2025.
[32] If no existing posts are re-designated to accommodate the recommendations, and appointments are made to newly established positions, the total annual cost will be less than A$100K. This represents a 1.1% increase in the 2019 MFMRD budget and 0.07% of the estimated annual value of the offshore fishery to Kiribati.
[33] Increased managerial-level staffing has been identified as a critical need for the observer programme for many years. For example, see Carnie (2013).

136. A MCS human resource development strategy will include on-going study offering opportunities for staff to acquire formal professional qualifications. Apart from opportunities for fisheries-related study at tertiary institutions in Fiji, Australia and New Zealand, for many years FFA and SPC have, and continue to, develop specialist training opportunities. These include short term workshops, fellowship attachments and longer-term courses such as the Certificate IV MCS and E course delivered at USP.

7.4.1 Regional opportunities in MCS training

137. In 2012 a training needs analysis confirmed regional demand for an accredited foundation course for all MCS personnel that provided an introductory overview to MCS activities and the general skills and knowledge required to undertake a career in MCS (Carnie and Brown, 2012). In 2014 the MCS Fisheries Enforcement and Compliance course was developed and accredited as a Certificate IV Course at USP. The first intake was in October 2014.

138. The programme consists of four separate courses. Each course is a discrete package of MCS&E education that is closely aligned with the role and responsibilities of a MCS Officer working in a FFA member country. All four courses must be passed in order to attain the academic qualification of the Certificate IV in Fisheries Enforcement and Compliance.

139. The cost of each of the four courses is approximately FJ$550. The entire Certificate programme costs approximately $2,200 FJD with the FFA paying students fees to the USP. The Courses are primarily delivered through an online format with a 1-week competency-based assessment. The courses offered are:

a. Introduction to Governance and Legal Frameworks
b. Introduction to Fisheries Management
c. Operational Planning and Enforcement Processes
d. MCS Role and Monitoring Tools

140. Southern (2019) reported that approximately 179 Pacific Islands fisheries staff from across the FFA membership, including Kiribati, have enrolled in this MCS training. 147 have successfully completed the Certificate.

141. In 2019, FFA commissioned an assessment of regional needs for enhanced skills development in investigation and prosecution knowledge, skills and competence (Southern, 2019). The conclusion was that there is a strong need to develop an Advanced Fisheries Investigations/Prosecutions (MCS and enforcement skills and competence development) training programme. It was proposed that such a course be offered as an enhancement to the current Certificate IV course in MCS&E. FFA is currently consulting with FFA members regarding this possibility.

142. Other resources include the FFA Prosecutions Manual which is relevant and a valuable tool for assisting with advanced fisheries investigation and prosecution skills development.

143. It is recommended that the MCS HR Capacity Development Strategy incorporate the FFA/USP Certificate IV offering, and any companion courses developed to complement the current Certificate IV Course.

8. INFORMATION MANAGEMENT

144. Information management systems (IMS) are generally built to support business relationships that are characterized by the acquisition, or dissemination, of data, information and services. At a high level, MFMRD external business relationships engage numerous other Kiribati government ministries and agencies and regional and sub-regional organisations (Figure 10). The quality of these relationships may be determined by the quality and timeliness of data, information and services exchanged which means that, in respect of IMS, quality assurance, which is best achieved through the adoption of industry standards, is critical. The development of best-practice IMS required to provide such assurances in the complex data-intensive environment in which MFMRD is both a client and a provider, requires significant strategic planning, analysis and implementation support.

145. An appraisal of an IMS generally starts with a review of documentation that describes current systems and processes. Apart from information for regional systems that MFMRD engages with, FFA, the PNAO and SPC, no MFMRD information management system documentation was available to review. Such documentation would normally describe current infrastructure, procedures, clients and users, data models, standards, processes and services among other elements. This is a task that is currently being undertaken for MRMFD under the New Zealand-supported *Tobwan Waara* Programme.

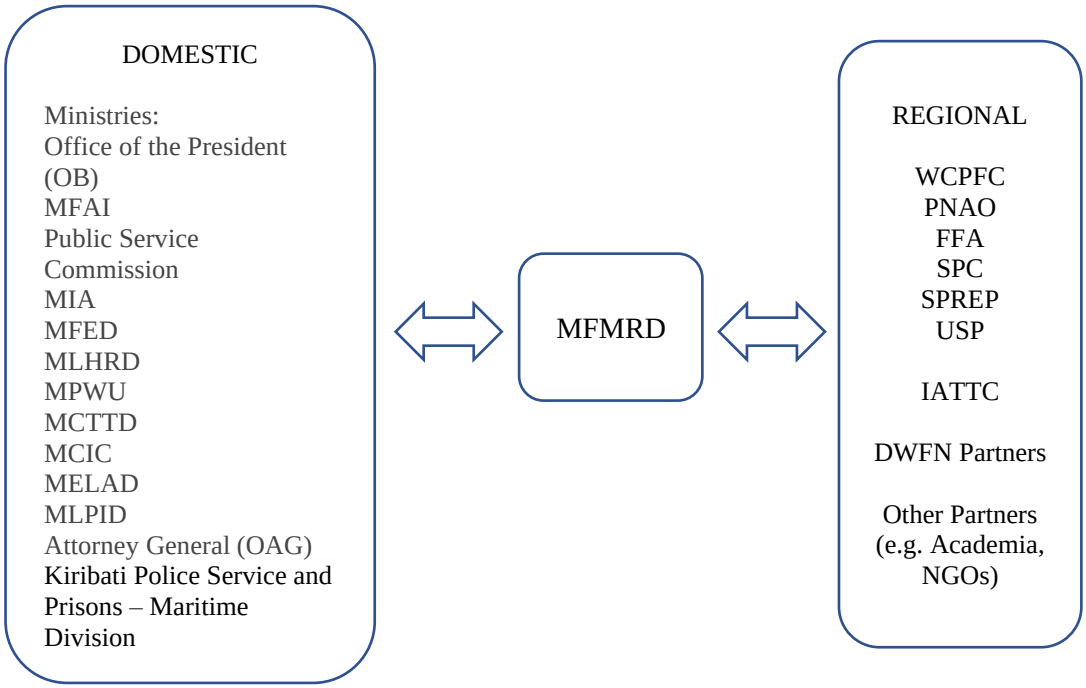


Figure 10. Conceptual model for MRMFD external data relationships.

146. The regional data systems that MFMRD engages with throughout the year are displayed schematically in Figure 11. The primary regional data systems which MFMRD LCD staff engage with on a daily basis are:

a. SPC's TUFMAN2;
b. FFA's RMIF;
c. WCPFC's Vessel Record, and
d. PNAO's FIMS.

8.1 MFMRD

147. MFMRD uses the national IMS portal to facilitate reporting to both SPC and WCPFC and exchange information with FFA and the PNAO (Figure 10). Most MFMRD users access the VMS module regularly but other modules are generally under-utilised. With funding support primarily from New Zealand, FFA is implementing a strategy for FFA member outreach and capacity building to further develop national systems and strengthen MCS applications (see FFA, 2014). The purpose of this initiative is to strengthen the accessibility of quality-assured information to support MCS operations, such as boarding and inspection, and assessments so, for among other reasons, surveillance assets can be more efficiently tasked.

148. A summary profile of each of the FFA, SPC and PNAO systems is at **Appendix H.**

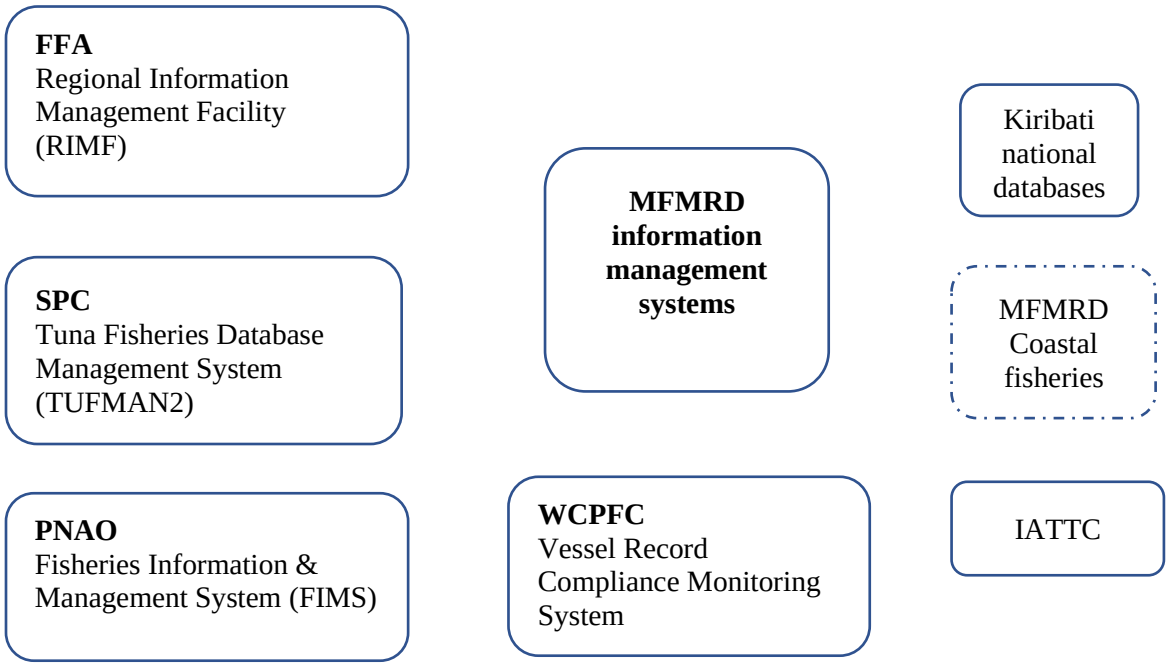


Figure 11. Regional data systems critical to MFMRD's MCS-related business functions.

149. Although MCS TUFMAN is installed at MFMRD, staff report challenges in attempting to use it on a routine basis. The principal contents of MCS TUFMAN include:

a. History of vessel boardings;

b. Vessels that have not been boarded;
c. Vessels that have been boarded, categorized by compliance index rating;
d. Details of patrols in past years;
e. Details of boarding inspections in past years, and
f. WCPFC Part 2 Data for boarding and patrols.

150. The rapidly emerging information and communications technology environment creates both opportunities and challenges for an administration such as MFMRD where costs and access to appropriately skilled data and information professionals are key considerations in determining future development strategies.

151. In addition, like its Pacific Islands neighbours, IMS maintenance in Kiribati encounters numerous challenges. They include limited personnel and financial resources, legal and commercial sensitivities about data sharing and confidentiality, poor bandwidth and a general absence of rigor, utilising best-practice standards, for the design and development of IMS.

152. Nevertheless, given the significance of fisheries to the nation, accounting for 75% of Government revenue in 2016, it is critical that the Government invest in MFMRD's on-going IMS development so the aspiration of providing the most effective and efficient service possible for national benefit, is realised.

153. To at least partially understand current gaps and constraints, consultations with staff, which included a Strengths, Weaknesses, Opportunities and Threats (SWOT) exercise, identified the following issues which inhibit the realisation of this goal:

- Unrealistic senior staff work loads
- Unreliable data systems
- Not 100% confident in data quality
- Limited MCS specialist skills
- Limited data analytical skills – including for integrating multiple data sources
- Inadequate MCS training
- Limited staff engagement in port monitoring
- Under-developed inter-Ministerial coordination
- Budgetary limitations
- Office absences of key staff due to international travel
- Slow uptake of new technology
- Poor internet connectivity
- Power interruptions
- Limited/No planning
- Still many manual processes/entry

154. The exponential pace and sophistication of the development of information and communication technologies offers enormous opportunities to strengthen MFMRD's IMS services in relation to MCS. However, this needs to be undertaken in a strategic manner that preserves Kiribati's specific national interests while simultaneously optimising integration with regional systems in terms of both operability and analytical functionality.

155. In mid-2019, MFMRD contracted a Spanish company, Satlink S.L.[34], to develop a Fisheries Management Platform (FMP). Satlink S.L. manufactures and supplies communication

[34] https://satlink.es/en/

equipment for satellite network operators globally. It offers portable satellite and high-speed communication equipment, tracking systems and associated data management systems. Due to commercial-in-confidence arrangements between MFMRD and Satlink, no FMP project documentation, nor functional or technical specifications for the project, were available for review.

156. With or without the FMP project, MFMRD, or its contractors, should adopt a strategic approach to first reviewing, and then designing a FMP that uses internationally accepted data management standards to improve efficiencies for managing Kiribati tuna data and information. It is relatively easy to purchase emerging technologies but clear documentation of how they map to current, or planned, database management systems is critical. It is particularly important that consistent specifications, standards and procedures are developed, documented and utilised to ensure maximum value in terms of interoperability and the ease of sharing appropriate information amongst MFMRD business users.

157. The essential first step in the design of an IMS is to agree to the expected functionality of the system – what service is it expected to perform. It is only then that IMS architecture required to provide that functionality can be assessed. It is essential to describe the present[35], and future planned, functionality, to identify what is part of IMS and what is external to it and the interfaces between the IMS and external systems. A clearly defined architecture will identify elements such as:

a. current and future functional components and interfaces;
b. data models (conceptual, logical and practical);
c. standards and rules, and
d. procedures for operation, support and maintenance.

158. These processes provide the foundation for applying industry standard 'Data Warehouse' methods to describe and design the system[36].

159. Data models can be defined with different level of detail. For example, for the same business process, both a 'high-level' (conceptual) model, and a detailed ('practical') model can be developed. The purpose of a conceptual model is to communicate the 'big picture' of information needs, while the purpose of the practical model is to provide the basis for the design of the required database.

160. An approach for maintaining simplicity and clarity even with large models is to break entities into component models by 'subject area'. A subject area generally represents a set of related business functions. The principal components/modules for an MCS information management system for MFMRD are determined by subject areas. Explicitly, or implicitly, MFMRD's Licensing and Compliance Division supports 13 such subject areas represented schematically in Figure 9. This illustrates subject areas associated with information management for MFMRD MCS-related business functions that determine principal information system components/modules.

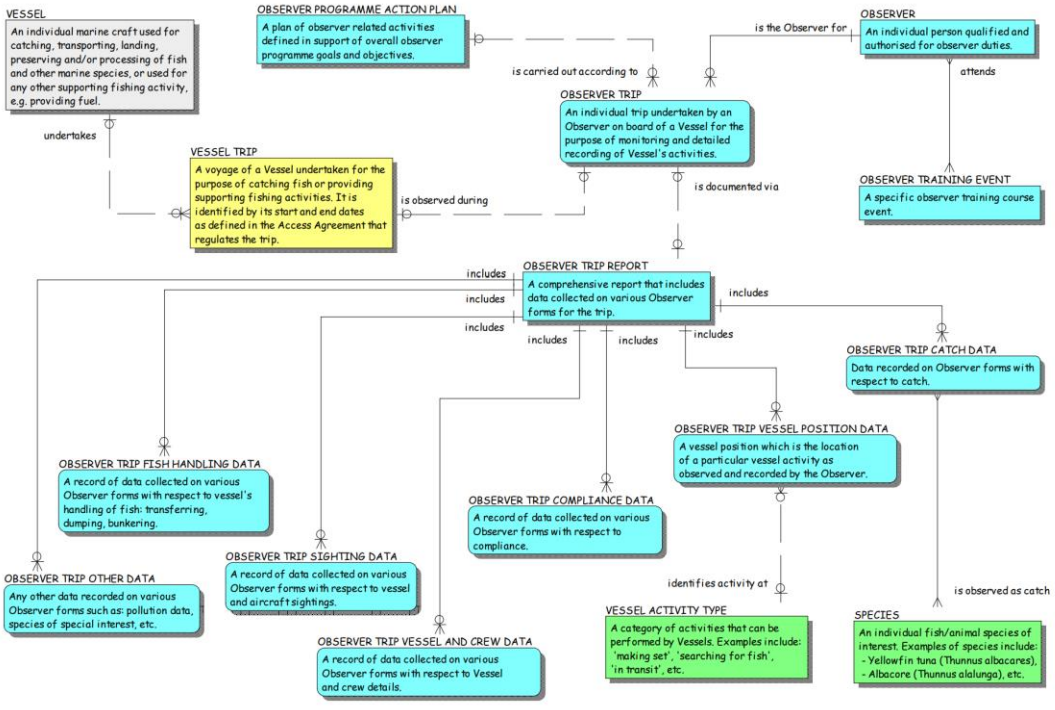
[35] Other than documentation for various modules available from regional agencies, documentation for the current MFMRD system(s) either do not exist or were not available.
[36] Informed by Jones and Petrovic (2009) and Petrovic (2012).

161. While each subject area can be viewed as relatively independent there is increasing need to integrate and reconcile data associated with the same activity from different sources for the purposes of use of reference data, naming conventions, data mapping, verification and validation. In addition to improving the quality and timeliness of data available to support decision making such initiatives will strengthen the capacity of MFMRD to efficiently deploy MCS effort, detect non-compliance and so, gradually, improve the behaviour of fleets.

162. Robust data systems and processes design are often based on data modelling that applies industry-standard 'Entity-Relationship (ER)' methodology to describe data attributes and relationships represented by Entity-Relationship Diagrams (ERD) and a Data Dictionary (DD).

163. An ERD shows the relationships of 'entity sets' stored in a database. An 'entity' is an object, a component of data. An 'entity set' is a collection of similar entities. Entities have attributes that define its properties. It is impractical to present an ERD for a large, complex model such as those supporting the fisheries managed by MFMRD; there is just too much information to compress effectively. Instead, large models are usually reduced to component models by 'subject areas'.

164. Examples of ERDs for human at-sea observer programme and vessel licensing subject areas, based on information available in 2009, is reproduced from Jones and Petrovic (2009) at Figure 12. Each of subject areas identified in Figure 9 will support an ERD.



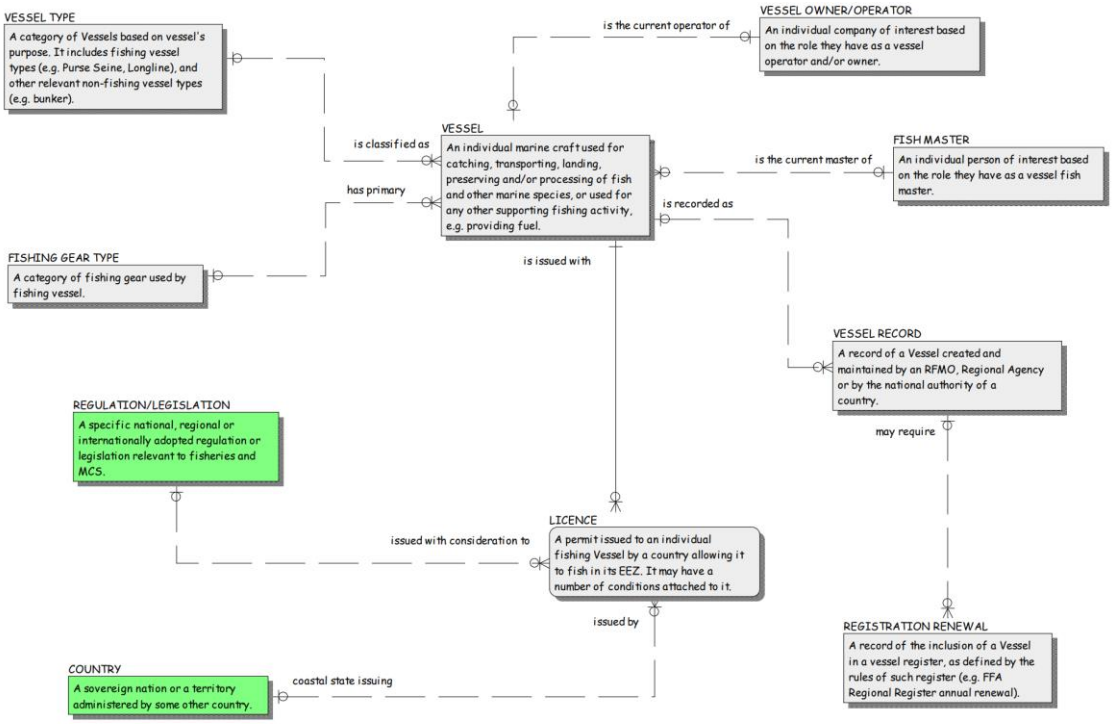


Figure 12. Examples of MCS-related ERDs. Top: Human at-sea observer programme business function (without electronic monitoring); Bottom: Vessel Licensing (From Jones and Petrovic, 2009). Critical, in terms of ensuring consistency, common objects, such as 'vessel', use the same definition which is recorded in the data dictionary.

165. By defining the entities, their attributes, and the relationships between them, an ERD illustrates the logical structure of databases. 'Relationships' are critical to a data model since they define various business rules.

166. A 'DD' is a list that includes the names and definitions of all entities identified within a particular data model. It is critical that accurate, unambiguous and meaningful names are applied to data entities. In addition, each entity name should be accompanied by an adequate definition. Appropriately defined entity names and definitions capture business concepts and terminology and will greatly enhance the communication and common understanding between stakeholders (business users, designers, etc.) plus encourage consistency across related systems.

167. MFMRD is strongly advised to ensure such an industry standard approach is applied to any IMS development that it might commission. Such an approach would support the detailed preparation of both functional and technical specifications that should serve as the basis of contractual arrangements and procurement for systems development. If at all possible, it would be prudent to secure the services of an IT IMS professional in a monitoring and oversight, quality assurance, role for any initiative in this regard to ensure expectations are met and standards applied.

168. In addition, MFMRD will require trained and competent staff to both manage the FMP, and any future developments associated with it, and utilise its capacity for optimal benefit. A

sustained investment in training and skill development in information management systems, database development and MCS data analytics will be required to complement the FMP investment. This will help ensure that MFMRD does not become captive to a reliance on external service providers indefinitely.

8.2 Future facilities

169. Technology changes so rapidly that it is difficult to predict what will be available to support fisheries information systems in 5 years' time. In addition, technology that is used now for military or national security purposes, and thus highly restricted, will gradually become available for broader applications, such as fisheries, as it superseded and upgraded.

170. The next generation systems will be capable of ingesting data from multiple data sources simultaneously and display different resolutions of that data, in multiple layers, on a common screen, or separately. Relevant information will go beyond VMS, AIS, ER, EM, SAR, VIIRS and integrate blockchain and e-traceability (e-CDS) data.

171. For small economy like Kiribati, due to economies of scale and the availability of appropriately skilled information management expertise, data and information management is likely to be optimally utilised if it is centralised for all Government agencies. It will be inefficient for small economies to replicate highly technologically advanced systems in each Government agency. As applies to most systems now, different data users will have different levels of security.

8.3 New and emerging technologies

8.3.1 Fibre Optic

172. The Government's National ICT policy 2019 recognises ICT as a key enabler to improve economic and social development to take advantage of new technologies. It maps out a plan to develop e-Government and digital infrastructure in line with the broader objectives of the KV20.

173. There are two initiatives underway to link Kiribati by fibre-optic cable; one for Kiritimati to link to the US East Coast financed by the World Bank and a second, the East Micronesia Cable (EMC) System, for Tarawa to link to Pohnpei, Nauru, Australia and New Zealand financed by ADB. The Kiritimati project is confirmed with project completion expected at the end of 2021. The Tarawa project is in the process of issuing tender documents. It is also scheduled for completion at the end of 2021.

174. The Tarawa connection will provide a bandwidth of 100Kb/sec with an option to increase that in the future. The Kiritimati link will provide 50 Kb/sec.

175. In preparation for the improved bandwidths to be offered from 2022, the Ministry of Information, Communications, Transport and Tourism Development (MICTTD) has announced plans to connect all Government ministries on Tarawa to one wide area network.

176. These developments will have significant positive implications for the connectivity of MFMRD domestically and internationally.

8.3.2 Electronic reporting

177. Electronic reporting (ER) is already common across tuna fisheries reporting in the region. FIMS, RIMF and TUFMAN2 all incorporate e-reporting. Benefits such as the application of common standards across data platforms, access to quality assured near-real-time data, higher resolution data and implications for data processing costs are generally accepted. At the most recent TCC in Pohnpei in September 2019, Samoa, on behalf of FFA members noted:

> "……. *they recognise the numerous benefits of having a standardised reporting format for data exchange in the Commission and find the annual report very useful. Samoa noted that ER has become the norm rather than a future aspiration, and that FFA members are pleased to see increased uptake of ER tools among CCMs continues, with many CCMs providing data to SPC in a form consistent with adopted ER standards.*
>
> *FFA members were in particular pleased to see:*
> - *the high level of operational data being submitted to SPC in accordance with the ER standards – particularly for the purse seine fleet,*
> - *the 100% coverage of purse seine data held in ROP database that aligns to the ER standards,*
> - *the vast improvement of longline observer data aligned to the ER standards, and*
> - *that significant longline ER data have been submitted to SPC that conforms with the ER SSPs for observer data.*
>
> *FFA members supported ongoing use by CCMs of the ER SSPs adopted by the Commission……*"

178. SPC developed e-reporting tools that feed into TUFMAN2 include:
a. TAILS: a mobile device app, used to collect various data from artisanal fisheries;
b. ONBOARD: an app used to collect logbook data onboard longline vessels;
c. ONSHORE: an app used to collect port sampling data from longline vessels, and
d. the OLLO app which is used to collect observer data from longline vessels.

179. MRMFD's IMS should be future proofed to accommodate e-reporting as a standard.

8.3.3 Electronic monitoring (including component costs)

180. One hundred percent of the WCPO tuna purse carries human observers. However, human at-sea observer coverage for longline tuna fisheries operating within EEZs and the adjacent high seas has rarely achieved an annual coverage of 5% required under WCPFC's CMM 2018-05[37].

[37] The metric for observer coverage in WCPO tuna longline fisheries still attracts debate and, unfortunately, is not necessarily standardised some fisheries administrations using, for example, days fished and others hook set. The most reliable unit of effort is hooks set. It has the least bias and is used as the main unit of effort in WCPFC's stock assessments.

181. Low observer coverage is due to a combination of factors. They include an absence of flag State regulations that oblige vessels to accept observers, logistical challenges associated with the deployment of human observers on vessels that undertake trips of extended duration on the high seas, safety concerns and the small size of some of those vessels where an observer placement means it is necessary to displace a crew member with consequent implications for vessel operations.

182. To complement the coverage and quality of information available through human observers on longline vessels, significant global progress has been made during the last five years with the utilisation of automated camera systems installed on fishing vessels. These electronic monitoring (EM) systems are providing additional independent monitoring of at-sea fishing operations for an increasing number of national or regional fisheries administrations.

183. Such systems are being trialled in several FFA members including Australia, the Federated States of Micronesia, Fiji, Marshall Islands, New Zealand, Palau, Solomon Islands and Cook Islands. Kiribati is also considering a trial on one vessel.

184. The drivers for these initiatives include strengthening the availability of independent information on fishing activities – for example, improving the information base on catch and effort for target species, by-catch and discards and encounters with species of special interest – as well as encouraging compliance with national regulations or regional obligations. The analytical software of several EM systems is well advanced towards being able to facilitate the collection of limited biological information, such as fish length. Significant advances are occurring in relation to image recognition and artificial intelligence which further strengthen such systems as a valuable additional fishery monitoring and data collection tool in the short to medium term.

185. External development assistance partners such as the World Bank and the Food and Agricultural Organisation, as well as non-government organisations (NGOs) such as The Nature Conservancy (TNC) and the World-Wide Fund for Nature (WWF), have provided substantial financial and technical support for EM trials in FFA members to date. In addition, several longline companies, such as Luen Thai in Micronesia and Bumble Bee in Fiji, have been trialling EM systems independently.

186. While assistance provided by NGOs and development assistance partners is no doubt appreciated by the FFA island members, there is a clear recognition that the long-term operation of effective EM systems requires a durable, self-sustaining financing model. This is area that FFA is currently looking at in some detail.

187. It is important that Kiribati be actively engaged in WCPFC on ER and EM to ensure that Kiribati is capable of complying with any obligations that may be considered for adoption by the Commission. In addition, FFA is in the process of developing a regional EM Policy which is another initiative that it would be beneficial for Kiribati to remain engaged with.

188. Additional information relating to EM, including component cost elements, are presented at **Appendix I**.

8.3.4 Catch documentation

189. A Catch Documentation Scheme is designed to ensure fisheries products entering markets are taken in compliance with internationally adopted arrangements for the management and conservation of that resource and that the product is not being presented as a result of IUU activity. The Scheme applies throughout the supply chain from vessels to processors to markets through flag, coastal, port and market States. CDS is reasonably well established in single species fisheries such as for Atlantic bluefin and Patagonian toothfish but there are significant challenges associated with multi-species, high-volume, fisheries such as WCPO purse seine fisheries.

190. Two CDS systems are in use in the Pacific: the EU Catch Certificate[38], for sales to EU markets, and the International Fisheries Trade Permit (IFTP) for US markets[39] - see Section 6.5.

191. In the WCPFC, over the last 5 years, work on a WCPFC CDS has been the subject of a dedicated inter-sessional working group (CDS-IWG[40]). Although work has stalled over the last year or so, the objectives and much of the scope for a WCPFC CDS have been largely agreed. Work on draft standards, facilitated by FFA, continues. An IMS will be required to support the CDS subject area.

192. In addition, FAO has prepared Voluntary Guidelines for Catch Documentation Schemes (FAO, 2017).

8.3.5 Automatic Identification System (AIS)

193. AIS was designed primarily as an anti-collision system as well as to assist port authorities to manage sea traffic. AIS data is public domain with the result that there are now many websites, such as Fleetmon[41] and Global Fishing Watch[42], that display vessel details and positions in near-real time. The reporting interval varies from every 2 secs to every 3 mins, depending on speed of vessel and if the course is constant. The International Maritime Organization (IMO) now requires all vessels over 300 gross tonnes (GT) to carry an AIS transponder on board and is currently considering reducing the requirement to vessels over 100 GT.

194. FFC85 meeting in May 2013 endorsed the requirement that foreign fishing vessels be fitted with AIS as a condition to be placed in Good Standing on the FFA Vessel Register. There is no requirement that AIS remain on at all times at this point. Active AIS is only required in the event of a VMS malfunction.

195. The AIS transponders, which include a GPS (Global Positioning System) receiver, specifically transmit the vessel's position, speed and course, along with some other static information, such as vessel's name, dimensions and voyage details.

[38] https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/technical_note_en.pdf
[39] https://www.fisheries.noaa.gov/permit/international-fisheries-trade-permit
[40] https://www.wcpfc.int/meeting-folders/workshops
[41] https://www.fleetmon.com/
[42] https://globalfishingwatch.org/

196. The RFSC at FFA and some national fisheries administrations, Kiribati and PNG among them, accesses AIS to validate zone entry and position reports by reconciling AIS reports with VMS information. AIS is not presently used by WCPFC.

197. It is likely that, since the technology is already widely utilised for fishery monitoring, mainly as a secondary data source for verification of data from other sources such as VMS, future developments will involve data analytics and utilising AIS data, in conjunction with other sources such as VMS, to predict fishing behaviour.

198. There are increasing calls particularly from the NGO community and consumers for AIS to be mandatory on all fishing vessels (for example, see Shaver and Yozell, 2019). The majority of the fishing industry maintain that this information should remain confidential to the vessel operators, the flag State and any appropriate regional fishery management organisation.

8.3.6 Long-Range Identification and Tracking (LRIT)

199. Already in wide-spread use in the region to monitor fishing vessels, including in Kiribati, the Long-Range Identification and Tracking (LRIT) system is an International Maritime Organisation (IMO) designated system. It assimilates and disseminates vessel position information received from IMO member States' ships that are subject to the International Convention for the Safety of Life at Sea (SOLAS). It is compulsory for all vessels >300 Gross Tonnes (GT) with some small vessels operating it on a voluntary basis mainly for safety reasons.

200. The LRIT hardware is 'similar' to VMS hardware in that it is a 2-way commandable system where nominal reporting is at least four positions per day. Reporting can be increased to every 15 minutes if required.

201. Requests, which are normally initiated by the coastal State to the LRIT Data Exchange Centre, are not limited to EEZ. For example, Kiribati can, at its expense, request a non-Kiribati ship planning to enter the Kiribati EEZ to report not only prior to entry to the EEZ but also that the reporting interval be changed (perhaps to hourly). The data remains confidential.

202. If a search and rescue (SAR1) incident occurs, all LRIT ships in the vicinity have their reporting interval increased. The flag States does not pay for these additional position reports.

203. LRIT information should be available for all carriers operating in Kiribati. A reefer carrier should have all three systems – VMS, LRIT, AIS.

8.3.7 Synthetic Aperture Radar

204. Satellites with Synthetic Aperture Radar (SAR2) orbit the Earth in a sun-synchronous, low-earth, polar orbit. The SAR2 satellites operate at designated frequencies usually within the L-, C, and X-band wavelengths. Numerous agencies supporting different SAR satellites include:

a. European Space Agency (ESA): ERS-1, ERS-2, Envisat, Sentinel-1
b. Japan Aerospace Exploration Agency (JAXA): JERS-1, ALOS-1, ALOS-2
c. Canadian Space Agency (CSA): Radarsat-1, Radarsat-2, Radarsat constellation

d. Korea Aerospace Research Institute (KARI): KOMPSat-5
e. National Aeronautics and Space Administration (NASA): NISAR (w/ ISRO)

205. High-resolution imagery, which can be acquired at any time of day or night independent of cloud coverage, is subsequently analysed to dismiss clutter and anomalous objects (such as icebergs in polar regions or partially submerged containers) and locate vessels at sea. Swathe imagery is purchased from satellite providers and, subject the availability of appropriate technology and analytical systems, can operate in near-real time.

206. As an indication of emerging possibilities using additional satellite capability to monitor fishing activity, Sampir *et al.* (2019) describe methodology, tested against AIS data, to distinguish fishing and non-fishing vessels applying the Search for Unidentified Maritime Objects[43] (SUMO) vessel detector to 2017 Sentinel-1 SAR2 images of the North Sea. Vessel classification accuracy was reported to be 91%. However, vessel classification precision for the fishing class was only 58% - which were partly explained by characteristics of the study area.

207. SAR2 may emerge as a useful source of supplementary data to plan surveillance operations in the future. It is not presently used in the WCPO tuna fishery.

8.3.8 Visible Infrared Imaging Radiometer Suite (VIIRS)

208. Like all FFA members, Kiribati has formally declared maritime zones including an EEZ, archipelagic waters and territorial seas and, within those boundaries, imposed zonal restrictions for the operation of different components of the fishery sector – purse seine, longline, small-scale, domestic and foreign licensed. In addition, the PIPA is a large marine area closed to commercial tuna fishing, including FAD deployment.

209. Fishery agencies typically have very little data relevant to planning closure enforcement actions and evaluating the effectiveness of closures, due in part to the vast expanse and remote nature of many closures (Elvidge *et al.* 2015, Elvidge *et al.* 2018). GPS, using AIS or VMS on fishing vessels assist in monitoring vessel presence within zones if these systems are operational and monitored. In fisheries where these systems are either not installed, or deactivated, other sources of data are required.

210. One such source is the low light imaging data collected by the NOAA/NOAA Visible Infrared Imaging Radiometer Suite (VIIRS) which registers light emitted from sea-surface activity such as fishing vessels. The data is filtered for anomalies such as light associated with thunder storms and NOAA has developed an automatic system for reporting the locations of VIIRS boat detections with a nominal 4-hour temporal latency (Elvidge *et al.* 2018).

211. VIIRS boat detection alerts are running for more than 900 fishery closures in the Philippines, with email and SMS transmission modes. These alerts are being actively used to plan

[43] Search for Unidentified Maritime Objects (SUMO) is an algorithm for ship detection in satellite Synthetic Aperture Radar (SAR) images that has been developed over 15 years using SAR images from almost all available SAR satellites operating in L-, C- and X-band.
http://publications.jrc.ec.europa.eu/repository/handle/JRC104044

enforcement actions with a growing list of apprehensions reported based on alerts generated from VIIRS (Elvidge *et al.* 2018).

212. A VIIRS closure index (VCI) has been developed to rate the effectiveness of closures on monthly increments in terms of a percentage. The results indicate that it is possible to rank the effectiveness of different closure-types, year-to-year differences in compliance levels, and to identify closure encroachments which may warrant additional enforcement effort (Elvidge *et al.* 2018).

8.3.9 Autonomous vehicles

213. Although still largely in research stages, future technological developments will include autonomous surface, or sub-surface, and aerial craft. Such developments may lead to continuous real-time surveillance over large areas of water at a considerable distance from fisheries monitoring centers for extended durations using solar power[44].

214. There are two types of surface autonomous craft:
   a. conventional powered vessels which are unmanned. They have limited time and range at sea and are acoustically noisy[45], and
   b. renewable energy powered vessels which are unmanned. They use solar and/or wind and/or wave energy so are persistent and can stay at sea indefinitely only limited by biofouling.

215. Payload, manoeuvrability to avoid collisions and the ability to navigate currents are areas under active research at present.

216. Remotely piloted aircraft systems (RPAS), using drones, are also attracting increasing research for applications in fisheries and pollution surveillance in coastal areas[46].

8.3.10 Blockchain technology

217. Fisheries is a sector that is attracting significant research investment in the application of blockchain technology to supply chain authentication. All block chain transactions are visible, un-editable and verifiable in a digital ledger. Each transaction is verified and authenticated so that a transaction cannot be released along the supply chain until all the information associated with the transaction has been authenticated and verified.

218. Its application in fisheries involves attaching a fish with a reusable radio frequency identification tag (RFID) tag as soon as it is removed from the water. Along the supply chain, the tag, which is encoded with information unique to that tag, is scanned and the information automatically uploaded to a blockchain ledger. Once the fish has been processed, the reusable RFID tag is exchanged for a cheaper Quick Response (QR) code tag, which is attached to the product packaging. The unique QR code is linked to the blockchain record for the original RFID

[44] For example, see: https://www.ocius.com.au/usv
[45] MFMRD has just received two drones, for the Minerals Unit, from the Korea Overseas Fisheries Association (KOFA). One is a large wing span with a duration of one hour and the other is a shorter wingspan with a duration of 10 minutes. Both are planned for use in coastal mapping.
[46] https://maritime-intelligence.groupcls.com/

tag and is associated with each individual transaction through the supply chain to transporters, transit markets, final wholesalers, and retailers to consumers (Visser and Hanich, 2019).

219. The current cost of RFIDs makes it difficult for small-scale operators to apply blockchain technology to their distribution chains but its application to longline fisheries, which tag individual fish, offers potential. High volume purse seine tuna fisheries present additional challenges. Significant work is underway in WCPFC at present to consider options as part of its work on CDS development.

220. Several certification schemes, such as MSC-certified tuna, already print bar codes on the side of cans which provide information on the catch history and provenance of the tuna inside. The Spanish tuna fleet is using something similar for vessels participating in its Fishery Improvement Project (FIP). Certification is issued under the Spanish Association for Standardization and Certification (AENOR) that incorporates ecosystem-wide conservation and management standards as well as social, labour and maritime safety standards.

8.3.11 Electromagnetic and radio frequency tracking from space

221. Several startup companies are investing heavily in space surveillance capabilities. A small French company, UnseenLabs[47], launches small (6kg) cube satellites to detect radio-frequency signals from ships attempting to avoid detection, for example by turning off their AIS (going 'dark') or 'spoofing' their positions. "Dark" vessels still communicate with push-to-talk radio systems or satellite phones, or they navigate using S-band [or] X-band radio systems. These can be analysed from space.

222. UnseenLabs plans a constellation (20-50 satellites depending on demand) of low orbit (550-650km) satellites each completing 15 orbits at less than 90-minute intervals a day. Luxembourg-based Kleos Space[48] and US-based HawkEye 360[49] are also developing small satellites constellations for the same purpose.

223. HawkEye 360 intends to focus on the high seas: illegal fishing, drug trafficking, human trafficking, weapons trafficking. HawkEye 360 believes its satellites will be able to detect spoofing.

9. COASTAL FISHERIES

224. Oceanic tuna fisheries account for most of the fisheries production, and contribute significantly to Government revenue, but coastal habitats and their associated resources are critically important to community food security and livelihoods in Kiribati. Apart from the mariculture of pearl and small-scale trochus harvesting in some countries, experience has demonstrated high-value coastal resources, such as beche-de-mer, crayfish, seaweed and deep-water snappers, rarely sustain economic levels of production. This is despite significant

[47] https://unseenlabs.space/
[48] https://kleos.space/
[49] https://www.he360.com/

investments designed to motivate coastal fisheries activity through the establishment of processing facilities and efforts to support cost-effective delivery to markets.

225. Urbanization, relatively high population growth rates, related reliance on coastal marine resources for subsistence support and habitat deterioration have contributed to significant depletion of many coastal resources in the vicinity of cities and major towns throughout the Pacific Island region. In remote coastal and island communities, where the regulatory capacity of most centralized, and usually under-resourced, government fisheries agencies is generally low, nearshore reef and lagoon resources still provide a significant proportion of daily protein needs. In these areas, resource management has often been based on strong, albeit not necessarily formally recognised, traditional or customary systems (Teiwaki, 1988). However, in many communities, these 'systems' are losing their status as a consequence of changes in cultural values, migration and land ownership patterns, and increases in population-driven resource exploitation pressure from 'outsiders' (for example, see Govan, 2013; Govan, 2014a; Campbell and Delisle, 2017).

226. Additional uncertainties, including those associated with climate change, pose new challenges to efforts to secure sustainable coastal resource use across the region. Management arrangements, based on reinvigorated community engagement and ownership, including suitably adapted MCS, will be important to the success of these efforts.

9.1 Coastal-related legislation and regulations

227. The legislative basis for the management of coastal fisheries in Kiribati is provided for across numerous existing legislation and regulations. A summary of relevant legislation, policies and plans is at **Appendix B**. The framework supporting coastal MCS in Kiribati is based on the following principal legislation:

a. Local Government Act 1984;
b. The Environment (Amendment) Act 2007;
c. Fisheries Act 2010 and subsequent amendments (2017);
- Draft Maritime (Small Craft) Regulations 2019,
- Incorporated Societies Act 2002
- Island bye-laws, and

d. Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019.

228. In addition, the implementation of community-based fisheries management (CBFM) is identified in the Kiribati National Fisheries Policy 2013–2025 as a strategic priority (Government of Kiribati, 2013). This is underscored in the recently released Kiribati National Coastal Fisheries Roadmap (2019-2036) which provides a detailed Action Matrix for coastal fisheries (Government of Kiribati, 2019). The Action Matrix identifies actions that can be implemented with existing resources and capacity and those where supplementary support is required.

9.2 MCS in coastal fisheries

229. Because of limited resources (principally staff, funds and equipment), centralized "top-down" regulatory systems have little sustained influence in many remote island coastal fisheries. In response, communities have been seeking more responsibility in coastal resource management

through processes broadly termed participatory co-management arrangements or CBFM (see Pomeroy and Andrew 2011).

230. Existing island protocols, established over many years in Kiribati, are broadly respected by island communities and play a crucial role in the management and conservation of nearshore fisheries resources. Island councils govern associated activities through bye-laws.

231. Adopting variations of what FAO (2002) terms a preventive, or 'soft' approach, participatory management requires traditional ecological knowledge and respect or acceptance, time, and resources to support:

a. information sharing and awareness raising to encourage stakeholder buy-in to support community-driven processes to achieve management objectives principally concerned with resource sustainability;
b. the identification of key resource indicators that can be monitored to inform stakeholders of progress towards achieving management objectives;
c. the mobilization of community social or political processes to elicit voluntary compliance and support for the management regime including the development of community-based systems to respond to non-compliance, and
d. mechanisms for engaged communities to monitor and assess resource status and trends.

232. This is a different approach to a top-down 'hard' approach more common in MCS for oceanic fisheries implemented through national fisheries agencies. A top-down approach generally involves inspections, investigations, evidence gathering and prosecutions often with court-imposed penalties in the event of non-compliance.

233. It does not mean that there are no circumstances where a hard approach to MCS is not appropriate in relation to coastal resource management. However, limited institutional resources can be used more effectively if responsibilities can be shared among stakeholders. This can be achieved by devolving some responsibilities to the authority of established community processes, such as fishing infringements in managed areas, and strengthening others, such as in respect of exports of protected species or false export declarations, in central government agencies.

234. For many years, advocates for CBFM have been appealing for greater Government support for initiatives that grant increased responsibility to local communities for the management of their nearshore resources and associated habitats. The Coastal Fisheries Roadmap 2019-2036 Action Matrix provides substantial support for the mobilization of community-based coastal resource management processes (among them, Actions 1.3, 1.4 and all of 3).

235. At the regional level, the Pathways project is endeavoring to support such initiatives. Pathways has been formulated to support the Pacific Community's regional coastal fisheries strategy, *A New Song for Coastal Fisheries*. The Project, which engages SPC, World Fish, the Australian Center for International Agricultural Research (ACIAR) and the University of Wollongong, among others, is partnering with national fisheries agencies in Vanuatu, Solomon Islands and Kiribati to mobilise local communities to take greater responsibility for the management of their fisheries resources. Under the umbrella of CBFM, the Project aims to build partnerships and strengthen mutual communication pathways among communities, local,

provincial and national government agencies. In Kiribati, partly with support through the Pathways Project, nine Island Councils are implementing CBFM projects targeting resources such as goatfish, bonefish and bans on the use of small mesh size nets.

236. The Action Matrix clearly identifies where additional resources are required to assist with addressing some of the pressing coastal fisheries management challenges for Kiribati. Partnering with initiatives such as Pathways offers a valuable opportunity for securing both supplementary institutional capacities to start to engage with coastal communities on their resource management issues and also as a vehicle to build the skills and capabilities of MFMRD staff so that they can sustain and expand such CBFM initiatives into the future.

9.3 The case of Tarawa lagoon

237. A rapidly increasing population bordering the lagoon is putting increasing pressure on both the sustainability of Tarawa lagoon's marine resources and the quality of the lagoon environment. Lagoon water quality is threatened by increased waste discharge which also poses an environmental health and safety risk to coastal communities. After many years of effort to encourage the three responsible Island Councils to collaborate to address the mounting threats, it appears that, unfortunately, a crisis, possibly a health crisis, may be the only motivation for concerted action that secures broad community support.

238. Although environmental water quality is a significant factor influencing lagoon marine resource management considerations, it is not considered further here. Instead, possible actions focus on the addressing the threats to the fisheries resources of the lagoon from human over-exploitation. Action options include a combination of:

a. closed areas for all fishing by establishing permanent reserves, as is required for the seriously depleted *te bun* (*Anadara spp.)* resources, *[Coastal Fisheries Roadmap Action Matrix Reference 3.2.1];*
b. prohibited fishing gear/practices;
c. prohibition on the commercial sale of threated resources;
d. closed seasons for areas and/or species;
e. licensing fishermen and vessels with restrictions (species and areas), *[Coastal Fisheries Roadmap Action Matrix Reference 3.8];*
f. point-of-sale monitoring and surveillance;
g. community outreach, education and awareness raising;
h. training and support of local wardens or honorary officers,
i. vessel registration and tracking unit, and
j. support to local committees that might be established to support local management effort.

239. Govan (2014a) presented a range of pros and cons for licensing fishing activity on Tarawa Lagoon and concluded that while licensing is theoretically an egalitarian system, in that the three Island Councils would be treated equally, and that it could be monitored, there would be an administrative burden. The burden would be associated with maintaining a current registry of vessel registrations, their details and licenses. This is already provided for, but not operationalized, in both the Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019 and the Draft Maritime (Small Craft) Regulations 2019 ***(see Appendix B)***. With improved

island connectivity and technological advances, electronic means to identify vessels and register license details may alleviate, but not eliminate, the administrative burden in the not-too-distant future. SPC's TAILS tablet-based application is already being utilized in the region for data recording from small-scale fisheries[50].

240. In the past, i-Kiribati communities applied restrictions to protect spawning runs of certain species such as bonefish (Johannes and Yeeting, 2000). It is broadly acknoeldged that these practices are dying out.

9.4 SWOT

241. To assist with understanding challenges and rewards, frustrations and motivating factors associated with the MCS&E Unit work environment, a Strengths, Weaknesses, Opportunities and Threats (SWOT) exercise was undertaken (Table 8). Key outcomes were:

a. the office working conditions at Tanaea are not conducive to a productive work environment. The building and facilities are in urgent need of major renovation and rejuvenation;
b. staff are committed and would like to be able to do more. But limited resources (financial, requisite skills, and the means to spend more time in communities) is seriously constraining;
c. internet speeds are poor;
d. prosecutorial processes need strengthening to make better use of Island Council wardens and police, to empower Coastal MCS staff and avoid lengthy, and often unsuccessful court proceedings through, for example, the introduction of administrative penalties;
e. the Unit needs additional capable staff;
f. inter-government agency coordination and collaboration is poor (Island Councils, MELAD, etc.) and that there is some overlap in departmental responsibilities that should be addressed (MELAD),
g. the need to develop and implement an artisanal vessel registration system and associated capacity building to manage the registration system,
h. establish landing sites for ease of MCS&E work (local fishermen land their catch at multiple landing sites which makes it hard to carry out MCS&E actions)
i. invest in automated monitoring tools for artisanal vessel tracking,
j. on-going collaboration with relevant agencies to share lessons learnt in MCS&E, and
k. there is an on-going need for capacity building in MCS&E.

9.5 Needs assessment

242. Building on the SWOT, and adapting the methodology used to develop FFA's Regional MCS Strategy for oceanic resources (MRAG, 2009a), a performance matrix was prepared for MCS in coastal fisheries in Kiribati (Table 9). The matrix:

a. identifies six key components of MCS in coastal fisheries generally:
    i. Legislation, regulation and management plans;
    ii. Coordination and information management;
    iii. Vessel records and registrations;

[50] A locally developed application, *Te Betia*, is also utilised.

iv. Licensing;
v. Export monitoring, and
vi. Prosecutions.

b. identifies five key elements that contribute to the functionality of each component;
c. rates each element according to its significance, being 'critical' or 'important', in contributing to the functionality of each component;
d. assesses the current status of each element in terms of its performance as either i) weak, ii) moderate, or iii) strong, and
e. aggregates the individual assessments for each element to provide a collective indicator of the performance for each component.

243. The outcome provides strong guidance for priorities, and needs, for MCS in coastal fisheries in Kiribati. In addition, on the basis of periodic re-assessment, the matrix also provides a means to monitor progress in addressing these priorities.

244. Performance indicators, or audit points, were selected to assess the status of MCS programmes in Kiribati. These were mostly selected independently from Coastal MCS Unit staff input. The selection was based on:

a. identifying elements which, individually and collectively, are critical or important to the implementation of each business function. The selection was confined to those elements which can reasonably be expected to determine the success, or failure, of a particular function, then
b. assessing the status of the current implementation of each element. The sum of the assessment of elements within each business function was used as an indicator of the overall status of that function. This was used to assist in determining priority needs.

245. The current status of each element was assessed as 'weak', 'moderate' or 'strong' where:

a. 'Strong': key elements implemented but possibly not all (indicative of >66% implementation).
b. 'Moderate': implemented many of the requirements but not some key elements. Indicative of 34-65% implementation.
c. 'Weak': currently not implementing most or any of the key parts of a performance measure. Indicative of <33% implementation.

246. The performance indicators for each element were then consolidated and assessed to provide guidance on the implementation of each MCS component. The outcome is presented in the right column of Table 9.

Table 8. Outcomes of a Strengths, Weaknesses, Opportunities and Threats (SWOT) exercise undertaken with coastal MCS&E Unit staff.

STRENGTHS	WEAKNESSES
Implementation of community-based fisheries management projects (PATHWAYS) including the operations of the Task Force (MFMRD chair, Environment, MIA, Tourism and Council of Churches)	Departmental (including Island Councils) overlaps in responsibility/authority
Newly established Coastal MCS&E Unit and support being provided by the *Tobwan Waara* Programme	Limited capacity in MCS&E interventions
HR and governance reforms proposed under the *Tobwan Waara* Programme	Gaps in specific regulations to support enforcement, including Schedules
Endorsed Fisheries (Conservation and Management of Coastal Marine resources) Regulations 2019	Limited number of staffs (3). Need more.
Communications strategy – fortnightly radio broadcast, on-going community outreach, posters and pamphlets dissemination	No system in place for vessel registration – capacity to establish and administer
	Limited information management capacity in general.
	Communications strategy requires more resources to support education and public relations activities.
	No prosecutorial capacity – rely on Police. Fisheries cases are low priority
	MCS Offices at Tanaea and Kiritimati are in poor condition. The *Tobwan waara programme* is refurbishing old Pearl Hatchery at Tanaea for Coastal MCS&E..
	Office facilities including internet connectivity.
OPPORTUNITIES	**THREATS**
Establish a joint enforcement team (Police Maritime, Environment and Island Councils)	Cultural barriers regarding enforcement Reluctance to prosecute family members breaching the fisheries law
CBFM pilot work	Conflicts between resources users and authority
Trainings in CB MCS&E (with SPC and the *Tobwan Waara Programme)* to build confidence in MCS officers	Dispersed multiple landing sites

Build the relationship with Island Councils to strengthen by-laws and encourage the appointment of Island Council Wardens as MFMRD authorised officers to oversee local fisheries management.	For Tarawa Lagoon, an inability to resolve issues associated with the apparent overlap in jurisdiction between North and South Tarawa.
Infrastructure needs	
Establishment of a CB Response Management Task Force	
Need to develop Penalty regulation that will give powers of Authorised officers to impose on the spot penalties to get away from the pending cases with Police Office.	

Table 9. Identification of components and their associated elements for coastal MCS in Kiribati. An appraisal of the significance of each element, and its current status, is included.

Significance
Critical
Important

Assessment
Weak
Moderate
Strong

Significance	Performance Indicator	Assessment
Legislation, regulations and management plans		**Overall assessment**
	1. Coastal legislation and regulations effectively support the monitoring and management of coastal resource use. *[Coastal Fisheries Roadmap Action Matrix Reference 1.2.1 and 1.2.2, 3.4 and 3.6]*	
	2. Legislation and regulations are publicly available and have been promoted with relevant fisheries, police, customs, internal affairs ministries and island councils *[Coastal Fisheries Roadmap Action Matrix Reference 1.3.1]*.	
	3. Designated fisheries have been formally gazetted.	
	4. Coastal maritime zones and shared boundaries are formally agreed and advertised. *[Coastal Fisheries Roadmap Action Matrix Reference 3.2.1]*	
	5. Protected areas and reserves are recorded, monitored and infringements prosecuted	
	6. Management plans, including community-based management plans, are being implemented, and monitored, reviewed and the results are publicly available. *[Coastal Fisheries Roadmap Action Matrix Reference 1.3.4 and 3.3]*	
MCS coordination and information management		**Overall assessment**
	1. Systems established for acquisition, storage and sharing of coastal fisheries MCS-related information among relevant Government agencies and Island Councils. *[Coastal Fisheries Roadmap Action Matrix Reference 2.2.2 and 2.6.2]*	

	2. Inter-agency processes established to support coastal fisheries MCS, for example a coastal fisheries MCS committee and inter-agency resource sharing. *[Coastal Fisheries Roadmap Action Matrix Reference 1.1.3 and 1.2.3]*	
	3. A Communication Strategy is developed and implemented by the Committee to support Island Council and island community information sharing. *[Coastal Fisheries Roadmap Action Matrix Reference 2.1.1, 1.3.3 and 1.3.4]*	
Vessel Records and registrations		**Overall assessment**
	1. Maritime and MFMRD have implemented a small Vessel Record or Registry in accordance with Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019 and/or the Draft Maritime (Small Craft) Regulations 2019.	
	2. Vessels and fishing gear are marked in accordance with the Draft Maritime (Small Craft) Regulations 2019.	
	3. Information management systems have been developed and implemented to support the Vessel Record or Registry and the information is shared among relevant Government agencies and Island Councils. *[Coastal Fisheries Roadmap Action Matrix Reference 2.2.2]*	
Licensing		**Overall assessment**
	1. A license system is implemented, in collaboration with Maritime, for fishing in a designated coastal fishery for commercial purposes.	
	2. A permit/licence system is implemented for trading in products from a designated coastal fishery for commercial purposes.	
	3. Up-to-date vessel license lists are available to other relevant Government agencies and Island Councils.	
	4. Exporter licenses/permits specify penalties for non-compliance with Kiribati Fisheries legislation, polices and management plans.	
Export monitoring		**Overall assessment**
	1. A permit system is implemented for exporting products from a designated coastal fishery.	
	2. A robust inspection system is implemented for all coastal fishery commodity exports, for example, pet fish from Kiritimati.	

	3. Information management systems have been upgraded to manage data relating to exporters and exports of coastal resources that is quality assured and available in a timely manner. *[Coastal Fisheries Roadmap Action Matrix Reference 2.2.2]*	
	4. Awareness raising and public relations campaigns alert the public to the consequences for non-compliance with Kiribati coastal resource export regulations.	
Prosecutions		**Overall assessment**
	1. Coastal MCS staff and staff from other Government agencies, such as Police and Customs, or Island Council wardens, are trained and certified in investigations, evidence gathering, case preparation and prosecution.	
	2. Formal collaborative arrangements are established for coastal MCS cooperation with Attorney-Generals' Office, Police, Maritime and Island Councils. *[Coastal Fisheries Roadmap Action Matrix Reference 1.1.3, 1.4.4, 1.4.5 and 3.3]*	
	3. A coastal prosecutions database is developed and maintained by the Coastal MCS Unit. *[Coastal Fisheries Roadmap Action Matrix Reference 2.2.2]*	
	4. The Coastal MCS Unit advertises penalties and sanctions for non-compliance with coastal fisheries legislation, regulations and management plans. *[Coastal Fisheries Roadmap Action Matrix Reference 2.7.3]*	

9.6 Challenges and issues

249. Key issues challenging the effective management of coastal resources throughout Kiribati are summarised in Table 10.

Table 10. Primary factors, and associated gaps, that provide evidence for critical needs to strengthen resource management, including through building MCS capacity, for Kiribati coastal fisheries.

Factor	Issues
Legislation	The legislative basis is essentially sound but operationalizing the provisions of that legislation (and associated plans) is a major challenge. Some legislative overlaps exist, such as in respect of small boat registration, but are not such significant issues to warrant comprehensive legislative review. Most apparent issues should be resolvable through consultation. The Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019 provide a sound framework for MFMRD's responsibilities in coastal fisheries. The Fisheries Act 2010 (and subsequent amendments) provides that Ministerial approval is required for a Fishery Management Plan. If the opportunity arises, this could usefully be reviewed to remove this additional layer of bureaucracy.
Institutional capacity	The gap in terms of being able to achieve effective outcomes, in the form of sustainably managed coastal resources, is being able to marshal the institutional capacity required to implement legislative and related provisions.
Inter-agency collaboration	Institutional capacity is impacted by underperforming inter-agency coordination and collaboration. Or, probably more accurately, poor inter-agency coordination and collaboration reflects limited institutional capacity. This is partly a consequence of under-resourced agencies (personnel and finances). The impacts are in the form of both the capacity to initiate and support consultation, outreach and engagement across dispersed island communities and to deliver centralized government agency functions associated with sector administration and management. Although Wardens will benefit from capacity building and training, the engagement of Island Council Wardens is an excellent example of institutional collaboration utilizing best-placed expertise and resources. Opportunities to build capacity through joint enforcement efforts, such as the boarding party teams assimilate available resources in a common endeavor to support enforcement. The CBRM Task Force may be a suitable platform for supporting such efforts.
MFMRD MCS capacity	Although the establishment of the new Coastal MCS Unit in early 2019 is encouraging, there is limited evidence of MRMRD monitoring and enforcement for coastal or nearshore resource use in terms of strategies that are being implemented and where performance is periodically assessed. This includes in respect of acquiring the requisite data and

	information critical for decision-making. The Unit is seriously under-resourced in terms of funding and staff i.e. its MCS capability is inadequate relative to its challenges. Tarawa Lagoon is the obvious example of a fishery in serious need of significant management intervention with a key role for the MCS Unit. In addition, a review of the inspection processes that are implemented for pet fish exports from Kiritimati would result in improved monitoring and regulation.
Stakeholder engagement, communications and outreach	Broader stakeholder consultative arrangements are limited to occasional workshops and *maneaba* meetings**.** MFMRD staff require significant support to build capacity in community engagement, consultation, communication and outreach as provided for under Kiribati National Coastal Fisheries Roadmap (2019-2036).
Quality data and information	The availability of quality data to support decision-making is insufficient.

250. The critical requirements, the needs, to address these priorities are:

a. an improved office environment for MCS staff in at Tanaea and Kiritimati in terms of both accommodation, amenities and access to technology;
b. additional Tarawa- and Island-based staff. It is unreasonable to expect a MCS Unit of three staff to service current national expectations;
c. capacity building in CBFM incorporating appropriate MCS systems and methodologies with emphasis on voluntary compliance mechanisms in communities;
d. information management systems that are appropriately staffed;
e. to review the inspection and monitoring program associated with pet fish exports from Kiritimati, including associated data management, and
f. financial resources including to support communications, outreach and awareness raising.

9.7 Capacity building

251. Since 2017, through a Project funded by New Zealand's Ministry of Foreign Affairs and Trade (MFAT), SPC has been increasing its activities in relation to governance in coastal fisheries in the region. Kiribati has been one of the countries to have participated in the *Improving fisheries food security and sustainable livelihoods for Pacific Island communities Project* which is focussing on strengthening governance structures and processes, specifically legislation, policy and monitoring, control, surveillance and enforcement (MCS&E), which numerous meetings of Heads of Fisheries have identified as being weak for coastal fisheries.

252. The Project is focussing on capacity-building for fisheries officers and staff from various regulatory and enforcement agencies such as Police, Customs and Environment in MCS&E. The focus is on basic skills in interviewing techniques, taking statements, gathering evidence, operational planning, court proceedings, court room etiquette and undertaking market inspections. The training also emphasises community education and awareness of the need to sustainably manage marine resources.

253. Kiribati has hosted one Workshop for the Project. To refresh learnings for the participants from the first Workshop, and train additional officers, additional Workshops should be requested.

Appendix A

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Appendix C

REPUBLIC OF KIRIBATI

3. PACIFIC ISLANDS REGIONAL OCEANSCAPE PROGRAM (PROP) PROJECT
Terms of Reference

Monitoring, Control and Surveillance (MCS) Gap Analysis and Needs Assessment – Kiribati Offshore and Coastal Fisheries

4. CONTEXT
The Government of Kiribati is working to enhance the sustainable value of large-scale oceanic fisheries, diversify sustainable marine-based sources of revenue for coastal communities and strengthen the safety of seafood in Kiribati. The lead agency in these activities is the Ministry of Fisheries and Marine Research Development (MFMRD). The Government of Kiribati has received financing from the World Bank for a Programmatic Preparation Advance (PPA) for the PROP Project and intends to apply part of the proceeds for consulting services to undertake specific technical studies to inform Project design.

The envisaged Project Components are currently described as:

Component 1: Enhancing the Value of Large-Scale Oceanic Fisheries
Component 2: Diversifying Marine-Based Revenue Streams for Coastal Communities
- *Sub-Component 2.1*: Enhancing the Value of Coastal Marine Resource Supply Chains in the Gilbert Islands
- *Sub-Component 2.2*: Enhancing the Value of the Blue Economy in Kiritimati

Component 3: Improving Seafood Toxicology and Safety Measures in Selected Fisheries
Component 4: Delivering Effective Project Management

5. BACKGROUND
The Kiribati offshore fishery is broadly defined as those resources fished beyond territorial waters and includes migratory species of tuna and billfish caught within the Exclusive Economic Zone (EEZ) and includes flag state responsibility for Kiribati flagged fishing vessels. Under the Fisheries Act, MFMRD is mandated with sustainable management and utilisation of marine resources within the country's EEZ.

MFMRD is also responsible for legal operation of all fishing and fishing vessels flagged and licenced to Kiribati. The offshore transboundary and high seas fisheries across the Pacific region and beyond are an evolving and dynamic sector with an increased focus on the rights of resource owners and the integration of fishing with increased onshore benefits. MFMRD operates with limited resources in a climate of increasing national, regional and international obligations.

One of the core roles of the MFMRD Offshore Division is effective monitoring, control and surveillance (MCS) functions. This includes ensuring resources are in place for the monitoring and compliance requirements of fishing vessels and processing operations including IMS, VMS,

observers, inspections and log-sheet monitoring. At the same time, many countries in the Pacific, including Kiribati, have expressed interest in emerging technologies such as the e-Reporting and e-Monitoring regimes and increased flag and port state responsibilities under international agreements.

6. OBJECTIVE OF ASSIGNMENT

The Government of Kiribati in cooperation with the World Bank is committed to further enhancing effective management of Kiribati oceanic and coastal fisheries. To this end, effective implementation of MCS and enforcement in Kiribati offshore and coastal fisheries is planned as a significant part of the Kiribati PROP.

To assist in identifying priority Project-related MCS investments in both offshore and coastal fisheries, the Government of Kiribati seeks the services of an MCS fisheries advisor to carry out a gap analysis and needs assessment to enhance and implement Kiribati's national MCS services including in the areas of: (i) necessary MCS facilities and systems in Betio (Tarawa) and Kiritimati, (ii) facilities and equipment for the collection, storage, analysis and distribution of national MCS related information (National Fisheries Information Management Systems), (iii) equipment and capacity building services to implement e-monitoring and e-reporting in offshore fisheries, and (iv) capacity building services to enhance MCS and enforcement in offshore and coastal fisheries.

The MCS advisor will carry out a National MCS gap analysis and national MCS needs assessment to identify shortcomings associated with MCS capacity. Information prepared by the MCS advisor will contribute to the formulation of the Kiribati PROP project. The primary focus of the gap analysis is to consider current and projected offshore and coastal fisheries Division's MCS needs, highlighting existing capacity and strengths, needs and concerns of MFMRD Offshore Division MCS staff, existing limitations in resources and work program delivery, the nature of institutional structures and steps that may e taken by MFMRD to leverage opportunities for enhanced divisional performance.

7. SCOPE OF SERVICES & DELIVERABLES

The consultancy will consist of two phases: Phase 1: Undertake a comprehensive and systematic gap and needs analysis of the national MCS framework relevant to MFMRD offshore and coastal fisheries divisions; and Phase 2, present results to MFMRD and World Bank staff at the conclusion of the study taking into consideration changes proposed and compilation of a final report.

2. Phase 1

The Consultant will:

1. Perform a systematic Gap Analysis of the Government of Kiribati to effectively implement IUU fishing countermeasures in order to minimize the risks from IUU fishing occurring within the Kiribati EEZ. This will include *inter alia*:

    a. Review the relevance and effectiveness of current MCS capacity of the Government of Kiribati and, in particular, the capacity of the MFMRD offshore division for effective implementation of national MCS strategies.

b. Assess compliance with relevant national and international laws, policies and standards relating to MCS activities, and identify gaps in relation to the implementation of these laws, policies and standards;
c. Assess, using a risk-based assessment framework, whether current MCS programs are delivered in an efficient, cost-effective and strategic manner.
d. Review the need for and characteristics of a national fisheries information system with respect to operation, maintenance, data security and information sharing and distribution to RFMO. This includes identification of specific requirements that will contribute to the development of Fisheries Management Platform.
e. Review opportunities for adoption and use of new technologies associated with E-monitoring and E-Reporting in offshore and coastal fisheries including capacity building and training needs;
f. Review legal capacity of Government of Kiribati to effectively implement legal measures to combat IUU fishing in line with the requirements of the market states;
g. Assess potential resourcing and capacity gaps in the delivery of MCS outputs as a corollary of the current institutional setup, including absence of appropriate facilities, information systems, equipment and tools to address identified resourcing and capacity needs within MFMRD;
h. Provide clear and targeted recommendations on state-of-the-art facilities and equipment investments to consider as part of the PROP Project.
i. Prepare clear recommendations for MCS capacity building including training which will enhance MCS capacity at national, sub-regional, and regional levels through to 2025.

3. Phase 2

4.

The Consultant will:

1. Submit a detailed final report to MFMRD which clearly provides a comprehensive response to the full Terms of Reference.

2. Conduct a 1-day workshop with MFMRD / World Bank staff to review consultancy outputs and responses to any recommendations in the report.

3. Provide MFMRD and The World Bank with a summary report from the workshop summarising the activities and sessions undertaken, and outlining any additional outcomes or recommendations resulting from the workshop. This must be submitted within two weeks of the conclusion of the workshop.

Appendix D

A summary of legislation, regulations, policies and plans relevant to MCS-related functions in MFMRD

1. In addition to several international environment and climate change-related instruments, Kiribati is signatory to, or has ratified, the following international fisheries instruments:

a. the 1982 United Nations Convention on the Law of the Sea (UNCLOS),
b. MARPOL (International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978,
c. the 2001 Bunkers Convention,
d. the 2001 Anti-Fouling Convention,
e. the 2004 Ballast Water Management Convention,
f. SPREP Pollution Protocol concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region,
g. the United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (in force as from 11 December 2001) (UN Fish Stocks Agreement),
h. the 1979 South Pacific Forum Fisheries Agency Convention,
i. the 1982 Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest (as amended April 2010) and its three Implementing Agreements (1982, 1990 and 2008),
j. the 1989 Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific (the Wellington Convention),
k. The 1992 Niue Treaty for Cooperation in Law Enforcement and Fisheries Surveillance in the South Pacific Region and its 2012 Subsidiary Arrangement,
l. the 1995 Palau Arrangement for the Management of the Purse Seine Fishery in the Western and Central Pacific,
m. the 2004 Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPF Convention) which entered into force on 19 June 2004,
n. the 1995 Federated States of Micronesia (FSM) Arrangement for Regional Fisheries Access,
o. the 1982 Harmonised Minimum Terms and Conditions (as amended in 2005 and 2016), and
p. the 1987 Multilateral Treaty on Fisheries Between Certain Governments of the Pacific Island States and the Government of the United States of America (the "US Treaty).

2. Kiribati supports a significant body of domestic legislation and associated regulations that either explicitly, or implicitly, have implications for coastal fisheries. Principle legislation, regulations and related policies and plans include:

Acts:

a. Merchant Shipping Act 1983
b. Local Government Act 1984 (Amended 1987, 1989, 1992, 2006, 2008 and 2013)

c. Kiribati Ports Authority Act 1990
d. Environment Act 1999
e. Phoenix Islands Protected Area Conservation (PIPA) Trust Act 2009
f. Fisheries Act 2010 with Amendments in 2015 and 2017
g. Biosecurity Act 2011
h. Marine Zones (Declaration) Act 2011

Regulations:

a. Conservation and Protection (Rock Lobsters – *Panulirus* species) Regulation 1979
b. Fisheries processing and export Regulations 1981
c. Prohibited Fishing Areas (Designation) Regulations 1981
d. Phoenix Islands Protected Area Regulations 2007
e. Fisheries (Protection of bonefish on Kiritimati) Regulations 2008
f. Fish export regulations 2012 (currently under review)
g. Closing Lines Regulations 2014
h. Contiguous Zone Outer Limits Regulations 2014
i. Fish Aggregating Device Management Regulations 2014
j. Fisheries (Purse Seine Vessel Days Scheme) Regulation 2014
k. Domestic Fishing Zone Limit Regulations 2015
l. Shark Sanctuary Regulations 2015
m. Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019
n. Draft Maritime (Small Craft) Regulations 2019

Plans and Policies:

a. MFMRD Strategic Plan
b. PIPA Management Plan
c. Kiribati Integrated Environment Policy 2012
d. National Plan of Action to Prevent, Deter and Eliminate Illegal, Unregulated and Unreported (IUU) Fishing
e. Kiribati National Fisheries Policy 2013-2023
f. Draft Kiritimati Marine Aquarium Trade Management Plan 2017
g. FAD Management Plan 2014
h. Tuna Fishery Management Plan - 2017 revision.

Merchant Shipping Act 1983

3. Established under the Marine Division of Ministry of Information, Communication, Transport and Tourism Development (MICTTD), the Merchant Shipping Act 1983 establishes the Kiribati Registry of Ships and a Registrar.

4. The Kiribati Ship Registry has the exclusive authority to register vessels under the Kiribati Flag and issue all the necessary certificates on behalf of the Kiribati Government. The operational headquarters of the Kiribati Ship Registry is in Singapore.

Local Government Act 1984
(Amended 1987, 1989, 1992, 2006, 2008 and 2013)

5. Local Government Councils are established by the Minister responsible under the Local Government Act 1984. Section 4 defines the limits of the area of the authority of the Council, which unless otherwise specified, shall include "the Kiribati waters adjacent".

6. Although the Minister responsible has a power of veto, a Council may enact bye-laws, which have the force of law in the area of authority of the Council. Bye-laws must be made available for public discussion prior to adoption.

7. In addition, Section 32 of the Local Government Act gives authority to the Island Council to appoint a committee for any general or special purpose it may think may be better regulated or managed by means of a committee.

8. A Schedule lists functions of Island Councils that include:
to provide for the improvement and control of fishing and related industries;

9. The 2006 amendment includes a definition of "waters adjacent":
notwithstanding the provisions of the Fisheries Ordinance and the Maritime Zones Declaration Act, the lagoon and/or parts of the sea having as, its inner limits the low-water line, as defined under the Marine Zones Declaration Act, and extending 3 nautical miles seaward, but where two or more councils have their adjacent waters over-lapping, an agreement shall be reached to determine the extent of their adjacent waters, failing that the Minister shall so determine;"

Kiribati Ports Authority Act 1990

10. Access to the main ports is regulated by the Kiribati Ports Authority[51] (KPA), a statutory body established in 2000 under Kiribati Ports Authority Act 1990. The KPA is overseen by a Board Directors appointed by the Minister of Communication, Transport and Tourism.

11. The KPA is wholly owned by the Government and employs around 160 staff. The main KPA office is located at Betio on Tarawa. KPA is also responsible, as the harbour-master, for the safe and efficient functioning of shipping and port navigation facilities, berthing, and the use of shore-based facilities. The second port-of-entry is located at Ronton on Kiritimati to serve the Line and Phoenix Islands. Under the Act, KPA provides the following services:

a. regulate and control navigation within ports to promote the use, improvement and development of ports facilities and services,
b. to acquire such land and execute such works or do such acts and things as may be necessary in respect of the functions of the Authority,
c. to monitor and control overseas cargoes that are under its custody,
d. releasing cargoes through proper procedures and documents, and
e. to detain any vessels that are not in compliance with the international ship and port facility security code (ISPS) control and regulation.

Environment Act 1999

[51] www.kiribatiportsauthority.com

Amended 2007

12. The Environment Act 1999 provides for the protection, improvement and conservation of the environment of Kiribati. The Act focuses on controlling pollution and the impacts of development. Amendments were made to the 1999 Act with the Environment (Amendment) Act 2007 to reflect international obligations and commitments. Section 2 of the Act, Interpretation, includes a definition of environmental impact assessment:

> *"means the identification, analysis, avoidance and litigation of environmental and social impacts arising from any proposed development under Part I and the evaluation of the cost effectiveness and environmental consequences of alternative options to the proposed development;'*

13. Section 4 provides that:

a. *To the extent of any inconsistency between this Act, and any other Act, the Acts shall be construed so far as is possible so that the objects of this Act are fulfilled*
b. *Compliance with the requirements of this Act shall not absolve a person from separate compliance with any other law of Kiribati in so far as it is not inconsistent with this Act*.

14. Objectives of the Act of relevance to fisheries, detailed in Section 3, include:

a. to provide for and establish integrated systems of development control, environmental impact assessment and pollution control;
b. to prevent, control and monitor pollution;
c. to reduce risks to human health and prevent the degradation of the environment by all practical means, including the following –
    a. regulating the discharge of pollutants to the air, water or land;
    b. regulating the transport, collection, treatment, storage and disposal of wastes; and
    c. to comply with and give effect to regional and international conventions and obligations relating to the environment;
d. protecting and conserving the natural resources threatened by human activities, particularly those resources of national and ecological significance as may be classified under the categories of terrestrial vegetation, coral, fish and marine life;
e. to comply with and give effect to regional and international conventions and obligations relating to the environment;
f. to provide for the protection, conservation and use of the environment;
g. to promote sustainable development;
h. to promote the conservation and sustainable use of biological diversity

15. Under the Act, it is the responsibility of the Minister to, *inter alia:*
develop, co-ordinate and facilitate implementation of national policy concerning environmental planning, environmental impact assessment and pollution control.

16. The Act provides for a general duty to consider environmental impact associated with a prescribed development, under Part III:

> *In considering the grant of approval for any existing or proposed development or further expansion in any existing development, the Minister, acting in accordance with the advice*

of Cabinet after consultation with the Division and the relevant public authority and all other relevant and concerned shareholders shall have regard as far as practicable to the effect such development or expansion would have on the environment.

17. In respect of a "prescribed development", the Schedule to the Act provides, *inter alia:*

FISHING AND MARINE INDUSTRY PRODUCT
Fish processing, seaweed farming, land or marine foods processing or farming, pet fishing licensing, fishing ponds industries, fishing activities in Kiribati waters, introduction to Kiribati non-native (alien) species.

18. Part III of the Environment Act 1999 outlines obligations and offences under the Act, including those that relate to environmentally-significant activities. Key provisions at Part IV include: application processes (Section 31) and considerations (Sections 32, 37), requirements for Environmental Impact Assessment Reports (Sections 33, 36) and conditions for environmental licences (section 38).

19. Section 37(2)(a) provides that, in considering an environmental impact assessment report and making a decision on an application for an environmental licence for a proposed activity or development, the Principal Environment Officer must be guided by the principles of sustainable development. Section 33(4) provides that all the costs and expenses incurred for monitoring the impacts of a prescribed development should be covered by the developer.

Phoenix Islands Protected Area Conservation (PIPA) Trust Act 2009

20. This legislation establishes a Trust to support the administration, management and operation of the Trust and ensure that exploitation of PIPA resources remains limited or prohibited. Development of a PIPA management plan is provided for under the Environmental Act 1999.

21. The Trust's primary activity is to use trust assets to provide support for:
   a. administration and operation of the Trust;
   b. management of the Phoenix Islands Protected Area; and
   c. ensuring that exploitation of the resources of the Phoenix Islands Protected Area remains limited or prohibited.

22. The Trust's secondary activity is to use trust assets to provide support for, *inter alia*:
   a. sustainable development activities relating to the PIPA;
   b. long term data gathering and analysis, documentation and information sharing relating to the PIPA;
   c. collaboration with local government and natural resources institutions and other interested parties to build a national commitment to environmental conservation;
   d. supporting environmental awareness and education programs that promote biodiversity conservation in Kiribati;
   e. activities similar to those the Trust pursues with respect to the PIPA in other protected areas within Kiribati; and

f. activities relating to the conservation of the environmental, cultural and historic resources of Kiribati for the benefit of the public.

23. The Trust is governed by a Board of Directors which reviews performance under the PIPA Management Plan.

24. A Conservation Contract between the Trust and the Government provides for payments to the Government for reasonable compensation for loss of revenue occasioned by measures to limit or prohibit the exploitation of PIPA resources.

Fisheries Act 2010

25. The Fisheries Act 2010 was enacted to repeal the existing Fisheries Ordinance 1979 and to incorporate all amendments to the previous legislation enacted over the years. It provides for the conservation, management and development of Kiribati fisheries and the control of foreign fishing. Moreover, it implements regional and international obligations from treaties to which Kiribati is party.

26. The principal objectives of the Act are:

a. To promote the sustainable management of the fisheries of Kiribati and the development and use of fisheries resources for the benefit of Kiribati, including the recovery of fees that reflect the value of the resource; and
b. To protect fish stocks and the marine environment of Kiribati.

27. The Act also provides for, *inter alia*:

a. licencing conditions for local and foreign fishing vessels, aquaculture and fish processing establishments,
b. international agreements,
c. the protection of customary rights,
d. the prohibition of driftnet fishing and destructive fishing methods,
e. instruments of enforcement,
f. management plans for designated fisheries,
g. the powers of authorised officers,
h. the authorization of the Kiribati Seafood Verification Agency,
i. extension of Kiribati's jurisdiction to act on infringements in the high seas pockets (HSPs) in support of WCPFC measures, primarily through providing for powers for inspection on the High Seas,
j. participation of observers in the Regional Observer Programme,
k. automatic implementation of the PNA 3 Implementing Arrangements without Parliamentary approval, and
l. providing for use of evidence and actions by non-Kiribati officers in enforcing fisheries regulations.

28. Fisheries fall under the responsibility of the Ministry of Fisheries and Marine Resources Development (MFMRD).

29. The Director of Fisheries is required to prepare a management plan for each of the Designated Fisheries, as designated by the Minister under the Act.

30. Amendments in 2017 extended the definition of Director of Fisheries to include the Director of Coastal Fisheries, Director of Licensing and Compliance, and Director of Seafood Verification.

Biosecurity Act 2011

31. The Biosecurity Act 2011 establishes a regime to control the import and export of regulated pests and diseases and includes the designation of a Director of Biosecurity and biosecurity officers in the Ministry of Agriculture. Miscellaneous and legal provisions include enforcement procedures.

Marine Zones (Declaration) Act 2011

32. In 2011, in repealing the Marine Zones (Declaration) Act 1983, the Republic of Kiribati adopted a Marine Zone (Declaration) Act in order to make provisions in respect of the baselines for Kiribati, internal waters, the archipelagic waters, the contiguous zone, the territorial sea, the exclusive economic zone, and the continental shelf.

33. The Regulation includes a declaration of sovereign rights and provides for the enactment of supplementary regulations, if required.

Fisheries (Amendment) Act 2015

34. The purpose of the Fisheries Amendment Act 2015 is to promote the sustainable management of the fisheries of Kiribati and the development and use of fisheries resources for the benefit of Kiribati, including fees that reflect the value of the resource and to protect fish stocks and the marine environment.

35. The scope of application in relation to persons, fishing vessels and associated equipment is described in relation to Kiribati waters or any other waters as permitted under international law or treaty. The Act provides that the application of conservation and management measures adopted by a regional fishery management organisation of which Kiribati is a member do not apply to internal waters, archipelagic waters or territorial seas defined under the Maritime Zones (Declaration) Act 2011, unless expressly agreed to by Kiribati.

36. The Amendment re-defines pre-existing terms, or defines new terms, in relation to, *inter alia,* foreign and Kiribati fishing vessels, fish aggregating device, fishing gear, net sharing, seafood, related activity and transhipment. The Minister's responsibilities, including in relation to the appointment of officers, is described. It also describes obligations associated with entry to Kiribati waters by a foreign vessel, equipped for fishing, but which is not licensed to fish in Kiribati waters.

37. It amends Section 11 of the Fisheries Act 2010 to require the Director of Fisheries to maintain a Register of Local Fishing Vessels. In granting a license to fish in Kiribati waters, the Director of Fisheries may prohibit a vessel from:

a. fishing on specific high seas areas, or
b. load, unload or tranship fish outside Kiribati waters, or
c. load or unload fuel or supplies outside Kiribati waters, or
d. use specific fishing gear or equipment outside Kiribati waters.

38. In addition, fishing is prohibited in a marine protected area, reserve or area designated as a prohibited area.

39. A new part 5A, in relation to exports, establishes a Competent Authority to regulate, control, supervise and monitor fish processing establishments.

40. A new Section (15A) was also inserted in Part 6 to establish a Record of Fishing Vessels, the details required for a vessel to be entered on to the Record and information relating to the Record that may be transmitted to any relevant regional or sub-regional fisheries management organisation of which Kiribati is a member.

41. The Amendment also provides for the designation of Observers for any vessel licensed or authorised to operate in Kiribati waters including the operation of observers outside Kiribati waters. It includes responsibilities for authourised officers to execute powers under the Act in waters outside Kiribati waters as provided for under any conservation and management measure, organisation, arrangement, agreement or scheduled treaty to which Kiribati is party. There are also provisions in relation to the contravention of laws of other States.

42. The Amendment describes arrangements in relation to confidentiality and the security of information. Section 39(6) provides that the Minister, on the advice of the Director, may authorise the release of any information supplied by an observer device or equipment used for vessel monitoring purposes (designated confidential information under 39(4)), relating to the position of any vessel, upon request, to the relevant government agencies for purposes including surveillance, SAR and other emergency and may authorise the release of such other confidential information for such purposes as may be prescribed.

43. Administrative penalties are also provided for under the Amendment. Decisions whether to instigate criminal or administrative penalties fall to the responsibility of the Fisheries Administrative Penalty Committee (Section 40). This Committee, comprising the Attorney General's Office, MFMRD, Police, and Customs and Immigration, considers the seriousness of the offence and whether the offender had any prior record, and determines the legal course of action. Administrative proceedings are often preferred as they allow for the detention of the vessel, and rapid recovery of penalties and, from the vessel operator's perspective, avoid lengthy port detentions while awaiting court proceedings. These penalties may be negotiated out of court but are compliant with the schedules as laid out in the Act. Criminal proceedings may be initiated for systematic repetition in offence, and allow for the detention of the ship's captain.

44. The associated Explanatory Memorandum describes the purpose of the Amendment and the issues it addresses.

Fisheries (Amendment) Act 2017

45. The objective of the Fisheries Amendment Act 2017 is to support the long-term conservation, management and sustainable use of the marine living resources of Kiribati. In support of this objective, the Minister may, from time to time, determine the total allowable catch, total allowable effort, or both, for fisheries in Kiribati fisheries waters.

46. In addition to significant revisions to schedules of penalties, the Amendment re-defines the scope of responsibilities for the Director and, *inter alia*, defines IUU fishing and serious violations. Consistent with a general obligation to protect the marine environment, measures that may be implemented by the Minister to achieve the objective of the Amendment include:

a. the adoption of measure to ensure long-term sustainability of fisheries resources taking account of the impacts of fishing on non-target species and associated or dependent species, and
b. prevent or eliminate over-fishing and excess fishing capacity, and
c. ensure that data on fisheries, including information relating to ecosystems, social and economic systems in which fisheries occur, shall be collected, verified, reported and shared in an appropriate and timely manner, and
d. ensure that effective enforcement of, and compliance with, and conservation and management measures shall be pursued to protect biodiversity, and
e. ensure that pollution and waste originating from fisheries operations, discards, by-catch and lost and abandoned gear and the impacts on other species and marine ecosystems shall be minimised or eliminated, where possible, and
f. apply the ecosystems and precautionary approach where the precautionary approach means that the absence of full scientific information shall not be used to avoid or prevent a decision to minimise potential adverse effects or risks.

47. The Amendment also provides that the Minister will publish, in the Gazette, a list of international, regional and sub-regional organisations to which Kiribati is party or a cooperating non-contracting party. It also provides that conservation and management measures adopted by regional organisations or arrangements do not apply to Kiribati's internal waters, archipelagic waters or territorial sea, as defined in the Marine Zones (Declaration) Act 2011, without the express consent of the Minister following consultation with Cabinet. The Minister is also required to publish a list of all international conservation and management measures that apply in Kiribati, including in respect of those foreign fishing vessels registered or licensed to operate in Kiribati waters. Such notices may specify parts of those conservation and management measures that apply and those parts that do not. Licensing conditions, which are also to be published in the Gazette at least every 6 months, shall specify appropriate obligations in this regard. Non-compliance with the Amendment, or a fishery management plan approved by the Minister, may result in a penalty of up to A$3,000,000.

48. In regard to port State control, the Amendment includes a new Section (21) which provides for the Minister to, *inter alia*:

a. prohibit port[52] entry to a vessel, or fleet of vessels, which has been identified as having been engaged in, or supporting, fishing in contravention of international conservation and management measures, or the laws of Kiribati or another State, unless it can be established that fish on board was taken in a manner consistent with relevant conservation and management measures or the laws of another State,
b. grant conditional entry to a vessel, or fleet of vessels, for the purpose of inspecting,
c. deny, or grant conditional, entry to a vessel believed to be without nationality or to have operated under the flags of two States for convenience,
d. revoke authority for a vessel to enter, or remain, in port, or be detained, if any of the above conditions associated with port entry warrant such action,

49. The Minister may reverse any decision associated with these provisions following review. If a vessel is denied port entry, the Minister is required to advise the flag State and any regional fisheries management organisation that the flag State is a member.

50. The associated Explanatory Memorandum explains that the Amendment seeks to address issues raised by the European Commission in relation to the possibility of identifying Kiribati as a non-cooperating third country in the fight against IUU fishing.

Regulations

Conservation and Protection (Rock Lobsters – *Panulirus* species) Regulation 1979

51. These Regulations define "rock lobster" (sometimes known as crayfish) as the species of crustacean known by the scientific name of *Panulirus*.
52. The Regulations provide that a rock lobster is deemed to be immature if the length of its carapace (the inflexible shell covering the forepart of a rock lobster) is less than 85 millimetres measured from its eyes.

53. The Regulations state that any person who catches, takes, kills, has in his possession, sells, exposes for sale, buys for sale or consigns to any person for the purpose of sale:
a. any immature rock lobster,
b. any female rock lobster bearing its eggs,

shall be guilty of an offence and liable to a fine of $100 or imprisonment for 3 months.

Fisheries Processing and Export Regulations 1981

54. The Fish Processing and Export Regulations 1981 apply to fish intended for export for human consumption that intended for processing in Kiribati, including fish landed by Kiribati flagged vessels in a foreign port. The Regulations define fish processing establishments, the conditions for export of fisheries products and a schedule of associated fees.

55. Although the provisions of these Regulations are included in the Fish Export Regulations 2012, the 2012 Regulations do not repeal the 1981 Regulations.

[52] Includes offshore terminals and other installations for transshipping and bunkering.

Prohibited Fishing Areas (Designation) Regulations 1981

56. The Prohibited Fishing Areas (Designation) Regulations, close fishing in Azur, Pelican and Isles Lagoons and the Tonga Channel, with adjoining Artemia ponds, on Kiritimati. They are mainly concerned with protecting milkfish.

Phoenix Islands Protected Area Regulations 2007

57. The Phoenix Islands Protected Area (PIPA) is among the largest designated MPAs in the world[53] and is also a UNESCO World Heritage Listed site. PIPA encompasses the Phoenix Island Group, covering an area of 408,250 km^2 of marine and terrestrial habitats in the Southern Pacific Ocean. PIPA was established through the Phoenix Islands Protected Area Regulations 2007, in accordance with the Kiribati Environment (Amendment) Act 2007.

58. The PIPA Regulations define 'protected area' to mean "large, zoned, multi-use land and marine areas managed for conservation and sustainable use under IUCN Category 1b - Wilderness Area". The Government of Kiribati is responsible for the development of the PIPA Management Plan under the Environment Act 1999.

Fisheries (Protection of bonefish on Kiritimati) Regulations 2008

59. These Regulations, administered by MFMRD, establish conditions for fishing for bonefish on Kiritimati. They make provision for fishing permits to be purchased by tourists, research permits and penalties for breach of any provisions of the Regulation. The Regulations also provide for the appointment of wildlife wardens, under the Wildlife Conservation Ordinance. Although apparently never actioned, it provides for fishing guides to be appointed as wardens.

Fish Export Regulations 2012

60. These Regulations, promulgated under the Fisheries Act 2010, apply to fish intended for export for human consumption that intended for processing in Kiribati, including fish landed by Kiribati flagged vessels in a foreign port. The Regulations also establish the Competent Authority, the Kiribati Seafood Verification Agency, which is responsible to the Director of Fisheries, or his or her designate.

61. The objectives of the Agency include to:
   a. conduct the verifying and certifying of the export of seafood,
   b. ensure the application of appropriate quality control measures and seafood production industry standards; and
   c. to ensure the facilitation of exports from Kiribati of all categories of seafood for human consumption.

62. Among other functions, the Agency is responsible for setting standards and certifying and licensing fish processing establishments.

[53] The largest is the Ross Sea MPA in Antarctica. It is approximately 1.5 million km^2.

63. In what appears to be an administrative oversight, these Regulations do not repeal the Fisheries Processing and Export Regulations 1981.

64. The 2012 Regulations are currently subject to review. The motivation is to respond to the EU's issuing of the yellow card.

Closing Lines Regulations 2014

65. Declared by the Minister for Fisheries and Marine Resources Development under the Maritime Zones (Declaration) Act 2011, the Closing Lines Regulations 2014, define internal waters as all waters on the landward side of the territorial sea or any closing lines to the extent the closing lines are outside the archipelagic baselines.

Contiguous Zone Outer Limits Regulations 2014

66. Under the Marine Zones (Declaration) Act 2011, the Minister for MFMRD declared a "Contiguous Zone" to mean waters beyond the territorial sea within a distance of twenty-four (24) nautical miles from the baselines from which the breadth of the territorial sea is measured.

Fish Aggregating Device Management Regulations 2014

67. In addition to defining a fish aggregating device (FAD), associated equipment and operator servicing of FADs, the Fish Aggregating Device Management Regulations 2014 provide for the inclusion of this Regulation in licensing conditions. The Regulation establishes a Register of FADs by the Director of Fisheries and an associated registration fee.

68. The Regulation requires the operator of a licensed purse seiner to maintain a FAD log with details of the FAD including deployment details and location coordinates by date. Details for monthly reporting of FAD deployments are prescribed as well as the information required by the Director of Fisheries 24 hours in advance of a FAD-related activity. Details for the marking of FADs, and associated electronic equipment, are also described. Monthly reports for FAD-related activity are required under the Regulations from all vessels registered to fish in the Kiribati EEZ operating in the WCPF Convention Area. These reports are required to be transmitted to the WCPFC in accordance with relevant CMMs adopted by the Commission from time to time.

69. The Regulations also provide for the Director of Fisheries to prepare a FAD Management Plan. It describes obligations in relation to discards, including reporting, and requirements in relation to human observers and mobile transmitter units associated with vessel monitoring systems in accordance with specifications and procedures determined by the Director.

70. The Regulations can prohibit the deployment and servicing of FADs for prescribed periods. Although not specified, it includes current WCPFC FAD closure periods specified in Conservation and Management Measure 2018-01. However, the Minister has the authority to issue exemptions in this regard. In assessing the case for an exemption, the Director may consider any

disproportionate burden associated with such a restriction and the status of any related measures that provides for the reduction of fishing on FADs by domestic vessels.

Fisheries (Purse Seine Vessel Days Scheme) Regulation 2014.

71. The Fisheries (Purse Seine Vessel Days Scheme) Regulation 2014, promulgated under the Fisheries Act 2010, defines, *inter alia*, electronic equipment, fishing days and non-fishing days, which include references to the use of electronic equipment in support of fishing and stowage of fishing gear, vessel monitoring system and vessel monitoring system information. The Regulation also provides for the operation of a vessel monitoring system, the ownership of vessel monitoring system information, which is vested in the State, and requires activities claimed to be associated with non-fishing days to be verified by on-board human observers.

Domestic Fishing Zone Limit Regulations 2015

72. In accordance with the Fisheries Act 2015, the Minister, on advice of the Director, may declare a **"**Domestic Fishing Zone" which means:

a. for a domestic purse seine fishing vessel, the exclusive area the breadth of 21 nautical miles (nm) measured from the outer limits of the contiguous zone as specified under the Contiguous Zone Outer Limits Regulation 2014, that is from 24nm to 45 nm of the Gilbert Group Exclusive Economic Zone (EEZ) and the Line Group EEZ;
b. for a domestic longline fishing vessel, the Contiguous Zone of 12nm measured from the outer limits of the Territorial Sea as specified under the Territorial Sea Outer Limits Regulation 2014.

73. "Domestic Fishing Vessel" is defined under Regulation 4 of the Act to include a longline or purse seine fishing vessel that:

a. is licensed to fish in the Kiribati EEZ beyond the Contiguous Zone;
b. is operated by a joint venture fishing company or fly a Kiribati flag;
c. land their catch for onshore processing; and
d. is subject to any other qualifications as imposed by the Minister.

74. Only domestic fishing vessels will be licensed to operate within the domestic fishing zone.

Shark Sanctuary Regulations 2015

75. The objectives of the Shark Sanctuary Regulations 2015, established under the Fisheries Act 2010, are to:

a. establish a shark sanctuary in Kiribati waters to ensure the conservation of sharks,
b. to protect the balance of the marine ecosystem, including commercially important fish species, and the health of marine habitats including coral reefs,
c. to help sustain and develop Kiribati's economy from shark and marine-related ecotourism, and
d. further enhance the conservation reputation of Kiribati by joining other countries in the region in adopting measures to protect sharks.

76. The Regulation prohibits the presence of wire traces on board a fishing vessel in Kiribati waters and persons are prohibited from using a wire trace for fishing inside the Sanctuary. However, the prohibition on wire traces does not apply to a foreign fishing vessel that has entered Kiribati fisheries waters for a "purpose recognised by the United Nations Convention on the Law of the Sea". The Regulations provide for permits to be issued specifying exemptions that may apply.

77. The Schedule identifies five shark species that warrant special protection.

Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019.

78. The purpose of these Draft Regulations is to:

a. conserve, manage and protect coastal marine resources to ensure their sustainable utilization for the benefit of l-Kiribati people; and
b. state out conservation and management measures to sustain the marine resources covered under these Regulations; and
c. enable the inclusivity of the community in fisheries management through recognising and enforcing community-based fisheries management plans; and
d. promote data collection through the establishment of a record of licensed fishing vessels and reporting obligations to enhance the ability to conserve and manage such marine resources.

79. The Draft Regulations apply the definition of a coastal fisheries management plan adopted under section 5(3) of the Fisheries Act 2010 for a designated coastal fishery. It defines community-based fisheries management to mean a co-management system under which a community takes a leading role in managing fisheries in adjacent coastal areas in partnership with, or with support from, a promoting agency. A community-based fisheries management plan means an arrangement between the Minister and a coastal community for the adoption of conservation and management measures regarding certain fisheries in which the community takes a leading role. The scope and consultative process associated with a community-based fishery management plan are described.

80. The Regulations will establish a prohibition on certain fishing gears and fishing methods, prohibit tampering with a fish aggregating device deployed in coastal waters, egg-bearing lobster and mantis shrimps, turtles, giant clams, and size limits for species of fish listed in the Schedule. It also prohibits lime production from coral.

81. Fishing for commercial purposes in Kiribati coastal waters will be reserved for local fishing vessels in accordance with the Act and the Regulations. A person will not be permitted to fish in a designated coastal fishery, for commercial purposes, without a licence. A permit is also required to trade in a designated coastal fishery for commercial purposes.

82. The Draft Regulation will establish a Record of Licensed Vessels, a Record of Offences and penalties, including forfeiture of fishing gear. They also prohibit the removal of any material from an anchored FAD or the attachment of small craft to an anchored FAD.

Draft Maritime (Small Craft) Regulations 2019

83. Consistent with Section 6(x) and Section 214 of the Maritime Act 2017, the Minister is considering new small craft Regulations. Once promulgated, the Regulation will apply to all small crafts that are less than 10 meters in length that operate within Kiribati waters unless, on the basis of advice from the Director vessels are exempted. Exemptions may be based on:

a. the nature or the type of the small craft;
b. the use for which the small craft is put; or
c. the area or place in which the small craft operates.

84. The Regulations provide for a Registry of small craft to be maintained by the Marine Division. Small craft registered must display the registration number on each side of their hull. In addition, the Regulations establish different categories of license including "commercial small-scale fishing craft". It is an offence to operate a small craft without such a license. Minimum crew and safety standards are prescribed in associated Schedules and small craft are subject to periodic inspections to ensure compliance.

Plans and Policies

Kiribati Integrated Environment Policy 2013

The 2014 Kiribati Integrated Environment Policy (KIEP) is a key strategic policy document for the Government. It provides the policy platform for long-term planning, and action, to respond to priority environmental issues, in particular the impacts of global climate change on Kiribati's islands. It is considered a statement of intent and a document providing guidance and direction for government, local communities, development partners and all other stakeholders.

Key drivers for the Policy "*are most apparent in the heavily populated urban centres of Betio, South Tarawa and increasingly on Kiritimati Island. Increased human population, urbanization at alarming levels, degradation of the natural environment due to increased generation of nonbiodegradable wastes and pollution put both the environment and economy under tremendous strain*".

The Ministry of Environment, Lands and Agriculture Development (MELAD), under the Environment and Conservation Division (ECD), led the preparation of the Policy, Kiribati's first integrated environment policy, to provide one vehicle for mainstreaming the environment into the national development agenda. The KIEP builds on the objectives of the Kiribati National Environment Management Strategy (NEMS) that was developed in 1993.

The Policy has five goals:

a. Climate Change: To strengthen national capacity for effective response and adaptation to climate change, with a particular focus on environmental protection and management
b. Island Biodiversity Conservation and Management: To strengthen national capacity and institutional frameworks for the effective conservation, management and sustainable use of Kiribati's terrestrial and marine biodiversity
c. Waste Management and Pollution Control: To strengthen national capacity to ensure a safe and healthy environment for the people of Kiribati through effective and sound

management of chemical and waste and to foster behavioural changes through education, awareness raising campaigns, enforcement of regulations, and capacity building that minimise waste generation and promote best waste management and pollution prevention practices.

d. Resource Management: To promote the sustainable use and development of Kiribati's non-living land, water, coastal and mineral resources
e. Environmental Governance: To advance the development of capacities and systems for implementing effective environmental governance.

The Policy proposed the establishment of an overarching Environment Advisory Committee to provide advice, consultation and coordination for the implementation, monitoring and review of the policy and its strategic plan at national level. Membership was proposed to include senior representatives of government agencies and other key stakeholders such as NGOs, churches and the private sector. The Policy is supplemented by a Strategic Environment Plan which was for the period 2012-2016.

Several subsidiary committees were also proposed. Committees which could engage MFMRD MCS staff include the Foreshore Management Committee, the Environment Advisory Committee and the Environment Enforcement Advisory Group, among others as considered appropriate.

Kiribati National Fisheries Policy 2013-2023

This is the first fisheries policy developed by MFMRD to set new directions or a roadmap for effective fisheries management, conservation and development through to 2023. The policy is designed as a planning tool for MFMRD to "mainstream, implement and monitor the national development fisheries' priorities reflected in the Kiribati Development Kiribati National Fisheries Policy 2013–2025 13 Plan (KDP)". It complements the Kiribati Development Plan 2012–2015 supporting its objectives of economic growth and poverty reduction, sustainable development and good governance.

The Policy is supported by five strategic objectives:

a. Support economic growth and employment opportunities through sustainable fisheries, aquaculture and marine resources development.
b. Protect and secure food security and sustainable livelihoods for I-Kiribati.
c. Ensure long-term conservation of fisheries and marine ecosystems.
d. Strengthen good governance with a focus on building the capacity of MFMRD to implement and support fisheries management, development, and monitoring, control and surveillance.
e. Build climate change resilience for fisheries and marine resources in Kiribati.

The Policy identifies that, although Kiribati claims a strong record in prosecuting blatant illegal fishing, there is a need to strengthen existing fisheries laws and related legal frameworks, including management measures/procedures to identify misreporting and prosecute non-compliance accordingly. It notes that Kiribati has not prosecuted a vessel for observer-reported violations since the mid-1990s and has no consistent process for collecting, analysing or recording observer violation reports, nor for reviewing previous violation reports when issuing licenses.

The Plan is supported by 34 strategic actions: 20 described for the period through to 2020 and 14 for the period 2020-2023.

Strategic Actions 13 and 14 relate to MCS activities:

- *Strategic Action 13*: Establish on-going training programme in fisheries boarding and inspection, monitoring, control and surveillance,
  Implementation Partners and Support: Close engagement between MFMRD, PMU and potentially the Maritime Training College. Support may be available from AFMA and FFA.

- *Strategic Action 14*: Register for WCPFC High Seas, Boarding and Inspection as and when appropriate.
  Implementation Partners and Support: Close engagement between MFMRD and PMU. Support may be available from AFMA and FFA.

The Policy is to be reviewed every 4 years.

Draft Kiritimati Marine Aquarium Trade Management Plan 2017

85. A Draft Fishery Plan for the Kiritimati aquarium trade has been prepared for MFMRD in accordance with section 5 of the Fisheries Act, 2010 and the Local Government Act 1984. Implementation responsibilities will rest with MFMRD and the Kiritimati Urban Council.

86. The Draft Plan declares the Marine Aquarium Trade Industry in Kiritimati to be a Designated Fishery in terms of Section 5 of the Fisheries Act. In addition, under Section 3 of the Local Government Act 1984, the Island Council takes authority for the control and management of the island's area of authority, including the resources of the lagoon and waters adjacent to the island as defined under the Marine Zones Declaration Act 2011.

87. Implementation requirements of the Plan, if it is promulgated, require, *inter alia*, that the following be established:

a. a Catch Quota Management System (Part 2,1a)
b. a participatory management system and framework (Part 2, 1b)
c. a mechanism to monitor related economic developments (Part 2, 1d)
d. a mechanism to ensure that the equitable distribution oand f benefits is maximized (Part 2, 1d)
e. an information management system (Part 2, 1e)
f. Designate the Fishery (Part 4, 1a) [consistent with section 5(3) of the Fisheries Act 2010 and the Draft Fisheries (Conservation and Management of Coastal Marine Resources) Regulations 2019]
g. a Committee (Part 2, 2ii and Part 4,1d)
h. bye-laws (Part 2, 2iii)
i. licensing/permit arrangements ((i) Trade Operations and ii) Collector) (Part 2, 2iv, Part 4, 3 and 4)

j. an effective self-supporting enforcement system (2v) including monitoring of closed areas (Part 4,6), and
k. an ongoing monitoring program (for both compliance and scientific purposes) (Part 2,2vi),

2019 Tuna Management Plan

The stated purpose of the 2013, revised in 2019[54], Tuna Management Plan (TMP) is to *sic.* establish sound management framework for the tuna resources of Kiribati to support the sustainable utilization of tuna fisheries in the non-contiguous waters of Kiribati's EEZs. It makes no mention of tuna being a 'designated fishery'. It applies to all registered tuna fishing vessels flying the Kiribati flag, to foreign fishing vessels and joint-venture fishing vessels licensed to fish in Kiribati including locally-based fishing companies fishing in any of the non-contiguous EEZs. Vessels flying the Kiribati flag fishing on the adjacent high seas' areas are also covered by the Plan.

The Plan supports three goals and six associated strategies:

- *Goal 1: Ensure appropriate Consultation and Collaboration*
    - Strategy 1: Ensure an open and transparent consultation for the discussion of tuna fisheries related issues through collaboration with tuna stakeholders.
    - Strategy 2: Ensure national tuna interests are protected and reflected at the sub-regional, regional and international tuna fisheries management fora.
    - Strategy 3: Ensure appropriate collaboration at the sub-regional, regional and international level for the proper management and sustainable use of tuna resources.
- *Goal 2: Provide Opportunities to Harvest and Process Tuna*
    - Strategy 4: Maximise benefits and opportunities from sustainable harvest of tuna and other tropical billfishes.
    - Strategy 5: Enhance opportunity for on-shore processing of tuna products through an enabling tuna fishing environment.
- *Goal 3: Ensure proper Conservation and Protection of Tuna Resources*
    - Strategy 6: Ensure tuna stocks are maintained at or above levels necessary to ensure their continued productivity.

A series of objectives, and associated actions, are identified to achieve each strategy.

The Plan refers to the National Register of Licensed Fishing Vessels, National Register for Authorised Vessels to Fish on the High Seas, Fishing Licences, the VDS, longline vessel number limits, protected and species of special interest (including purse seine setting on whale sharks), catch retention, observer coverage, FAD closure provisions for both foreign-licensed and Kiribati-flag fishing vessels, closure of archipelagic waters and territorial seas, a prohibition of fishing on anchored FADs and fishing within one nautical mile of identified seamounts in the Gilbert, Phoenix and Line Islands Groups and introduction of the longline VDS. It also describes reporting and monitoring requirements, including logsheet sheet e-reporting where possible, port monitoring and transhipment.

[54] The main apparent revision is to update catch figures to 2018 figures.

The Plan stipulates fees that operators are obliged to comply with. They include a:

a. Fisheries Management Fund – which goes towards Kiribati's annual assessed contributions to regional fisheries management agencies of which it is a member,
b. Fisheries Observer Fund – which supports the deployment of observers on licensed fishing vessels,
c. Fisheries Monitoring Fund – to support EEZ monitoring and surveillance,
d. Artisanal Fisheries Fund – to support the development of artisanal fisheries, and
e. VMS Fund.

The Plan is to be reviewed from time to time, as considered necessary.

2014 FAD Management Plan

In accordance with paragraph 37 or WCPFC CMM 2013-01, Kiribati submitted its FAD Management Plan to the WCPFC Secretariat in 2014. Th objectives of the Plan include to:

a. rationally manage FAD fishing so as to minimise potential conflicts between and amongst resource users,
b. enhance the use of FADs and associated pelagic resources through the collection of catch and effort data for scientific assessment purposes,
c. better inform the management of FAD fishing through the establishment of a national FAD Inventory Register,
d. ensure the limit on the number of sets by vessels flying the Kiribati flag on the high seas targeting drifting Fish Aggregating Devices (DFADs), is maintained,
e. impose limits on the number of eligible anchored FADs that each vessel flying the flag of Kiribati can fabricate and subsequently deploy,
f. to delineate specific areas assigned for FAD fishing for foreign fleets versus vessels flying the Kiribati flag, and
g. ensure vessels flying the Kiribati flag are not disproportionately burdened.

The Plan includes guidance on FAD design and marking, deployment and retrieval reporting and catch retention, among other provisions.

The Plan is to be reviewed annually in line with measures adopted nationally or regionally and amended as necessary.

PIPA Management Plan

The Phoenix Islands Protected Area Conservation (PIPA) Trust Act 2009 supports multiple activities including arrangements for financial support for the management of PIPA and paying compensation to the government for demonstrated decline in fishing revenue as a result of PIPA's establishment. These arrangements are accomplished through a conservation contract which was signed by the government and the PIPA Conservation Trust in 2014. Performance under the contract is measured by the government's compliance with the provisions of the Management Plan, which was adopted in 2009, and the success of the government's actions taken to prohibit pelagic or other fishing in the designated PIPA no-take zones.

2017 National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated and (IUU) Fishing

The National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (NPoA IUU), and an associated Implementation Plan, or Logical Framework Matrix, was jointly prepared by MFMRD and FFA in 2016. It was developed in accordance with the 2001 FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated (IUU) fishing (IPOA-IUU). It describes objectives, actions and activities that will be applied by the relevant agencies involved in Kiribati fisheries MCS system and states that it is the intention to review the Plan and, if necessary, revise it for submission to FAO.

This was to be achieved through the implementation of the following strategies:

a. consolidating and enhancing MCS for offshore fisheries including through capacity development;
b. strengthening inter-ministerial coordination and cooperation,
c. timely processing of data and reports including collaborating with regional institutions to meet regional data entry, analysis, and reporting standards,
d. strengthening information processing and analytical processes including through adoption of e-reporting,
e. strengthening the national observer programme,
f. applying robust Port State Measures,
g. strengthening the legislative framework,
h. applying an appropriate sanction system, and
i. Implementing the Kiribati Tuna Management and Development Plan, 2014.

The Plan includes the following proposed actions:

a. MFMRD and MCTTD to re-evaluate the criteria for the domestication of the partly foreign-owned fleet on the Kiribati Ship Registry,
b. a compliance check, based on the previous period and each vessel's compliance record, to be completed prior to the issuing of a licence,
c. monitoring arrangements for all national flagged vessels fishing in the Kiribati EEZ, in the waters of other PNA parties, and on the High Seas by:
    i. maintaining an up-to-date national Record of Fishing Vessels,
    ii. authorising high seas activity, if and when appropriate,
    iii. requiring submission of catch log sheets within 15 days of trip completion (or a revised regional standard facilitated by FFA),
    iv. weekly catch reports,
    v. recording exits and entries,
    vi. monitoring by VMS,
    vii. receiving transhipping reports when transhipping takes place in a designated port, and
    viii. promoting use of electronic logbook technology.
d. progress guidelines for the appropriate level of fines to be applied (within the maximum penalties provided for in legislation) for different offences where fines are to be compounded,

e. periodically review penalties to ensure adequate deterrence, particularly for high-risk activities,
f. to increase the de-briefer complement to 10, or more if required, ensure de-briefers are adequately trained and continue to strengthen the de-briefing process,
g. to consolidate the Observer Programme through ongoing training,
h. require, by way of a licence condition, that exit and entry reports must include details of the observer, including nationality (or national agency),
i. under the auspices of KSVA, maintain a system of regular factory audits to cross-check Factory Entry Logs against catch log sheets,
j. the Catch Certificate (CC)/Catch Documentation Scheme (CDS) will be fully integrated with the MFMRD IMS,
k. a suite of Standard Operating Procedures (SOPs) to support implementation of processes associated with these Actions,
l. review training needs for Compliance Officers and Senior Enforcement Managers on an annual basis,
m. maintain an offender's database in the IMS, and
n. consider signing and ratifying the FFA Niue Treaty Subsidiary Agreement.

Articles 52 to 64 of the IPoA IUU encourages port States to establish necessary controls at port installations (ports or offshore terminals). Measures proposed include to:

a. provide reasonable advance notice and seek permission to enter port,
b. refuse landing or transhipping authorization to vessels in port, for which IUU fishing activities have been established,
c. publicize ports which foreign vessels may be permitted access, and ensure on site capacity to conduct inspections,
d. communicate data flowing from inspections (vessel identification, quantities of catch on board, etc.) to interested parties (incl. RFMOs & flag States),
e. immediately report detected infractions to the flag State of the inspected vessel,
f. publicize the national strategy and procedures on Port State Controls concerning fishing vessels, and train officers accordingly,
g. cooperate bi-laterally or regionally, as appropriate, to develop compatible Port State Control measures,
h. assume that vessels calling to port, flying the flag of a non-member or non-cooperating State of a relevant RFMO, have engaged in IUU fishing, and order the master to establish that catch on board was taken in a manner consistent with regional management and conservation measures, and
i. enhance information flows amongst relevant RFMOs on Port State Controls.

Kiribati has designated ports for purse seine transhipments – Tarawa, Washington**,** Banaba and Kiritimati.

The IPOA-IUU encourages States to take steps, consistent with international law, to prevent fish caught by vessels identified by the relevant RFMO to have been engaged in IUU fishing being traded or imported into their territories, The IPOA-IUU also suggests that certification and documentation requirements should be standardised to the extent feasible, and electronic schemes

developed where possible, to ensure effectiveness, reduce opportunities for fraud, and avoid unnecessary burdens on trade.

MFMRD can issue Catch Certificates (CCs) for Kiribati registered vessels. It also validates section 7 of CCs of other nations who have transhipped in Kiribati, on request from the vessel's agent. These countries include all DWFNs (Japan, China, Taiwan, Korea, EU and USA), as well as FSMA vessels. These are for transhipments taking place between fishing vessel to carrier, with products destined to the EU through canning operations in Asia or South America.

The system in place to validate section 7 of the CC is that:

a. the MFMRD on-board inspection does not identify any anomalies on board,
b. Police Maritime Unit and MFMRD are both satisfied that the vessel has performed within its specified licence conditions (i.e. cross-checking positions with VMS by reviewing the observer report through debriefing), and
c. MFMRD has checked that the weights stated on the catch certificate correspond to the weights transferred to the carrier, and that sum of the relevant purse seine discharge is equal to the weight of the catch certificate, the weights stated on the log sheet and the mate's receipt.

In the event of weight inconsistencies MFMRD normally undertakes further verification. MFMRD will only authorise Section 7 if it is satisfied that the vessel is compliant and that the weights are validated or, if required, pass the verification checking procedure.

Though the checks may be sufficient to ensure that catches are taken legally, there is no validation or verification checklist or standard procedure in place. Nor does MFMRD have a record or copy of the CCs it has validated, should a flag State or Member State of the EU wish to undertake verification.

A logical framework matrix, complete with aspirational goals, risk ratings and performance measures was appended to the Plan.

The Plan includes SOP for Compliance Benchmarking. The purpose of the SOP was to identify a series of performance indicators and the performance targets that relate specifically to the foreign- and national-based on risk assessment.

WCPFC obligations

The 2019 Compliance Monitoring Report, considered by the 15th Regular Session of the Technical and Compliance Committee which met at Pohnpei, Federated States of Micronesia, 25 September – 1 October, 2019, was based on the List of Obligations to be assessed by Compliance Monitoring Scheme in 2019 (CMM-18-01) presented in the table below (as updated at WCPFC15). Numbers in the left column are paragraph number references in the relevant CMM, or obligation, concerned[55]. Obligations that are not applicable to Kiribati, for example CMM 2017-01, paragraph 29 relating to America Samoa, CMM 2015-02 (South Pacific Albacore)[56], CMM 2018-02 (North Pacific Bluefin), and CMM 2005-03 (North Pacific Albacore), have not been included.

CMM 2018-07 (Compliance Monitoring Scheme)

The purpose of the WCPFC Compliance Monitoring Scheme (CMS) is "to ensure that Members, Cooperating Non-Members and Participating Territories (CCMs) implement and comply with obligations arising under the Convention and conservation and management measures (CMMs) adopted by the Commission.

The purpose of the CMS is also to assess flag CCM action in relation to alleged violations by its vessels, not to assess compliance by individual vessels.

The CMS is designed to:

a. assess CCMs' compliance with their WCPFC obligations,
b. identify areas in which technical assistance or capacity building may be needed to assist CCMs to attain compliance,
c. identify aspects of CMMs which may require refinement or amendment for effective implementation,
d. respond to non-compliance by CCMs through remedial and/or preventative options that include a range of possible responses that take account of the reason for and degree, the severity, consequences and frequency of non-compliance, as may be necessary and appropriate to promote compliance with CMMs and other Commission obligations[57], and
e. monitor and resolve outstanding instances of non-compliance by CCMs with their WCPFC obligations.

[55] Source: WCPFC website (www.wcpfc.int)

[56] No Kiribati vessels target South Pacific albacore (*Thunnus alalunga*). Annual Report to the Commission Part 1: Information on Fisheries, Research and Statistics. WCPFC-SC15-AR/CCM-11 (Rev.01). Ministry of Fisheries and Marine Resources Development. Western and Central Pacific Fisheries Commission, 15th Regular Session of the Scientific Committee, Pohnpei, Federated States of Micronesia, 12-20 August 2019. 17 pages.

[57] In accordance with the process for identifying corrective action, as provided for in paragraph 45(vi).

	Appears to be fully compliant/equivalent
	At to be least partially compliant/equivalent
	Unknown/uncertain level of compliance
	Non-compliant or equivalence cannot be demonstrated

Obligation	Form	Descriptor	Kiribati response
Scientific Data			
SciData 01	Report		
SciData 01	Deadline		
SciData 02	Report		
SciData 02	Deadline		
SciData 03	Report		
SciData 03	Deadline		
SciData 05	Report		
SciData 05	Deadline		
CMM 2007-01 Regional Observer Programme			
10	Implementation	CCMs shall explain to the vessel captain, observer duties relevant to appropriate measures adopted by the Commission.	
14 (vii)	Implementation	The Commission ROP shall be operated to ensure that observers shall not be unduly obstructed in the discharge of their duties. To this extent, CCMs of the Commission shall ensure that vessel operators comply with the Guidelines in Annex B — Guidelines for the Rights and Responsibilities of Vessel Operators, Captains and Crew.	
Attachment K Annex C 06	Implementation and deadline	No later than 30 June 2012, CCMs shall achieve 5% coverage of the effort in each fishery under the jurisdiction of the Commission (except for vessels provided for in paras 9 and 10). In order to facilitate the placement of observers the logistics may dictate that this be done on the basis of trips.	

WCPFC 11 decision – para 484(b)	Report	CCMs are to compile and include in Annual Report Part 1 to be submitted from 2015 onwards, observer coverage for their longline fleet activity in the previous calendar year, noting that revisions can be provided at the annual TCC meeting. A sample report format is provided as guidance to assist CCMs with reporting (WCPFC11 Summary Report Attachment L Table 4)	
CMM 2006-04 SW Pacific striped marlin			
1	Report	In accordance with paragraph 1, CCMs shall provide information to the Commission, by 1 July 2007, on the number of their vessels that have fished for striped marlin in the Convention area south of 15°S, during the period 2000 – 2004, and in doing so, nominate the maximum number of vessels that shall continue to be permitted to fish for striped marlin in the area south of 15°S. CCMs shall report annually to the Commission the catch levels of their fishing vessels that have taken striped marlin as a bycatch as well as the number and catch levels of vessels fishing for striped marlin in the Convention Area south of 15°S.	
CMM 2009-03 Swordfish			
8	Report	CCMs shall report to the Commission the total number of vessels that fished for swordfish and the total catch of swordfish for the following: a. vessels flying their flag anywhere in the Convention Area south of 20°S other than vessels operating under charter, lease or other similar mechanism as part of the domestic fishery of another CCM; b. vessels operating under charter, lease or other similar mechanism as part of their domestic fishery south of 20°S; and c. any other vessels fishing within their waters south of 20°S. This information shall be provided in Part 1of each CCM's annual report. Initially, this information will be provided in the template provided at Annex 2 for the period 2000-2009 and then updated annually. *Note: WCPFC11 confirmed a common understanding that "total catch" in this reporting requirement refers to both targeted and bycatch catches of swordfish.	

CMM 2009-06 Transshipment			
11	Report and deadline	CCMs shall report on all transhipment activities covered by this Measure (including transhipment activities that occur in ports or EEZs) as part of their Annual Report in Para 11 (ANNEX II) accordance with the guidelines at Annex II. In doing so, CCMs shall take all reasonable steps to validate and where possible, correct information received from vessels undertaking transhipment using all available information such as catch and effort data, position data, observer reports and port monitoring data. Each CCM shall include in Part 1 of its Annual Report to the Commission: 1. the total quantities, by weight, of highly migratory fish stocks covered by this measure that were transhipped by fishing vessels the CCM is responsible for reporting against, with those quantities broken down by: a. Offloaded and received; b. Transhipped in port, transhipped at sea in areas of national jurisdiction, and transhipped beyond areas of national jurisdiction c. Transhipped inside the Convention Area and transshipped outside the Convention Area d. Caught inside the Convention Area and caught outside the Convention Area e. Species f. Product Form g. Fishing gear offloaded received 2. the number of transhipments involving highly migratory fish stocks covered by this measure by fishing vessels that is responsible for reporting against, broken down by: i. Offloaded and received	

		ii. Transhipped in port, transhipped at sea in areas of national jurisdiction, and transhipped beyond areas of national jurisdiction iii. Transhipped inside the Convention Area and transhipped outside the Convention Area iv. Caught inside the Convention Area and caught outside the Convention Area v. Fishing gear	
13	Implementation	Each CCM shall ensure that vessels they are responsible for carry observers from the WCPFC Regional Observer Programme (ROP) to observe transhipments at sea as follows: a. for transhipments to receiving vessels less than or equal to 33 meters in length, and not involving purse seine caught fish or frozen longline caught fish, 100% observer coverage starting on the effective date of this Measure, with the observer(s) deployed on either the offloading vessel or receiving vessel, b. for transhipments other than those covered by subparagraph (a) and involving only troll-caught or pole-and-line-caught fish, 100% observer coverage starting 1 January 2013, with the observer(s) deployed on the receiving vessel, c. for transhipments other than those covered by subparagraphs (a) and (b), 100% observer coverage starting on the effective date of this Measure, with the observer(s) deployed on the receiving vessel.	
29	Limit	CCMs shall only authorize those purse seine vessels that that have received an exemption by the Commission to engage in transhipment outside of port. CCMs shall issue vessel-specific authorizations outlining any conditions or requirements identified by the Commission or CCM, and shall require that vessel operators carry such authorizations on board at all times.	
34	Limit	There shall be no transhipment on the high seas except where a CCM has determined, in accordance with the guidelines described in paragraph 37 below, that it is impracticable for certain vessels that it is responsible for to operate without being able to tranship on the high seas, and has advised the Commission of such.	

35 a (ii), (iii) and (iv)	Report and deadline	Where transhipment does occur on the high seas: a. the CCMs responsible for reporting against both the offloading and receiving vessels shall, as appropriate: i. advise the Commission of its procedures for monitoring and verification of the transhipments ii. indicate vessels to which the determinations apply, iii. notify the information in Annex III to the Executive Director at least 36 hours prior to each transhipment, iv. provide the Executive Director with a WCPFC Transhipment Declaration within 15 days of completion of each transhipment; and v. submit to the Commission a plan detailing what steps it is taking to encourage transhipment to occur in port in the future.	
2016-05 Charter Notification Scheme			
2	Report	Within 15 days, or in any case within 72 hours before commencement of fishing activities under a charter arrangement, the chartering Member or Participating Territory shall notify the Executive Director of any vessel to be identified as chartered in accordance with this measure by submitting electronically where possible to the Executive Director the following information	
3	Report	Each chartering Member or Participating Territory shall notify the Executive Director as well as the flag State, within 15 days, or in any case within 72 hours before commencement of fishing activities under a charter arrangement of……	
7	Report	Unless specifically provided in other CMMs, catches and effort of vessels notified as chartered under this CMM shall be attributed to the chartering Member or Participating Territory. Unless specifically provided in other CMMs, the chartering Member or Participating Territory shall report annually to the Executive Director catch and effort of chartered vessels in the previous year.	
CMM 2017-05 & 2014-03 Record of Fishing Vessels (RFV) and Standards, Specifications and Procedures (SSPs)			

2	Implementation	Each member of the Commission shall take necessary measures to ensure that its fishing vessels, when in the Convention Area, only tranship to/from, and provide bunkering for, are bunkered by or otherwise supported by: a. vessels flagged to members, or b. Other vessels flagged to States not members of the Commission only if such vessels are on the WCPFC Interim Register of non-Member Carrier and Bunker Vessels established under section D below (the "Register"); or c. Vessels operated under charter, lease, or similar mechanisms in accordance with paragraphs 42 to 44 of this measure.	
3	Implementation	3. No member of the Commission shall allow any fishing vessel entitled to fly its flag to be used for fishing in the Convention Area beyond areas of national jurisdiction unless it has been authorized to do so by the appropriate authority or authorities of that member.	
4	Implementation	Each such authorization shall set forth for the vessel to which it is issued: a. the specific areas, species and time periods for which the authorization is valid, b. permitted activities by the vessel, c. a prohibition of fishing, retention on board, transshipment or landing by the vessel in areas under the national jurisdiction of another State except pursuant to any license, permit or authorization that may be required by such other State, d. the requirement that the vessel keep on board the authorization issued pursuant to paragraph 1 above, or certified copy thereof; any license, permit or authorization, or certified copy thereof, issued by a coastal State, as well as a valid certificate of vessel registration; and e. any other specific conditions to give effect to the provisions of the Convention and conservation and management measures adopted pursuant to it.	
7	Implementation and deadline	After 1 July 2005, each member of the Commission shall notify the Executive Director, within 15 days, or in any case within 72 hours before commencement of fishing activities in the Convention Area by the vessel concerned, of:	

		a. any vessel added to its Record along with the information set forth in paragraph 6, b. any change in the information referred to in paragraph 6 with respect to any vessel on its record; and c. any vessel deleted from its record along with the reason for such deletion in accordance with article 24 (6) of the Convention,	
9	Report and deadline	Before 1 July of each year, each Member shall submit to the Executive Director a list of all vessels that appeared in its record of fishing vessels at any time during the preceding calendar year, together with each vessel's WCPFC identification number (WIN) and an indication of whether each vessel fished for highly migratory fish stocks in the Convention Area beyond its area of national jurisdiction. The indication shall be expressed as (a) fished, or (b) did not fish.	
17	Implementation	It is the responsibility of each member of the Commission to ensure that its fishing vessels have been placed on the WCPFC Record of Fishing Vessels in accordance with the requirements of this measure, and any vessel not included in the WCPFC Record of Fishing Vessels shall be deemed not to be authorized to fish for, retain on board, transship or land highly migratory fish stocks in the Convention Area beyond the national jurisdiction of its flag State. Each member of the Commission shall prohibit such activities by any vessel entitled to fly its flag that is not included on the Record and shall treat a violation of this prohibition as a serious violation. Such vessels shall be eligible to be considered for IUU listing.	
CMM 2014-02 Vessel Monitoring System			
9a	Implementation	Each flag CCM shall ensure that fishing vessels on the high seas in the Convention Area comply with the requirements established by the Commission for the purposes of the Commission VMS and are equipped with ALCs that shall communicate such data as determined by the Commission.	
9a VMS SSPs 2.8	Implementation	The Secretariat will administer a Commission VMS database. For each fishing vessel required to report to the Commission VMS the flag CCM will submit all necessary data to complete its data file in the Commission's VMS database. This data will include the name of the vessel, unique vessel	

		identification number (UVI)2 , radio call sign, length, gross registered tonnage, power of engine expressed in kilowatts/horsepower, types of fishing gear(s) used as well well as the make, model, unique network identifier (user ID) and equipment identifier (manufacturer's serial number) of the ALC that vessel will be using to fulfil its Commission VMS reporting requirements.	
9a VMS SSPs 7.2.2	Report and deadline	*Sic.* CCMs….To conduct and report results of ALC inspections in accordance to procedures established for that purpose, results to include data specified in Section 2 above.	
CMM 2017-01 Tropical Tuna			
16	Implementation	A three (3) months (July, August and September) prohibition of deploying, servicing or setting on FADs shall be in place between 0001 hours UTC on 1 July and 2359 hours UTC on 30 September each year for all purse seine vessels, tender vessels, and any other vessels operating in support of purse seine vessels fishing in exclusive economic zones and the high seas in the area between 20°N and 20°S.[2] [2] Members of the PNA may implement the FAD set management measures consistent with the Third Arrangement Implementing the Nauru Agreement of May 2008. Members of the PNA shall provide notification to the Commission of the domestic vessels to which the FAD closure will not apply. That notification shall be provided within 15 days of the arrangement being approved	
17	Deadline, implementation and Report	In addition to the three month FAD closure in paragraph 16, except for those vessels flying the Kiribati flag when fishing in the high seas adjacent to the Kiribati exclusive economic zone[3], and Philippines' vessels operating in HSP1 in accordance with Attachment 2, it shall be prohibited to deploy, service or set on FADs in the high seas for two additional sequential months of the year. Each CCM shall decide which two sequential months either April – May or November – December) shall be closed to setting on FADs by their fleets in the high seas for 2018, and notify the Secretariat of that decision by March 1, 2018.	

		[3] Those vessels fishing within a 100 nautical mile buffer zone extending from the high seas adjacent to the Cook Islands shall inform Kiribati and the Cook Islands authorities at least 24 hours prior to entry into and 24 hours prior to the exit from the buffer zone with estimated coordinates for entry and exit. Each report shall contain the vessel name, international radio call sign and position at time of reporting.	
23	Implementation	A flag CCM shall ensure that each of its purse seine vessels shall have deployed at sea, at any one time, no more than 350 drifting Fish Aggregating Devices (FADs) with activated instrumented buoys. An instrumented buoy is defined as a buoy with a clearly marked reference number allowing its identification and equipped with a satellite tracking system to monitor its position. The buoy shall be activated exclusively on board the vessel. A flag CCM shall ensure that its vessels operating in the waters of a coastal State comply with the laws of that coastal State relating to FAD management, including FAD tracking.	
25	Deadline and limit.	Coastal CCMs within the Convention Area shall restrict purse seine effort and/or catch of skipjack, yellowfin and bigeye tuna within their EEZs in accordance with the effort limits established and notified to the Commission and set out in Table 1 of Attachment 1 (Kiribati is included as a PNA member). Those coastal CCMs that have yet to notify limits to the Commission shall do so by 31 December 2018.	
26	Limit	CCMs that are not Small Island Developing States shall restrict the level of purse seine effort on the high seas in the area 20^0N to 20^0S to the limits set out in Attachment 1, Table 2, except that the Philippines shall take measures on the high seas in accordance with Attachment 2.	
27	Implementation	CCMs shall ensure that the effectiveness of these effort limits for the purse seine fishery are not undermined by a transfer of effort in days fished into areas within the Convention Area south of 20^0S. In order not to undermine the effectiveness of these effort limits, CCMs shall not transfer fishing effort in days fished in the purse seine fishery to areas within the Convention Area north of 20^0N.	
31	Implementation	To create an incentive to reduce the non-intentional capture of juvenile fish, to discourage waste and to encourage an efficient utilization of fishery	

		resources, CCMs shall require their purse seine vessels fishing in EEZs and on the high seas within the area bounded by 20^0N and 20^0S to retain on board and then land or transship at port all bigeye, skipjack, and yellowfin tuna. (Paragraphs 8 to 12 of CMM 2009-02 set out the Commission's rules for catch retention in the high seas.) The only exceptions to this paragraph shall be: a. when, in the final set of a trip, there is insufficient well space to accommodate all fish caught in that set, noting that excess fish taken in the last set may be transferred to and retained on board another purse seine vessel provided this is not prohibited under applicable national law; or b. when the fish are unfit for human consumption for reasons other than size; or c. when serious malfunction of equipment occurs.	
33	Implementation	Notwithstanding the VMS SSP, a purse seine vessel shall not operate under manual reporting during the FADs closure periods, but the vessel will not be directed to return to port until the Secretariat has exhausted all reasonable steps to re-establish normal automatic reception of VMS positions in accordance with the VMS SSPs. The flag State shall be notified when VMS data is not received by the Secretariat at the interval specified in CMM 2014-02 or its replacement, and paragraph 37.	
34	Implementation	CCMs shall ensure that purse seine vessels entitled to fly their flags and fishing within the area bounded by 20°N and 20°S exclusively on the high seas, on the high seas and in waters under the jurisdiction of one or more coastal States, or vessels fishing in waters under the jurisdiction of two or more coastal States, shall carry an observer from the Commission's Regional Observer Program (ROP) (CMM 2007-01).	
35	Implementation	Each CCM shall ensure that all purse seine vessels fishing solely within its national jurisdiction within the area bounded by 20°N and 20°S carry an observer. These CCMs are encouraged to provide the data gathered by the observers for use in the various analyses conducted by the Commission, including stock assessments, in such a manner that protects the ownership and confidentiality of the data.	

43	Limit	Subject to paragraph 5, each Member that caught less than 2,000 tonnes in 2004 shall ensure that its bigeye catch does not exceed 2,000 tonnes annually.	
45	Limit	CCMs, other than Small Island Developing States and Indonesia, shall keep the number of purse seine vessels flying their flag larger than 24m with freezing capacity operating between 20°N and 20°S (hereinafter "LSPSVs") to the applicable level under CMM 2013-01.	
51	Limit	CCMs shall take necessary measures to ensure that the total catch of their respective other commercial tuna fisheries for bigeye, yellowfin or skipjack tuna, but excluding those fisheries taking less than 2,000 tonnes of bigeye, yellowfin and skipjack, shall not exceed either the average level for the period 2001-2004 or the level of 2004.	
52	Report	Operational level catch and effort data in accordance with the Standards for the Provision of Operational Level Catch and Effort Data attached to the Rules for Scientific Data to be Provided to the Commission relating to all fishing in EEZs and high seas south of 20°N subject to this CMM except for artisanal small-scale vessels shall be provided to the Commission not only for the purpose of stocks management but also for the purpose of cooperation to SIDS under Article 30 of the Convention[10]. [10] CCMs which had domestic legal constraints under CMM 2014-01 shall provide operational level data as of the date on which those domestic legal constraints were lifted.	
CMM 2015-02 South Pacific Albacore ***[applicable to KIR?]***			
1	Limit	Commission Members, Cooperating Non-Members, and participating Territories (CCMs) shall not increase the number of their fishing vessels actively fishing for South Pacific albacore in the Convention Area south of 20°S above 2005 levels or recent historical (2000-2004) levels.	
4	Report	CCMs shall report annually to the Commission the annual catch levels taken by each of their fishing vessels that has taken South Pacific albacore, as well as the number of vessels actively fishing for South Pacific albacore, in the Convention area south of 20°S. Catch by vessel shall be reported according to the following species groups: albacore tuna, bigeye tuna, yellowfin tuna,	

		swordfish, other billfish, and sharks. Initially this information will be provided for the period 2006-2014 and then updated annually. CCMs are encouraged to provide data from periods prior to these dates.	
CMM 2018-03 Seabirds			
13		CCMs shall annually provide to the Commission, in Part 1 of their annual reports, all available information on interactions with seabirds reported or collected by observers to enable the estimation of seabird mortality in all fisheries to which the Convention applies. (see Annex 2 for Part 1 reporting template guideline). These reports shall include information on: 1. the proportion of observed effort with specific mitigation measures used; and 2. observed and reported species specific seabird bycatch rates and numbers or statistically rigorous estimates of species- specific seabird interaction rates (for longline, interactions per 1,000 hooks) and total numbers.	
CMM 2010-07 Sharks			
9	Implementation	Each CCM shall include key shark species*, as identified by the Scientific Committee, in their annual reporting to the Commission of annual catch and fishing effort statistics by gear type, including available historical data, in accordance with the WCPF Convention and agreed reporting procedures. CCMs shall also report annual retained and discarded catches in Part 2 of their annual report. CCMs shall as appropriate, support research and development of strategies for the avoidance of unwanted shark captures (e.g. chemical, magnetic and rare earth metal shark deterrents). *footnote 2: The key shark species are blue shark, silky shark, oceanic whitetip shark, mako sharks, and thresher sharks, porbeagle shark (south of 20°S, until biological data shows this or another geographic limit to be appropriate) and hammerhead sharks (winghead, scalloped, great, and smooth). *Note; Whale Sharks (Rhincodon typus) was included as a key shark species by WCPFC9 (2012)	
12	Deadline		
CMM 2011-03 Impact of purse seine fishing on cetaceans			

5	Report	CCMs shall include in their Part 1 Annual Report any instances in which cetaceans have been encircled by the purse seine nets of their flagged vessels, reported under paragraph 2(b).	
CMM 2011-04 Oceanic Whitetip sharks			
1	Implementation		
3	Report	CCMs shall estimate, through data collected from observer programs and other means, the number of releases of oceanic whitetip shark, including the status upon release (dead or alive), and report this information to the WCPFC in Part 1 of their Annual Reports.	
3	Deadline		
CMM 2012-04 Whales sharks			
6		CCMs shall advise in their Part 1 Annual Report of any instances in which whale sharks have been encircled by the purse seine nets of their flagged vessels, including details required under paragraph 4(b).	
CMM 2013-08 Silky shark			
1	Implementation		
3	Report	CCMs shall estimate, through data collected from observer programs and other means, the number of releases of silky shark caught in the Convention Area, including the status upon release (dead or alive), and report this information to the WCPFC in Part 1 of their Annual Reports.	
3	Deadline		
CMM 2010-01 Striped Marlin			
5	Limit		
8	Report		

Appendix E

Summary profile of current MFMRD MCS activities

Boarding, inspection and surveillance

254. The Police Maritime Unit's (PMU) main asset is the Pacific Forum Class Patrol vessel, the *RKS Teanoai*. The *RKS Teanoai* was provided to Kiribati in January 1994 under the Australia's Defense Cooperation Programme. She is 31.5m in length with a maximum speed of 20 knts and a range of approximately 4,600 km at 12 knts. She will be replaced by a new Guardian class vessel in 2020. The replacement vessel will be 39.5 m long, capable of travelling at 20 knts, with a 5,600 km range at 12 knts, and capable of accommodating 23 people. The new vessel will accommodate male and female crew and will provide an improved platform for at-sea boardings.

255. In addition to the *RKS Teanoai*, the PMU operates a search and rescue boat which is mainly reserved for lagoon operations involving both dock side boarding and search and rescue (SAR). Surveillance and enforcement activities for the PMU for the last three years are summarized at Table 1.

256. Where possible, at-sea operations are supported by aerial surveillance, normally through joint operations involving Australian, New Zealand and French air forces, the US Coast Guard or a local charter. Seven aerial surveillance operations, including to the PIPA, were supported in 2016, 2 in 2017 and 7 (all local charter) in 2018. The PMU's Surveillance Operations Center, with VMS monitoring, is manned 24/7. VMS Watch Keepers continually update the *RKS Teanoai* on fishing vessel activity when it is on patrol so that suspicious cases in the vicinity of the patrol boat can be investigated.

257. Under the Oceania Maritime Security Initiative (OMSI), the United States' expanded ship-rider agreement includes Kiribati[58]. The objective of the initiative is to provide security and support missions that permit Kiribati law enforcement officials to ride aboard U.S. Navy and U.S. Coast Guard vessels. The ship rider agreement with the US has not supported any operations for 4 years.

258. Fisheries prosecutions in Kiribati are managed in two ways. Section 40 of the Fisheries Act 2010, amended in 2015, establishes the Fisheries Administrative Penalty Committee (FAPCOM). This Committee, comprising the Attorney General's Office, MFMRD, Police and Customs and Immigration, and chaired by the Director of Fisheries, considers the seriousness of the offence, any history of offending and determines the legal course of action. Administrative proceedings are often preferred to a court case as they allow for the detention of the vessel and the rapid recovery of penalties. From the vessel operator's perspective, adjudication by the Panel can avoid lengthy port detentions while awaiting court proceedings. These penalties may be negotiated out of court but are compliant with the Schedules as laid out in the Fisheries Act. If FAPCOM is unable to arrive at an acceptable settlement, court proceedings may be initiated. This may be the

[58] https://www.state.gov/u-s-relations-with-kiribati/

case, for example, in the case of serial offenders and may extend to detention of the ship's captain.

259. The relatively large size of the Kiribati EEZ presents significant challenges for an at-sea surveillance presence in remote regions of the zone for any extended period. An operation to Kiritimati, for example, requires the *RKS Teanoai* to carry at least 42 200l drums of fuel to support operations in that eastern EEZ. This is one of the reasons why the capacity to share assets, share information and cross-endorse enforcement personnel, as provided for under the Niue Treaty, has been so broadly embraced by many FFA member countries with limited capacity to maintain a sustained presence in their extensive EEZs.

260. Section 39 of the Fisheries Act 2010, amended in 2015, deals with data and information confidentiality. Section 39(4)(b) provides, *inter alia,* that any information or other data supplied by an observer device, designated machine or equipment used for vessel monitoring purposes, in accordance with the Act, is confidential. Under 39(6), the Minister, on the advice of the Director, has the discretion to release such information to relevant government agencies, such as the PMU, upon request for the purposes of surveillance, SAR and other emergencies.

261. Kiribati ratified the Niue Treaty in October 1994 but is yet to sign the 2012 Agreement on Strengthening Implementation of the 1992 Niue Treaty on Cooperation and Law Enforcement in the South Pacific Region (the NTSA). The reason for the delay in signing the NTSA is that MFMRD needs to confirm that the data sharing provisions of the NTSA do not contravene existing data confidentiality arrangements in Kiribati law. Confidentiality concerns delaying formal acceptance of the NTSA relate to the extent Kiribati's domestic confidentiality requirements are met under the confidentiality arrangements in place in other FFA member countries which may call on Kiribati data to be shared under the NTSA. MFMRD is reviewing a data sharing agreement endorsed by the FFC in May 2019 to ensure that it meets MFMRD's requirements before further considering ratification of the NTSA.

262. Finally, in relation to the sharing of VMS data, as a result of the adoption of revised Harmonised Minimum Terms and Conditions (HMTCs) at the annual FFC in 2013, under all tuna fishing vessels are required to ensure their Automatic Information Systems (AIS) are on and operational when licensed to operate in FFA member countries. This has applied since July 2015. AIS information is public domain and available from numerous ship tracking websites on the internet. As a result, VMS no longer has the proprietal value that previously supported strict confidentiality arrangements.

263. The annual reports prepared by the PMU list a range of training and capacity building activities directly related to maritime operations that staff participate on an annual basis. In relation to fisheries MCS, they include:

- Use of force
- NTSA
- Boarding
- Enforcement and compliance

- International maritime law

264. Training needs identified include:

- Leadership and Management

Table 1. At-sea monitoring and dock-side, inspections and resulting prosecutions (2016-2018)

Year	Voyages[59]	Seadays	DCF funding (voyages)	Inspections		Arrests	Issue	Prosecutions	FAPCOM	Court	Penalty Total (A$m)	Ship Rider
				Dockside	At-sea							
2016	7	69	2	36	31	1	FAD	17	14	3	1.56	0
2017	5	76.5	1	49	20	1 1	VMS PIPA	5	4	1	3.1	0
2018[60]	7	50	1	69	27[61]	0	NR[62]	2	2	0	.03	0

[59] *RKS Teanoai*
[60] 2018 included 4 months in dry dock undergoing a re-fit.
[61] Some vessels were boarded 4-5 times during the year.
[62] Non-reporting.

Transhipment

265. Article 29, Article 4 of Annex III of the Convention, and CMM 2009-06, provide advice on requirements which must be met by the Transhipment Scheme implemented by CCMs.

266. The WCPF Convention provides that:

a. *Commission members shall encourage their vessels to transship in port*:
The Convention discourages all transshipments at-sea, regardless of gear or jurisdiction (i.e. in-zone or high seas) through requiring members to encourage their fishing vessels to the extent practicable, to conduct transhipment in port (Art. 29(1)).
b. *Designated transhipment ports*:
The Commission is required to periodically circulate a list of designated transhipment ports to all members. (Art. 29(1)). The Convention does not offer any guidance on port requirements, or processes for designating transhipment
c. *Primacy of national laws in port or waters under national jurisdiction*:
All transhipment in port or within waters under the national jurisdiction of a Commission member shall occur in accordance with applicable national laws. (Art. 29(2)).
d. *Development of transhipment procedures*:
The Commission is required to develop transhipment procedures to: obtain data on the quantity and species transshipped both in port and at sea in the Convention Area; verify data on the quantity and species transshipped both in port and at sea in the Convention Area; and determine when transhipment covered by the Convention has been completed (Art. 29(3)).
e. *Fisheries characteristics*:
The procedures developed shall take into account the characteristics of the fishery concerned (Art. 29(4)).
f. *Purse seine at-sea transshipments prohibited within the Convention Area*:
The Convention explicitly prohibits transshipments at-sea by purse seine vessels (Art. 29(5)). This prohibition applies to all waters within the Convention Area.
g. *Exemptions may be granted*:
The Commission may grant exemptions for purse seine transhipment "to reflect existing operations" (Art. 29(5)). This was incorporated to accommodate Philippine group and small-scale seiners.
h. *Operators of Vessels to comply with Commission transhipment procedures*:
All operators of fishing vessels are required to comply with Commission procedures to verify the quantity and species transshipped, and any additional procedures and measures established by the Commission with respect to transshipments in the Convention Area (Annex III, Article 4.1). Operators of vessels are further obliged to allow and assist any authorized person to undertake inspections and verification, including access and use of all facilities and equipment as determined by the authorized person, and the taking of samples and the gathering of information. Operators of vessels shall not assault, obstruct, resist, delay, refuse boarding to, intimidate or interfere with authorized person in the performance of their duties (Annex III, Article 4.2)).
i. *Commission authorized transhipment inspectors*:

The Convention refers to persons authorized by the Commission to undertake transhipment inspections and verifications. However, the Convention does not elaborate on the authorization process.

j. *Only vessels on the WCPFC Record of Fishing Vessels are allowed to transship in the Convention Area*:
Conservation and Management Measure-2004- 01 on the WCPFC Record of Fishing Vessels and Authorisation to Fish, requires that a CCM fishing vessel operating within the Convention Area, beyond its area of national jurisdiction, must be suitably authorized by the CCM and recorded on the WCPFC Record of Fishing Vessels. CCMs are obliged to prohibit any fishing or transshipments by their flag vessels not on the WCPFC Record of Fishing Vessels. CCMs have also agreed not to license the fishing operations, including transhipment, of non-CCM vessels in the Convention Area. Furthermore, CCMs are obliged to prohibit any landings at their ports, or transshipments to their flag vessels, by vessels not entered on the WCPFC Record of Fishing Vessels.

267. The provisions of the Measure do not apply to transhipment of highly migratory fish stocks where fish is taken and transhipped wholly in archipelagic waters or territorial seas.

268. At WCPFC15, the Commission agreed to conduct a review of CMM 2009-06 in 2019. The review was commenced by an inter-sessional working group in the lead up to the 2019 TCC.

269. In Kiribati waters purse seiner transshipments are inspected in port[63]. Longliners transshipping at sea are not subject to inspection but have an observer on board if fishing within the EEZ. These observers complete a GEN 3 compliance form.

270. Given the increasing importance of management measures on longliners, and an increase in the number of longliners active in the Kiribati EEZ and adjacent high seas, MFMRD has identified a need for closer scrutiny of activities of longline vessels. This will include building capacity to analyse vessel behaviour and interactions as indicators of transhipment. If longline transhipment at sea was prohibited logistic support associated with monitoring would be significantly reduced.

271. For both Tarawa and Kiritimati, once vessels are cleared to tranship, monitoring personnel (a limited number of off duty observers) are deployed on board. The functions of the monitors include:

k. record estimates of catch volume and composition;
l. record species of interest;
m. record potential MARPOL contraventions, and
n. provide the data to the compliance unit.

272. For these objectives to be achieved there is a need for strengthening of monitoring capacity by a combination of skills building, increasing the numbers of monitors available,

[63] The comprehensiveness of 'inspections' was not assessed. Such an assessment, to evaluate procedures, data acquisition methodology and identify weaknesses would be beneficial.

better equipping monitors, for example with 2-way radios and making both discharging vessels and receiving vessels aware of responsibilities and expectations in relation to monitors including the provision of food and refreshments at reasonable frequency.

o. Payment for monitoring functions should be made conditional on full compliance with ship board monitoring and reporting expectations. Finally, payments to monitoring staff should be processed in a timely manner – not the 2-3 months it is reported to take at present.

Table 2. Annual transhipment information (2017 - November 2019)

Year	Vessel type	# Port calls	Total (mt)								
			SKJ	YFT	BET	ALB	Marlin	SWO	Other	YFT+ SKJ	Total
2017	Longline	95	7.18	14,321	21,603	4.56	1.66	.27	214	849	37,002
	Purse seine	150	90,089	24,217	1,863	2.0			.6	1,153	117,325
	Reefer	52									
	Bunker	8									
	Total		90,096	38,538	23,467	6.5	1.66	.27	215	2,002	154,327
2018	Longline	65	78.4	32,257	29,923	2,082	653		2,046	22,039	89,080
	Purse seine	161	149,344	16,618	4,839	215			.05	2,724	173,741
	Reefer	84									
	Bunker	9									
	Total		149,422	48,875	34,762	2,297	653		2,046	24,764	262,821
2019*	Longline	96	3.05	41,768	7,494	96.83	11.43	430	11,498	6	61,309
	Purse seine	361	222,195	16,022	1,950				.85	4,455	244,624
	Reefer	109									
	Bunker	7									
	Total		222,198	57,790	9,445	96.83	11.4	430.8	11,499	4,461	305,934

*To November.

Observer programme

273. Kiribati currently has at least 160 trained observers and 10 qualified de-briefers. That number of de-briefers is below the recommended regional ratio for observers to de-briefers of one de-brief for 10 observers. However, in late 2019, the number of de-briefers is scheduled to be increased to 30. Deployments for the period 2014-to 2019, to date, are summarised in Table 3**.**

274. Fishery Observers are trained by SPC, FFA and WCPFC. A fisheries and marine training school is in place at Tarawa that provides additional support training for observers, as well as in fishing techniques, seamanship, sea safety, engine repair and related skills for potential crew in the domestic longline fishery.

275. A review completed 6 years ago (Carnie, 2013), identified that, at that time a lack of de-briefers was adversely impacting the performance of Kiribati observer programme. As the ratio of de-briefers to observers has significantly improved it is anticipated that the quality of data and information produced under the Kiribati observer programme will improve. Among the other issues identified by Carnie (2013), and which remain relevant, include:

a. limited performance when assessed against PIRFO standards,
b. inadequate placement processes,
c. no dedicated observer coordinator,
d. lack of suitable technical support,
e. poor office facilities,
f. insufficient observer remuneration and lengthy periods for observers to receive payments (the same applies to transhipment monitors, particularly in Kiritimati),
g. shortage of necessary support equipment, and
h. unsatisfactory data handling and reporting systems.

276. Additional areas that may cause challenges include:

f. resourcing and capacity to undertake cost recovery from vessels;
g. efficient financial systems to allow for prompt payment to observers and other service providers;
h. perceptions associated with maintaining impartiality and independence from the vessel. This is difficult when the vessel is paying directly for costs such as flights, accommodation, cash advances etc.;
i. recent obligations for programmes to provide 2-way communication devices and personal locator beacons (PLBs) etc. means there is a need for efficient asset tracking procedures and systems, and
j. the adequacy, or not, of observer insurance and systems to verify the insurance cover provided by vessels.

Table 3. Annual human at-sea observer placements (2014-November 2019)

Gear	2014	2015	2016	2017	2018	2019*
Purse seine	111	103	115	132	193	159
Longline	20	10	13	4	5	4
Reefer	16	23	12	11	8	4
Bunker	28	19	19	25	23	20
National trips	175	155	159	172	229	188
PNA or FFA trips	15	19	23	30	49	28
TOTAL	190	174	182	202	278	216

*To November.

Vessel Monitoring System (VMS)

277. It is a mandatory requirement under Kiribati Fisheries regulation that all vessels carry an ALC, this allows their activities to be monitored therefore serving as an important MCS tool for deterring vessels from engaging in IUU fishing.

278. The VMO, Assistant VMO, Senior Fisheries Officer Compliance (SCO), Director of Fisheries, Commander PMU, Police Commissioner and FFA Surveillance Officer have VMS-related responsibilities as described in the January 2019 Standard of Procedure for Management of VMS Alerts.

279. The Standards describe a series of steps associated with five different alerts that can be generated by the VMS. They also describe actions required when a vessel's Compliance Index (CI) is changed either way (Table 4).

280. Eight staff have recently received VMS training from FFA. Additional training will continue to build VMS capacity to fully utilize the functionalities offered by the FFA system.

Table 4. VMS alerts associated with risk measured by the FFA Compliance Index (CI).

Index & Marker	Risk Level	Criteria
-5 Pulsating Large - Red	Non-Compliant	1. Vessel is on an RFMO IUU List; 2. Vessels is not on WCPFC Register of Fishing Vessels and is fishing for, or transhipping pelagic species in the High Seas; or 3. Vessel's Owner or Master is known[64] to have fished or is fishing in contravention of a national fisheries law or a Conservation and Management Measure (CMM) of an RFMO.
-4 Large - Red	Very High Risk of conducting IUU	1. Vessel Owner, Master or Beneficial Owner is suspected of fishing in contravention of a national fisheries law or a CMM of an RFMO; 2. Observer Report, Compliance Inspection Report or Compliance Analysis detected a known or suspected contravention of a national fisheries law or an RFMO's CMM in the last two years. 3. Vessel is not reporting VMS data as expected.
-3 Large - Orange	High Risk of	1. Vessel is on an NGO's IUU Blacklist; 2. Vessel has a position history of transiting EEZs where it is not licensed or is not the most direct route; or

[64] Known is taken to be innocent until proven guilty under either Kiribati national or international law.

	conducting IUU	3. Vessel has not had an observer on-board or a compliance inspection within last 2 years.
-2 Medium - Light Green	Medium Risk of conducting IUU	1. Vessel licensed for EEZ or HS in which it is operating and either an observer trip or compliance inspection was undertaken in the last 12 months; or 2. Vessel's has a position history of fishing adjacent to EEZs to which it is not licensed.
-1 Small - Light Green	Low Risk of conducting IUU	1. Vessel licensed for EEZ or HZ in which it is operating and an observer trip or compliance inspection was undertaken in last 12 months. Only minor or no infringement detected.

Appendix F

Outcomes of a Strengths, Weaknesses, Opportunities and Threats (SWOT) exercise undertaken with MFMRD LCD staff.

STRENGTHS	WEAKNESSES
Hard working team	Senior (other staff) are overwhelmed with work/travel.
Experience senior staff	No/limited regular team (weekly) meetings to address issues/challenges that Division/staff face on a daily basis.
Have well trained staff	Lack of transparency about staff travel. No annual/quarterly plan including for trainings, etc.
Good at dockside boarding	Limited coordination with other departments. Especially, Christmas Is Fisheries re the Observer program, funds remittance to observers based there, to address other issues/challenges to improve the Observer program, etc.
At-sea surveillance (patrol boat)	Need capacity building in new undertakings – e.g. e-monitoring and reporting and data interrogation.
De-briefing observers	Insufficient MCS training
IUU	Internet connectivity
Providing Government with the fisheries revenue update.	Planning – some tasks given at very short notice
VMS	Slow uptake of new technology
Maintaining up-to-date license status	Unreliable databases that are currently used. Need to upgrade licensing in particular but MCS data generally.
Kiribati has 160 trained observers	Limited MCS staff to fully engage in port Monitoring plus insufficient staff to execute efficient services to observer program
Good legislative basis – including operations of FAPCOM	Limited analytical skills and capability
Fishery Management Plan?	Many generalist staff; no specialists
High level of cooperation with internal and external stakeholders	Limited staff
Good cooperation with fishing companies	Uncertainty of salary and lack of staff incentives
Positive contribution to country's economy	Power interruptions – impact productivity
Contribute to the sustainability of tuna resources	Lack of proper equipment and resources
Confident in data quality	
GEN-3 issues	

OPPORTUNITIES	THREATS
Capacity of the Division can be better improved in terms of IT staff trainings and workshops.	New programs (e-monitoring and reporting) may add to work load of the team so need careful assessment with limited 'piloted' fishing vessels.
Take advantage of new technologies	Office building and facilities – high risk
Internal cooperation and sharing of expertise and resources to enhance work efficiency	Senior staff are often stressed out and therefore need to undergo proper management training in running the Division.
VDS	Limited understanding among some decision-makers of the complexity of LCD work.
Climate change	De-briefers – need more opportunity to maintain/improve PIRFO program standards. De-briefers need to undertake 1/trip per year.
Regional support through FFA/SPC/PNAO	Limited financial support/budget shortage
Trainings and attachments – workshops and courses	WCPFC/IATTC obligations – implementation cost and associated measures affect fishing opportunities and aspirations at the national level
Seek interest in getting a better office building	Limited analytical capacity means compliance incidents probably get missed
	The high influx of data to office from fishing vessels and observers
	Flagging of fishing vessels that increases obligations as well as annual financial contributions to WCPFC IATTC FFA and other related fisheries organisations that Kiribati is a party to.
	Poor data = poor decisions
	Poor Government policies

Appendix G

Summary of the risk-based assessment methodology used in the development of the RMCS Strategy in 2009 (MRAG Asia Pacific, 2009a), adapted to the national situation in Kiribati.

Table 1. Risk assessment for MCS in oceanic purse seine and longline fisheries in Kiribati EEZ and on the adjacent high seas.

Strategic risk for Kiribati	Risk	Sector	Likelihood	Consequence	Risk rating	Adequacy of existing MCS	Residual risk
External pressure on common stocks undermines regional fisheries management goals.	Overfishing in SE Asia	YFT/BET	Almost certain	Serious	Severe	Weak	Severe
	Inadequate catch and effort monitoring and reporting of south east Asian fleets undermines data integrity and regional stock assessments	YFT/BET	Almost certain	Moderate	High	Weak	High
	Overfishing in the EPO	BET	Unlikely	Moderate	Moderate	Strong	Low
Unlicensed/unauthorised fishing in Kiribati EEZ and within the FFA region.	Unlicensed/unauthorised fishing by fleets from Asia	Western WCPO	Almost certain	Moderate	High	Weak	High
	Unlicensed/unauthorised fishing by fleets from the EPO	LL PS	Unlikely	Moderate	Moderate	Weak	Moderate
	Unlicensed/unauthorised fishing by new entrants/purse seiners	PS LL	Unlikely	Major	Moderate	Strong	Low
	Unlicensed fishing by high seas fleets in Kiribati's EEZ	LL PS	Likely	Moderate	Moderate	Moderate	Moderate
Excess capacity or effort in licensed fleets undermines fisheries management goals	Unlicensed fishing by vessels on the RREG	PS LL	Moderate	Moderate	Moderate	Strong	Low
	Excess capacity in the LL fleet	LL	Likely	Major	High	Moderate	High
	FAD closure Measures breached	PS	Moderate	Major	High	Very strong	Moderate
	Excess capacity in the PS fleet	PS	Moderate	Major	High	Moderate	Severe
	Effort shift from the EPO	PS LL	Moderate	Major	High	Strong	High
	Increasing LL catch among amongst 2000mt CCMs	LL	Unlikely	Moderate	Moderate	Moderate	Moderate
	Effort creep in the PS fishery	PS	Almost certain	Major	High	Weak	Severe
	Effort creep in the LL fishery	LL	Unlikely	Minor	Low	Weak	Low

	CMM capacity caps in various WCPFC Measures breached	LL	Moderate	Moderate	Moderate	Moderate	Low
Non-compliance by licensed vessels and flag states undermines fisheries management goals	Fishing in high seas pockets	PS	Likely	Moderate	High	Very strong	Low
	Fishing in high seas pockets	LL	Likely	Minor	Moderate	Moderate	Moderate
	Catch discarding in PS fleet	PS	Moderate	Moderate	Moderate	Strong	Low
	Non-compliance with VMS provisions	PS	Rare	Major	Moderate	Very strong	Low
	Non-compliance with VMS provisions	LL	Moderate	Major	High	Moderate	High
	Use of non-prescribed gear	LL	Moderate	Moderate	Moderate	Moderate	Moderate
	Use of non-prescribed gear	PS	Moderate	Insignificant	Moderate	Strong	Low
	Fishing inside closed areas (e.g. PIPA)	PS	Rare	Moderate	Low	Very strong	Low
	Fishing inside closed areas (e.g. PIPA)	LL	Moderate	Moderate	Moderate	Moderate	Moderate
	License document fraud	Sector	Major	Moderate	Moderate	Moderate	Moderate
	Vessels exceed days under the VDS	PS LL	Rare Unlikely	Moderate Moderate	Low Low	Moderate Moderate	Low Low
	Fraudulent assignment of non-fishing days	PS LL	Unlikely Unlikely	Moderate Moderate	Moderate Moderate	Moderate Moderate	Moderate Moderate
	Mis-reporting set type in the PS fishery	PS	Unlikely	Major	Moderate	Very strong	Low
	Mis-reporting target species	PS	Almost certain	Serious	Severe	Strong	High
	Mis-reporting target species	LL	Likely	Serious	Severe	Weak	Severe
	Mis-reporting non-target species	PS	Almost certain	Minor	High	Strong	Moderate
	Mis-reporting non-target species	LL	Almost certain	Moderate (high for shark and rays)	High	Weak	High
	Delayed log-book submissions	LL/PS	Likely	Major	High	Weak	High
	Incomplete/inadequate reporting by flag States	LL/PS	Moderate	Major	High	Weak	High

	Failure to supply prompt entry/exit/intention to transship reports	PS	Unlikely	Moderate	Moderate	Very strong	Low
		LL	Moderate	Moderate	Moderate	Moderate	Moderate
	Fraudulent port call and transhipment practices and reporting	PS	Moderate	Serious	High	Moderate	High
Inadequate monitoring and control of the postharvest supply chain undermines fisheries management goals	Illegal transshipping	PS	Moderate	Major	High	Strong	Moderate
		DW Freezer	Likely	Major	High	Weak	High
		Fresh product	Moderate	Major	High	Weak	High
	Bunkering at sea	PS	Moderate	Minor (highest for shark)	Low	Moderate	Low
		LL DW	Likely	Moderate (highest for shark)	High	Moderate	High
		LL domestic	Unlikely	Moderate (highest for shark)	Moderate	Moderate	Moderate
	Landing of catch in foreign ports	PS	Unlikely	Minor	Low	Strong	Low
		LL	Likely	Moderate	High	Moderate	High
	Traceability through the supply chain	PS/LL	Likely	Moderate	High	Weak	High
Fisheries undermine the sustainability of bycatch species and the wider ecosystem	Failure to adopt CMM mitigation methods on LL vessels (seabirds, sea turtles, etc.)	LL	High	High	Moderate	Moderate	Moderate
	High bycatch rates and/or illegal targeting may lead to overfishing of shark populations	PS	Moderate	Moderate	Moderate	Moderate	Moderate
		LL	Almost certain	Major	Moderate	Weak	High
	PS continue to set on whale sharks	PS	Moderate	Moderate	High	Moderate	Moderate

Appendix H

Brief overview of SPC, FFA and PNAO information management systems

SPC: Tuna Fisheries Database Management System 2 (TUFMAN2)

1. Developed and supported by SPC, TUFMAN2, which now incorporates what was previously a separate observer reporting system, TUBS, is a system designed for the collection, management and dissemination of tuna fishery data.

2. TUFMAN2 is a cloud-hosted, web-based database tool that supports secure data entry, data management, data quality control and data visualisation and administration through a comprehensive authentication system that reconciles data from different sources and applies data quality assurance routines. Such applications and routines improve confidence in data, highlight under-reporting and missing information, assist with calculation of coverage of data and identify vessel position conflicts, among other capabilities.

3. TUFMAN2 integrates tuna fisheries data from commercial or artisanal fleets for all gears (longline, purse seine, pole-and-line) including:

a. Logsheets
b. Port sampling
c. Un-loadings
d. Observer trips
e. Packing lists
f. Vessel Activity Reports
g. Vessel Position Reports, and
h. VMS

4. TUFMAN2 also receives data (automatically) from other sub-regional and regional systems, such as the PNA FIMS, the RIMF VMS data and the WCPFC Record of Fishing Vessels.

5. A separate reporting system, DORADO, interfaces with TUFMAN 2 to produce a wide range of integrated reports (i.e. reports using a single source or a combination of data types) to facilitate access to tuna fisheries data by SPC member countries.

6. TUFMAN2 and DORADO support mapping of fishery data, for example, the mapping of the vessel tracks for a trip sourced from Logbook, observer and VMS data on the same map. Special reports in DORADO cater for the countries' flag State reporting obligations to the WCPFC, and produce specific tables and figures defined in WCPFC reporting templates.

PNA: Fishery Information & Management System (FIMS)

7. The PNA's cloud-based web-service, the Fisheries Information & Management System (FIMS), supports national administration and management of fishing vessel activity by PNA fisheries authorities. FIMS, which is used in all PNA members national fisheries administrations, was originally developed by Quick Access Computing (QAC) for the Papua New Guinea National Fisheries Authority. Initially designed primarily to manage fishing effort under the VDS, FIMS

now provides a comprehensive suite of fisheries administration support tools (Table 1). It offers near-real-time reporting, uses email/http, international data format standards and does not require connectivity during use. Emails are stored and sent when an internet connection is established approaching port.

8. FIMS includes an industry portal, iFIMS, which supports the registration of vessel and licensing details, e-log support, automated licensing and CMM reporting requirements. iFIMS supports manual uploaded via email/http to FIMS by the ship's master to comply with pre-notification requirements (EEZ entry/exit, port calls, transhipment notification). It supports electronic reporting via VMS tracking for zone entry and exit or when entering territorial waters.

9. iFIMS also can generate a Marine Stewardship Council (MSC) trip number, maintain a register of all MSC trips including associated data, such as observer and catch data, for an MSC trip.

10. Comprehensive user manuals for both FIMS and iFIMS are available on-line and from the PNAO.

Table 1. A summary of some of the features of FIMS

Functionality	Examples of Services
Vessel management	Vessel and gear details, electronics, support craft, licensing, FADs, port sampling, MTU administration including manual processing, crew details, observers, VDS, Alerts, Observer trips
Clients	Client administration, Vessels, FADs and personal communication devices (PCDs)
Alerts	Alert management, email alerts, SMS alerts, Asset Tracking System (ATS), Catch Documentation Scheme (CDS), Catch Verification, e-Log tab, e-Obs tab, Licence tab, GEN 3
Compliance	Compliance incident management, Parties of Interest tab, Exhibit tab, Penalty Fees tab and Compliance Reports, offender history, incident summaries
Electronic Licence Registration (ELR)	Electronic license administration
Electronic Vessel Registration (EVR) on iFIMS	Registering on iFIMS EVR
Fish Aggregating Device (FAD)	FAD administration, Assigning a FAD to a client, Viewing a FADs position, FAD reports
Observer	Observer administration, Observer details, Medical Record, Training, Observer trips, e-Obs, GEN3, Start/Manage Observer trip
On-line Vessel Registration (OVR)	Processing lodged OVR Applications, Manual VDS registration in OVR
Personal Communication Devices (PCDs)	Details

Port Officer	Port Officer details and administration
Port Sampling	Reporting, Agreement Reports, Catch Reports, CDS Reports, Crew Reports, FAD Reports, Licence Reports, MSC Reports, Non-Fishing Reports, Observer Reports, Port Sampling Reports, VDS Reports, Vessel Reports
Vessel Day Scheme (VDS):	Company VDS reports, Managing VDS Companies, Flag VDS reports Non-Fishing in VDS, Procedure to process VDS Non-Fishing Days (NFD), Validation tools for Non-Fishing Day Claims
Vessel Day Scheme (VDS) trading	Vessel trips, Trip Summary tab, e-Log tab, Sightings tab

FFA: Regional Information Management Facility (RIMF2)

11. The second generation Regional Information Management Facility (RIMF2), developed and administered by FFA, is a cloud-based, web-application with multi-tenancy utilising a relational database. It uses HTTPS, API, REST and JSON protocols.

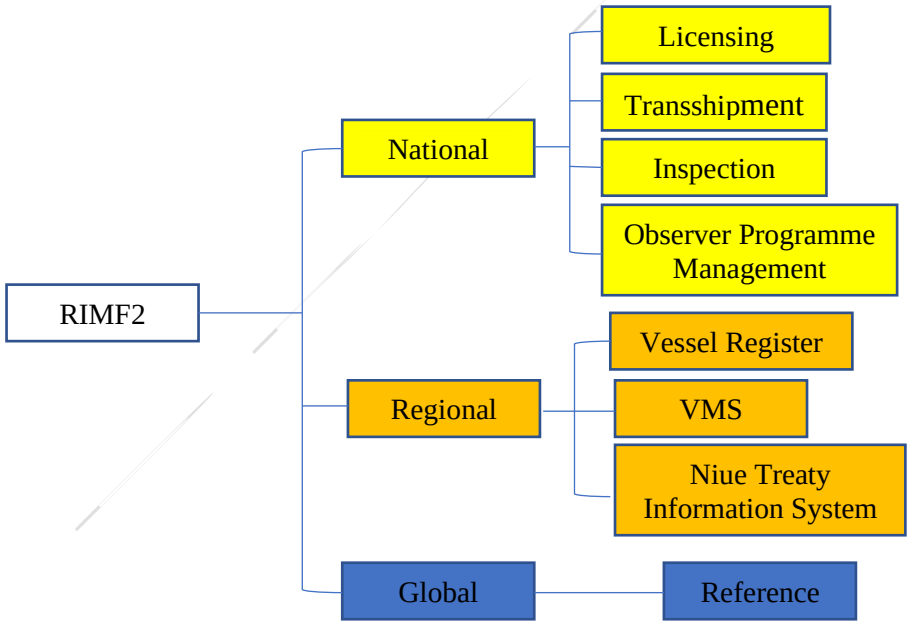

Figure 1. High-level schematic for RMIF2. Additional detail is in Table 1.

12. Both FIMS and RIMF provide data loaders to enter data into the required SPC data formats and both provide internet and cloud-based recording and transmission of information, using the same satellite-based systems available for VMS transmission, but transmitted through fleet broadband internet.

13. RIMF incorporates similar modules to some of those in FIMS, e.g. the Vessel Monitoring System, but also draws on other system software, such as SPC's TUFMAN2 (Figure 1). As with FIMS, e-reporting data collection has been built into the RIMF. The components in the national IMS systems supported by FFA and SPC that are either operational, or are under development, are listed in Table 1.

Table 1. Module componentry and status for FFA's RIMF system.

Module	Acronym	Status
Asset management	ASM	Current
Regional Register	EVR	Current
FFA Training	FFATRG	Current
Fisheries Inspection	FIN	Current
Fisheries Investigation	INV	Current
Landing Reports	LDR	Current
Observer Programme Management	OPM	Current
RFSC Operations	OPS	Current
Project Development Fund	PDF	Current
Reference	REF	Current
Regional Fisheries Management Org (WCPFC)	RMFO	Current
Record of Fishing Vessel	RFV	Current
Seafood Export	SFD	Current
FFA Travel Management	TRV	Current
Transhipment Fees	TSF	Current
Transhipment	TSH	Current
Transhipment Monitoring	TSM	Current
TUFMAN Licensing	TUFLIC	Current
Unloading Reports	ULR	Current
Violations and Prosecutions	VAP	Current
Vessel Boarding and Inspection	VBI	Current
Vessel Monitoring System	VMS	Current
Vessel Notification	VNT	Current
Food Quality Database	FQD	New
Monitoring, Control and Surveillance	MCS	New
Niue Treaty Information System	NTIS	New
Quota Management System	QMS	New
Change Request Management	CRM	Retired
Observer e-reporting	ERPT	Retired
Vessel licences	VES	Retired

14. The modules listed in Table 1 subsequently link directly to:
   a. the WCPFC RFV
   b. TUFMAN-2 : Logsheets

c. TUFMAN-2 : Port Sampling
d. TUFMAN-2 : Unloadings/Transhipments
e. TUFMAN-2 : Data Loaders
f. TUFMAN/TUBs : web reporting service

Appendix I

ER and EM including EM cost considerations for a Kiribati national programme

Electronic reporting

1. Electronic reporting is already common across tuna fisheries reporting in the region. FIMS, RIMF and TUFMAN2 all incorporate e-reporting and vessels, particularly the purse seine fleet are almost all utilizing e-reporting for logsheet submissions. Benefits such as the application of common standards across data platforms, access to quality assured near-real-time data, higher resolution data and implications for data processing costs are generally accepted (see Section 8). At the most recent TCC in Pohnpei in September 2019, Samoa, on behalf of FFA members noted "…….*ER has become the norm rather than a future aspiration……"*

2. Anecdotal information indicates that Phase 1 of the FMP initiative with Satlink includes provision for e-reporting across the Platform.

3. In relation to coastal fisheries, in 2016 SPC released a smart phone and tablet application they named "TAILS" to to support field collection and submission of artisanal small-scale fisheries data. Since its release, in excess of 20,000 data records have been loaded. TAILS supports the collection of data on the catches of tuna and other species in remote locations and transmits it back to central offices for analysis even when internet connectivity is limited. TAILS is designed to eliminate costly and time consuming delays in transmitting paper-based data from outer islands to the central fisheries office, and enables fisheries officers to monitor and manage artisanal catches with current, not historic data. TAILS is a supplementary application feeding into TUFMAN2 (see Section 8)**.**

Electronic monitoring

4. Human at-sea observer coverage for longline tuna fisheries operating within the areas under national jurisdiction and the adjacent high seas has rarely achieved an annual coverage of 5% required under WCPFC's CMM 2007-01 (the "longline problem")[65].

5. Low observer coverage is due to a combination of factors. They include an absence of flag State regulations that oblige vessels to accept observers, logistical challenges associated with the deployment of human observers on vessels that undertake trips of extended duration on the high seas, safety concerns and the small size of some of those vessels where an observer placement means it is necessary to displace a crew member with consequent implications for vessel operations.

[65] An agreed metric for "coverage" for at-sea observer programmes remains unresolved in the Western and Central Pacific Fisheries Commission (WCPFC). The obligation for 5% coverage in the longline fishery under the WCPFC Regional Observer Programme is not defined in its Conservation Measure (CMM) 2007-01. The metric in terms of coverage of catch, hooks deployed or retrieved, vessels or trips is unspecified. In addition, there is no advice regarding the spatial or temporal scale required to achieve representativeness of observer coverage for WCPO longline fisheries (see, for example WCPFC-TCC9-2013/09). Sea-days is a common metric to measure performance for EM. Equally, fishing days or hooks set/monitored may also be appropriate as this is the metric with lowest bias and is the parameter used in regional stock assessments. However, these metrics may not accommodate ancillary activity of the fishing vessel of compliance interest, such as transhipment.

6. To complement the coverage and quality of information available through human observers on longline vessels, significant global progress has been made during the last five years with the utilisation of automated camera systems installed on fishing vessels. These electronic monitoring (EM) systems are providing additional independent monitoring of at-sea fishing operations for an increasing number of national or regional fisheries administrations. Since 2014, such systems have been trialed across a number of FFA members including Australia, the Federated States of Micronesia, Fiji, Marshall Islands, New Zealand, Palau, Solomon Islands and Cook Islands.

7. The drivers for these initiatives include strengthening the availability of independent information on fishing activities – for example, improving the information base on catch and effort for target species, by-catch and discards and encounters with species of special interest – as well as encouraging compliance with national or regional regulations. The analytical software of several EM systems is well advanced towards being able to facilitate the collection of limited biological information, such as fish length. Significant advances in relation to image recognition and artificial intelligence are predicted to further strengthen such systems as a valuable additional fishery monitoring and data collection tool in the short to medium term.

8. External development assistance partners such as the World Bank and the Food and Agricultural Organisation, as well as non-government organisations (NGOs), have provided substantial financial and technical support for EM trials in FFA members to date. In addition, several longline companies, such as Luen Thai in Micronesia and Bumble Bee in Fiji, have been trialing EM systems independently.

9. While assistance provided by NGOs and development assistance partners is appreciated by the FFA island members, there is a clear recognition that the long-term operation of effective EM systems requires a durable, self-sustaining financing model. Regional organisations are investing considerable effort in EM. SPC is undertaking technical work on data standards to ensure that data formats for EM systems are consistent with the data formats implemented under the ROP. The PNAO is working on the rollout of an EM Programme and FFA, in association with the PNAO, is developing regional EM Policy and, with the PNAO, examining cost recovery options to sustain EM. These regional efforts are being progressed partly to ensure that FFA members are key drivers in ER- and EM-related work in WCPFC being facilitated under the auspices of a ER&EM Working Group. It is planned that, the ER&EMWG be in a position to produce a draft EM CMM for consideration by the Commission at its 2020 Regular Session.

10. Given the challenges associated with achieving adequate observer coverage on the Kiribati longline fleet, these vessels are prime candidates for trialing EM. Even though some MFMRD staff may contribute to the implementation of EM as "part of their normal duties", the real costs associated with establishing an EM programme in Kiribati will include consideration of:

a. Program management/coordination personnel (inclusive of salary and on-costs – e.g. pension fund contributions, employer tax contributions, health insurance). Proportion of Full Time Equivalent (FTE) staff as appropriate:
    i. MFMRD Secretary
    ii. Director, LCD
    iii. MFMRD EM Services Coordinator/Technician x2
    iv. Finance staff (for accounts)

v. On-staff data analysts/digital observers (initial digital data review and quality assurance procedures such as double analysis and reconciliation with other monitoring data such as observer data). This component can be responsible for 40% of Programme costs.
vi. Expert advisory and support services (e.g. administration and HR services; legal advice; auditing)

b. Contracted data analysts/digital observers (as needed in relation to volume of data to be reviewed)
c. Quality control (QC)/data review technicians – in the same way as data collected by observers is subject to quality control through debriefing by trained de-briefers, data collected by EM analysts will need to be subject to some form of quality control. This could take the form of a brief review of all data sets by experienced, qualified EM analysts (e.g. senior observers with relevant training), or a full independent review of a specified number of trips (e.g. 10%) to detect systematic errors/issues in data collection (analogous to an internal audit of systems in which a portion of outputs are sampled for analysis). The QC process adopted may depend on the objectives to be achieved – for example, if EM is used by MFMRD to monitor compliance with regulations, senior observers may wish to do a high level review of all trip data to identify/discuss any compliance incidents (similar to observer de-briefers reviewing GEN-3 forms for all observer trips).
d. Office accommodation and overheads:
    i. Rental (stand-alone or proportionally shared within the existing office),
    ii. Utilities (water, electricity, rubbish disposal, etc.),
    iii. Communications/internet, and
    iv. Security arrangements.
e. IT systems:
    i. Computing hardware (networked, including peripherals, servers, centralized data management storage capability and reserve mobile hard disks),
    ii. Analytical and storage software,
    iii. Software licenses,
    iv. IT database development and management support (from EM system accreditation and registration through to archiving and storage of EM data), and
    v. Annual systems maintenance and support.
f. Insurance
    i. Professional indemnity,
    ii. Buildings and contents, and
    iii. Travel (to cover systems accreditation audits).
g. Training and capacity building
    i. Program management staff,
    ii. Technical systems support, and
    iii. Data analysts.
h. Staff travel
i. Logistics costs - e.g. freight, postage and couriers, agent's fees
j. Miscellaneous costs – e.g. banking fees.

These costs assume that data that cannot currently be loaded automatically will be entered directly by analysts (observers) in a format capable of being uploaded to relevant databases (following some form of quality control). If this is not the case, additional data entry costs may be required.

Other technological developments with applications in fisheries are discussed in Section 8.