



AFRICAN UNION
**INTERAFRICAN BUREAU
FOR ANIMAL RESOURCES**



STATUS OF MONITORING, CONTROL AND SURVEILLANCE SYSTEMS IN SOUTHERN AFRICA

**Strengthening National and Regional Capacities for
Combating Illegal, Unreported and Unregulated Fishing**

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LIST OF ACRONYMS

AU	African Union
AU-IBAR	African Union - InterAfrican Bureau for Animal Resources
DRC	Democratic Republic of Congo
ESA-IO	Eastern and Southern African and Indian Ocean
FACT	Fisheries Analytical Capacity Tank
FAD	Fish aggregating device
FAO	Food and Agriculture Organization
FMC	Fisheries Monitoring Centre
FPA	Fisheries Partnership Agreement
FPV	Fisheries Protection Vessel
GDP	Gross Domestic Product
IFM	Integrated fisheries monitoring
ILO	International Labour Organization
IMO	International Maritime Organization
IOC	Indian Ocean Commission
IOTC	Indian Ocean Tuna Commission
IPOA	International Plan of Action
IPOA-IUU	International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing
IRCS	International Telecommunication Union Radio Call Signs
ISSF	International Seafood Sustainability Foundation
LOSC	United Nations Convention on the Law of the Sea
MCS	Monitoring, control and surveillance
MT	Metric tonne
NEPAD	New Partnership for Africa's Development
NFDS	Nordenfjeldske Development Services
OECS	Organization of Eastern Caribbean States
REC	Regional Economic Communities
RFB	Regional Fishery Body
RFMO	Regional fisheries management organization
SADC	Southern African Development Community
SIF	Stop Illegal Fishing
SRFC	Northwest Africa Subregional Fisheries Commission
SWIOFC	Southwest Indian Ocean Fisheries Commission
SWOT	Strengths, weaknesses, opportunities and threats
VMS	Vessel monitoring system
WWF	World Wildlife Fund for Nature

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EXECUTIVE SUMMARY

1. This Technical Report reviews the current status of Monitoring, Control and Surveillance (MCS) in Southern Africa in order to provide a baseline document of relevant information and knowledge that will enable the implementation of an effective system in the region. The specific objectives addressed in this document include: an examination of the legal framework for MCS; review of regional arrangements; an examination of decisions of the First and Second Conference of African Ministers of Fisheries and Aquaculture (CAMFA I and II) as well as the Policy Framework and the Reform Strategy; identification and assessment of the capacity of Southern African States; identification of challenges related to capacity building; and proposals for an effective regional or sub-regional framework. There have been a number of studies on MCS in Southern Africa and the wider African region and most of these studies have focused on technical and institutional capacity assessment, as well as examination of domestic, sub-regional and regional IUU fishing issues. This Technical Report addresses a gap in previous studies which is an analysis of the legal requirements to implement an effective MCS in Southern African States. This study, funded by the African Union-InterAfrican Bureau for Animal Resources (AU-IBAR), strongly supplements the various research studies conducted on MCS.
2. The assessment provided in this Technical Report is based on a desktop research of primary and secondary documents such as international fisheries instruments, regional organisation reports, and Southern African State fisheries laws and regulations. A survey on MCS implementation was circulated to national fisheries institutions and regional fisheries bodies; however, response was generally poor. However the report was enriched by representatives from SADC countries during the AU-IBAR/SADC Secretariat IUU Taskforce meeting in Maputo, May 2016. The analysis of individual capacity for MCS and the Recommendations highlighted in this Technical Report are therefore primarily based on readily available information, from desk studies and inputs from the Maputo meeting. Documents in languages other than English were also not considered.
3. An effective MCS is considered the best hope of preventing, deterring and eliminating illegal, unreported and unregulated (IUU) fishing and is recognized as one of the key principles of fisheries management both in areas under national jurisdiction and the high seas. The three components of MCS suggest that it is not limited to policing or fisheries enforcement but involves a range of measures that takes into account a legal framework, data collection and analysis, and surveillance and patrol systems that would help ensure compliance in fisheries. MCS also comprises land, sea, and air aspects that enable an operational implementation of the system.
4. The rich diversity of the Southern African marine resources and environment call for an effective conservation and management regime implemented by an effective MCS system. Fishing is one of the main large-scale commercial activities in the region which contributes to achieving food security, poverty alleviation, and economic development. Increased pressure on resources, driven by a number of factors such as population increase, industrialization, overcapacity, IUU fishing, and weak enforcement has become a significant threat to the ecological sustainability of the region's marine and coastal areas. IUU fishing is known to have negative economic, environmental, ecological and social impacts and need to be addressed at both national and regional levels. Recent studies also suggest that there may be incidents involving organized criminal groups in illegal fishing activities, which further call for wider cooperation beyond the scope of national fisheries institutions and regional fisheries management organizations (RFMOs). An example is the South Africa abalone fishery.

5. The implementation of MCS to combat IUU fishing has its legal basis in international binding and non-binding instruments such as the United Nations Convention on the Law of the Sea, UN Fish Stocks Agreement, FAO Compliance Agreement, the FAO Code of Conduct for Responsible Fisheries and the four International Plans of Action, including the International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU), and the FAO Port State Measures Agreement. These instruments provide for the adoption of a number of MCS measures from the commencement of the fishing activity to the final destination of caught fish. These measures include vessel registration, licensing or authorization to fish, record of fishing vessels, vessel monitoring system, observer programs, boarding and inspection regimes, port State measures, and catch certification.

6. The regional framework for MCS in Southern Africa comprises legal and policy measures developed under regional fisheries bodies and arrangements, as well as regional economic organizations. These regional fisheries organizations and arrangements include the Southwest Indian Ocean Fisheries Commission (SWIOFC), Indian Ocean Tuna Commission (IOTC), International Commission for the Conservation of Atlantic Tuna (ICCAT), Commission for the Conservation of Southern Bluefin Tuna (CCSBT), and South East Atlantic Fisheries Organisation (SEAFO). Regional economic organizations include the Southern African Development Community (SADC) and other bodies including, Benguela Current Commission (BCC), and Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). There are other regional institutions and initiatives that have actively conducted MCS activities such as the Stop Illegal Fishing Programme (SIF) which is working across Africa, and focuses on building knowledge and experience of tools, systems and policy requirements to tackle illegal fisheries production and trade. SIF does this through various means including:
 - Creating new knowledge and new understanding;
 - Building human and institutional capacity for implementation;
 - Developing effective mechanisms for operational cooperation;
 - Increasing awareness for engagement and change, and
 - Forming and communicating the African Voice.

7. The Southern African States of Angola, Democratic Republic of Congo, Mozambique, Namibia, South Africa, and Tanzania have enacted fisheries legislation with MCS-related provisions; however not all of them fully implement international and regional obligations and commitments. Namibia's legislation is backed by observer and VMS programs and monitoring of landings at fishing ports to ensure compliance with quota limits and fees payments. South Africa has a very comprehensive legal framework for fisheries, which even includes measures to address fisheries crime, and is supported by a fully operational unit MCS. Mozambique has relatively updated legislation on fisheries but only with some specific regulations on MCS. Tanzania has a more basic MCS framework in place and very little regulations and evidence of implementation, although one of the strengths of this legislation is the adoption of participatory approach to management which may be developed to encourage self-compliance amongst fisheries in the absence of other MCS tools. Angola and DRC have the weakest legal framework and level of MCS implementation. These States cooperate with each other, bilaterally and multilaterally, in implementing MCS measures through the various regional programs.

8. The lack of an effective legal framework is recognized as an impediment to an effective and fully functional MCS. Challenges impeding the establishment of a robust legal framework in Southern African countries include; long process of updating laws and developing comprehensive regulations, prolonged judicial procedures, low enforcement capacity, delays in legal infraction processes, a poor record of legal processes and lack of strong collaboration between institutions with fisheries-related functions. There

is a significant contrast in the way Southern African countries have been formulating and implementing MCS measures to counter IUU fishing. These countries stand in contrast to each other in how well they have managed to address the problem of IUU fishing. While some countries have set very significant global benchmarks in MCS implementation, others are struggling with MCS implementation due to significant institutional and capacity weaknesses. Country-specific characteristics impact on the diffusion and implementation of the international norm requiring them to counter illegal fishing and establishing MCS measures. Limited funding in responsible agencies as well as differences in enforcement capacities are crucial aspects of the implementation challenges. Limited operational assets have also hindered States from fully monitoring fishing vessels in their waters. Hence, regional cooperation in MCS presently is an effective solution to addressing these challenges. A number of regional initiatives could be utilised in so doing as well as assistance provided by international organisations such as the Food and Agriculture Organization (FAO), sharing of fisheries enforcement data, and conducting joint patrols. Southern African States which have more updated legal framework and sound MCS strategies may also serve as model framework for neighbouring countries requiring revision of fisheries laws.

The first conference of African ministers of fisheries and aquaculture (CAMAF I) in 2010 expressed concern at the magnitude of IUU fishing in Africa and its adverse consequences of both the economies of Member States and the fish stocks and thus recommended that Member States, RECs and RFBs strengthen Monitoring, Control and Surveillance and foster regional cooperation to curb IUU fishing. This concern was also reiterated by CAMFA II at the Joint Conference of African Ministers for Agriculture, Rural Development, Fisheries and Aquaculture in 2014, who equally expressed concern about all forms of overexploitation of the fisheries resources, including Illegal fishing, leading to plundering of the resources. The Member States reaffirmed their commitment to strengthen the MCS capacity including implementation of port states measures, flag State measures and related instruments in order to combat IUU fishing. The Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa recognises that IUU fishing results from the open-access character of capture fisheries, inadequate or weak governance at national level and for management of transboundary resources and ecosystems, institutional weaknesses and insufficient financial investments opportunities. This has caused financial losses of over US\$1.5 billion of lost resource rents in 2011 for African countries. As such, the Policy Framework and Reform Strategy provides opportunities for its Member States to optimize benefits from their natural resources by implementing the strategic reforms enunciated in the document.

9. This Technical Report highlights a number of Recommendations based on the analysis of global and regional MCS requirements and an assessment of domestic law and State practice. **Part I** of the Technical Report, which looks into the concept of MCS and the importance of the system in addressing IUU fishing, recommends the sub-region to:
 - Ascertain the priority IUU fishing issues in the Southern African sub-region, including possible incidents of fisheries crime
 - Identify specific fisheries and coastal and marine areas which are susceptible to IUU fishing in Southern Africa
 - Identify available MCS tools and assets in each Southern African state that may be used to address priority IUU fishing issues
 - Nominate or establish a repository of relevant studies, documents and other materials relating to fisheries in general, IUU fishing and MCS which will be readily available to Southern African States
10. **Part 2** of the Technical Report on the international legal framework on MCS provides the following Recommendations:

- Encourage Southern African nations to accede to relevant international fisheries agreements, particularly the LOSC, UNFSA and the 2009 FAO Port State Measures Agreement
- Develop and/or review national plans of action to prevent, deter and eliminate IUU fishing in order to ensure that identified priority issues are addressed (Only Namibia has finalised and officially adopted NPOA-IUU). Each NPOA-IUU should include a whole-of-government capacity building strategy to support its full implementation
- Review legislation and/or develop specific regulations to implement MCS tools such as fishing vessel registration and licensing, record of fishing vessels, vessel monitoring system, observer program, boarding and inspection, port State measures, and catch certification
- Encourage all Southern African States to participate in the International MCS Network and INTERPOL initiatives to address fisheries crime

II. Part 3 of the Technical Report on regional fisheries framework for Southern Africa highlights Recommendations that will help strengthen sub-regional cooperation on MCS, as follows:

- Determine sub-regional priorities in MCS implementation that transcends different memberships and participation in various regional organizations and arrangements.
- Strengthen sub-regional cooperation on MCS amongst Southern African States by:
 - i. Establishing formal arrangements and protocols between regional fisheries bodies and arrangements with policy and management functions (i.e. SWIOFC, IOTC, ICCAT and CCSBT) that will facilitate exchange of information on IUU fishing and data obtained from MCS tools
 - ii. Creating awareness and encourage Southern African states to implement relevant provisions of the Policy Framework and Reform Strategy for fisheries and aquaculture in Africa
 - iii. Developing joint initiatives between regional fisheries bodies and arrangements and economic integration organisations (i.e. SADC, COMESA) involving Southern African States by exchanging information that will achieve common fisheries objectives
 - iv. Adopt policy measures within the purview of Regional Economic Communities to encourage cooperation against fisheries crime
 - v. Adopt lessons learnt from successful fisheries programs such as FISH-i Africa and IOC's SmartFish at the sub-regional level
 - vi. Engage in MCS activities with other States of the region
 - vii. Conduct regional training on both the legal and practical aspects of Vessel Monitoring System and Observer Program to facilitate cooperation among legal and technical personnel Ensure that any formal arrangement that will be developed within the Southern African sub-region have provisions that will enable wider cooperation with other African sub-regions
- Investigate how the planned SADC Regional Fisheries MCS Coordinate Centre can facilitate MCS cooperation with other African States
- incorporate provisions of fisheries partnership agreement and other bilateral cooperation arrangements in domestic legislation

II. Part 4 of the Technical Report on the assessment of national legislation and State practice recommends the following:

- Review, update and harmonise domestic fisheries legislation to ensure compliance with global and regional obligations. Allow for flexibility through subordinate legislation such as regulations, conditions of license and gazette notices as circumstances arise
- Incorporate provisions in legislation;
 - i. making it an offence to trade in fish caught by IUU fishing vessels
 - ii. enabling the adoption of MCS measures including multilateral catch documentation and certification

requirements as a means of eliminating trade in fish derived from IUU fishing

iii. allowing cooperation with neighbouring States on MCS matters

- Develop harmonized national MCS strategies and plans with long-, medium- and short-term objectives consistent with relevant legislation and policies and regional objectives
- Include a risk assessment framework within national MCS strategies and plans
- Develop joint management plans for all major transboundary fish stocks
- Adopt sound regulations on vessel registration and licensing, VMS, observer program, boarding and inspection, port State measures, catch certification and other MCS measures
- Implement an effective penalty system with adequate severity for fisheries offences which will deprive those that benefit from IUU fishing. Such a system should provide sanctions that allow for the refusal, withdrawal or suspension of licenses and authorizations to fish in response to non-compliance by licensed fishing vessels with conservation and management measures
- Ensure that an MCS system is supported by a compliance and enforcement mechanism
- Use co-management and community based management, as an approach to fisheries compliance, particularly in terms of data submission and incident reporting. Informal institutions have an important role to play
- Establish formal collaborative arrangements between institutions with fisheries-related functions which will facilitate sharing of relevant information
- Conduct legal and technical training to improve human capacity in MCS implementation, through whole-of government capacity building strategies ((i.e. ensuring that all relevant agencies [Fisheries, Police, Navy, Attorney Generals, etc] have the necessary capacity to implement their MCS responsibilities).)

12. From the comparison of State practice with global and regional requirements, the Technical Report also provides a set of Recommendations that may help Southern African States to operationalise the establishment of the Regional MCS centre and equally develop a sub-regional cooperation strategy on MCS. The following key elements could be implemented:

- Regional MCS Strategy to Combat IUU
- Development of National MCS frameworks
- Improving management and regional Sharing of Information
- Incorporating MCS advice in fisheries management plans
- Financial support for regional or sub-regional MCS; and
- Training and Professional and Institutional Development

I. INTRODUCTION

A key pillar of the African Union Policy Framework and Reform Strategy is the Conservation and Sustainable Use of fisheries resources to ensure fishing activities are conducted within enforceable regulatory frameworks that are clearly understood, enforceable and supported by resource users and others. Besides supporting the strengthening of national MCS systems, one of the anticipated outcomes from policy reforms proposed under this pillar is effective and sustainable regional (MCS) systems are operating in all regions. The AU Guidelines for implementation of Policy framework and Reform Strategy incorporate criteria and indicators to facilitate domestication of relevant provisions in national and regional policies. These provisions of the pan African fisheries policy document incorporate important principles of relevant global fisheries management instruments.

The Food and Agriculture Organization (FAO), in its Technical Guideline on the Implementation of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) states that effective implementation of monitoring, control, and surveillance (MCS) is the “best hope for preventing, deterring, and eliminating IUU fishing.” The implementation of MCS activities such as boarding, inspection, arrest and judicial proceedings is one of the coastal State powers under the United Nations Convention on the Law of the Sea (LOSC) to ensure the conservation and management of fisheries resources in the Exclusive Economic Zone (EEZ). Similarly, MCS is also one of the general principles in the conservation and management of straddling and highly migratory fish stocks in areas of the high seas, managed within the competence of regional and sub-regional fisheries organizations.

The IPOA-IUU adopts the broad concept of MCS, together with all its components and tools, and provides the requirement for States to apply specific MCS-related measures from the commencement of the fishing activity to the final destination of caught fish¹. These measures include vessel registration, authorization to fish, record of fishing vessels, vessel monitoring system (VMS), observer program, boarding and inspection, port State measures, catch certification and other measures such as the acquisition, storage and dissemination of MCS data, training and education to all persons involved in MCS operations, and promoting MCS issues in national judicial systems. This wide range of measures suggests that all States, whether acting as a flag, coastal, port, or market State must adopt an effective MCS system in order to address IUU fishing.

This Technical Report aims to conduct a review of the current status of MCS in the Southern African region of the African Union (AU) in order to provide a baseline document of relevant information and knowledge that will enable the implementation of an effective system in the region. The specific objectives addressed in this Technical Report are to:

- a. Assess the capacity for MCS in AU member States and their effectiveness, strengths and weaknesses, with a focus on Southern Africa;
- b. Identify difficulties and challenges related to capacity building for monitoring fisheries in Southern Africa;
- c. Make a thorough examination of fisheries Observers Programs in Southern African countries,
- d. Assess the status of vessel registers and analyze the obstacles to the establishment and/or non-operationalization of vessel registers (domestic and regional) as essential elements for effective MCS;
- e. Examine the legal framework for MCS and identify the causes of weakness and/or lack of enforcement of laws and regulations in force in Southern African countries for an effective deterrent against infractions in the industrial and artisanal fisheries;

¹Food and Agriculture Organization, International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) (FAO, 2001), para. 24.

- f. Review regional arrangements, if any, for MCS cooperation, their effectiveness, strengths and weaknesses;
- g. Assess/identify challenges and constraints for regional cooperation in the fight against IUU fishing;
- h. Propose a framework for establishment of regional accord for MCS, e.g. MCS Centre
- i. Analyze the results obtained in the context of other national or regional past or current projects in the fighting against IUU fishing for the best practices, success stories and lessons learnt; and
- j. Make proposals for effective and sustainable monitoring capacity of fisheries in Southern African States.

The Technical Report is divided into five Parts. Part 1 provides the concept, components and tools of MCS. It also contains a summary of existing studies on MCS in Southern Africa, as well as the project approach and methodology. Part 2 identifies the international legal requirements on MCS from relevant binding and non-binding instruments such as the LOSC, UN Fish Stocks Agreement, FAO Compliance Agreement, FAO Code of Conduct, IPOA-IUU, and FAO Port State Measures Agreement. Part 3 analyses the current regional capacity in implementing an MCS framework in Southern Africa. Part 4 of the Technical Report examines state practice in adopting specific MCS measures such as vessel registration and licensing, observer program, vessel monitoring system, port State measures and catch certification, and presents an analysis of the Strengths, Weaknesses, Opportunities, and Threats (SWOT) for the Southern African sub-region. Part 5 concludes with a summary of recommendation towards a sub-regional MCS cooperation to address IUU fishing.

1.1 Concept of MCS

An MCS Conference of Experts organised by FAO in 1981 developed a definition of MCS that is commonly accepted by fisheries personnel. In this conference, MCS was defined as:

Monitoring - the continuous requirement for the measurement of fishing effort characteristics and resource yields;

Control - the regulatory conditions under which the exploitation of the resource may be conducted; and

Surveillance - the degree and types of observations required to maintain compliance with the regulatory controls imposed on fishing activities

There are other definitions or descriptions of MCS as provided by other international organisations. The following table presents the various definitions of MCS.

What these definitions suggest is the comprehensive nature of MCS systems that take into account the legal framework for fisheries, data collection and analysis, and surveillance and patrol systems. Hence, MCS is not merely limited to policing or fisheries enforcement and involves a whole range of measures that would ensure fisheries compliance.

Table 1: Definitions and Descriptions of MCS

Source	Monitoring	Control	Surveillance
FAO Expert Consultation, 1981*	the continuous requirement for the measurement of fishing effort characteristics and resource yields.	the regulatory conditions under which the exploitation of the resource may be conducted.	the degree and types of observations required to maintain compliance with the regulatory controls imposed on fishing activities.
Southern African Development Community (SADC) Protocol*	the follow-up of a fishery through collection, compilation, analysis, and reporting of information on fishing and related activities, including fish processing, fish trade and aquaculture.	the establishment and enforcement of the legal and administrative measures under which living aquatic resources and aquatic ecosystems can be exploited.	the checking and supervision of fishing activity to ensure compliance with control measures.
Fishery Committee for the Eastern Central Atlantic (CECAF), 1981*	the collection, measurement, and analysis of fishing activity on catch, species composition, effort, discards, and area of operation, inter alia, which is necessary for fisheries managers to arrive at management decisions.	the specifications of the terms and conditions under which resources can be harvested, and normally contained in national legislation, and provides a basis for which management arrangements are enforced.	the checking and supervision of fishing activity to ensure national legislation and terms and of access and management measures are observed. This activity is critical to ensure that resources are not overexploited, poaching is minimised and management arrangements are implemented.
FAO-FAD, 2007**	the collection, measurement and analysis of fishing activity including, but not limited to: catch, species composition, fishing effort, bycatch, discards, area of operations, etc. This information is primary data that fisheries managers use to arrive at management decisions.	the specification of the terms and conditions under which resources can be harvested. These specifications are normally contained in national fisheries legislation and other arrangements that might be nationally, sub-regionally, or regionally agreed. The legislation provides the basis for which fisheries management arrangements, via MCS, are implemented.	the regulation and supervision of fishing activity to ensure that national legislation and terms, conditions of access, and management measures are observed. This activity is critical to ensure that resources are not over exploited, poaching is minimized and management arrangements are implemented.

Sources: * K. Kelleher, *The Costs of Monitoring, Control and Surveillance of Fisheries in Developing Countries*, FAO Fisheries Circular No. 976, FAO, Rome, 2002; ** <http://www.fao.org/fi>.

1.2 MCS Components and Tools

MCS has three spatial components: land, sea, and air. The land component of an MCS system serves as the base of operations and the co-ordinating centre for all MCS activities from which governments can regulate the deployment of resources to best address changing situations. It is the sector responsible for port inspections and the monitoring of transshipments and trade in fish products to ensure compliance with fisheries legislation. The sea component includes MCS activities undertaken in marine areas under the jurisdiction of a State and may also cover high seas areas. The technology involved in the sea component of MCS includes radar, sonar, and vessel platforms. The air component of MCS is usually the first level of response to a coastal State or region of concern and covers the air and space equipment such as aircrafts and satellites used in MCS activities. The flexibility, speed and deterrence of air surveillance make it a very useful and cost-effective tool for fisheries management. Different States and regions would have different application and combination of the land, sea, and air components of their MCS systems, based on cost, commitment, organisational structure, and fisheries management issues and priorities.

According to FAO, the key tools for MCS at the national level include: an appropriate participatory management plan developed with stakeholder input, enforceable legislation and control mechanisms such as licensing, data collection systems such as dockside monitoring, observers, sea and port inspections, supporting communication systems, and linked land-based monitoring². A national MCS system would also need patrol vessels capable of extended operations to remain at sea with the fishing fleets, aircraft available for rapid deployment to efficiently search large areas, and use, where appropriate, of new technology such as vessel monitoring system, satellite, video, and infra-red tracking³. In the implementation of an effective MCS system, the support of the industry and fishers and professional staff would also be necessary.

1.3 Importance of Addressing IUU Fishing in Southern Africa

The Southern African region straddles three great oceans: the Atlantic, Indian and Southern oceans. The region has a total of six coastal states: Angola, Democratic Republic of Congo, Mozambique, Namibia, South Africa and Tanzania. The living marine resources of the region's waters, including migrating fish stocks, are shared between two or more countries.

The confluence of the cold Benguela Current on the west coast of the Atlantic Ocean, and the warm Agulhas Current on the east coast of the Indian Ocean, contributes to the high levels of marine biodiversity and species endemism found within the region. ⁴The coastline stretches over 3000km from the cool temperate waters of the southeast Atlantic Ocean to the subtropical Indian Ocean bordering Mozambique, with oceans that support diverse artisanal and commercial fisheries, targeting a diverse array of species for local and international consumption. ⁵The upwelling of cold, nutrient-rich waters along the west coast contributes to the productivity of this area, supporting vast commercial fisheries for many valuable fish and invertebrate species, while the warmer, less productive waters of the east coast support several smaller fisheries. ⁶The marine fisheries are significant to the socio-economic development of Angola, Mozambique, Namibia, and South Africa.

The Southern African region is adjacent to two large marine ecosystems that reflect the characteristics of the fisheries. The Somali and Equatorial currents on the east coast are composed of the Agulhas and Somali Large Marine Ecosystem (ASLME), which provide a moderate productive environment. The Benguela Current Large Marine Ecosystem (BCLME) on the west coast is one of the world's most productive systems in the world in terms of biomass production and fisheries resources due to the upwelling of cold nutrient rich water. ⁷The region is characterised by the presence of some states with long coast lines and/or large EEZ such as Mozambique, Namibia, Angola, and South Africa, where fisheries have a big commercial importance for its stock (hake and horse mackerel in the Atlantic and tuna and prawns in the Indian Ocean). South Africa alone boasts a coastline that stretches over 3000km from the cool temperate waters of the southeast Atlantic Ocean to the subtropical Indian Ocean bordering Mozambique. The Atlantic waters off southern Angola, Namibia and South Africa are probably the richest in all of Africa. ⁸Fisheries contribute 6.5% to Namibia's local GDP, where the number of fishers is estimated to be more than 290,000 people, and the sector is a significant source of employment, contributing significantly to the local economy as well as to food security. ⁹

² Peter Flewelling, Cormac Cullinan, David Balton, Raymond P. Sautter and J. Eric Reynolds, *Guide to Monitoring, Control, and Surveillance Systems for Coastal and Offshore Capture Fisheries*, FAO Fisheries Technical Paper. No. 415 (Rome: Italy, 2003).

³ Ibid.

⁴ WWF Report, *Fisheries: Facts and Trends South Africa* (WWF, 2011)

⁵ Ibid.

⁶ Ibid.

⁷ Cochrane KL, Augustyn CJ, Fairweather T, Japp D., Kilongo K, Litumbu J, Morrof N, Roux JP, Shannon L, Zyl Bv, and Velho Fv, (2009), *Benguela Current large Marine Ecosystem- Governance and Management for an Ecosystem Approach to Fisheries in the Region*. *Coastal Management* 37: 235-254.

⁸ Angola-EU fisheries relations: many problems remain to be solved, <http://agritrade.cta.int/Fisheries/Topics/ACP-EU-relations-FPAs/Angola-EU-fisheries-relations-many-problems-remain-to-be-solved>. Sited on 05/01/2016.

⁹ ACP Fish II Southern Africa, <http://acpfish2-eu.org/index.php?page=southern-africa>. Sited 07/01/2016.

Increased pressure on resources is a significant threat to the ecological sustainability of Southern African marine and coastal areas. A number of factors have contributed to this pressure such as population increase, industrialization of the fishing sector, overfishing, climate change and other environmental factors, open access fisheries, overcapacity in the fishing fleet, subsidies, ineffective data collection systems, unsustainable fishing practices, lack of effective fisheries management, compliance and enforcement, and weak MCS.

One of the biggest obstacles to the effective management of high seas fish stocks is the prevalence of IUU fishing caused by economic incentives which in turn were enabled by a lack of regulation and enforcement resulting from global governance deficiencies. Each year that it is allowed to thrive, illegal fishing on the high seas is progressively stripping oceans of fish stocks and further threatening the food security of over a billion people, mostly in the developing world. The overall extent of IUU fishing on the high seas is very difficult to estimate, largely because much of it is unreported or illegal. The most reputable estimate suggests that IUU fishing on the high seas is worth US\$1.25 billion annually. However, IUU fishing also affects areas within national jurisdiction. If EEZs are included, the estimate increases to a sum between US\$10 and US\$23.5 billion annually. Linkages between IUU fishing activities and other forms of criminality are widely recognised, including fishing vessels used for smuggling migrants, drugs and weapons, and for committing acts of terrorism.¹⁰

It is estimated that illegal fishing costs sub-Saharan Africa US\$1 billion a year,¹¹ and that IUU fishing accounts for almost one third of total catches in some important fisheries and may represent an overall cost to developing countries of between USD2 to USD15 billion a year.¹² In the EEZ of African States, IUU fishing results in an annual loss estimated between USD 2 to USD 5 billion of potential wealth. About 25 to 30 per cent of the global fish catch is considered unreported. The degree of under-reporting of fish catch can be up to 75 per cent in regional areas, while on the high seas it may be 100 per cent.¹³ For example at the national level, it has been reported that under-reporting of fish catch can be as high as 75 per cent within the shrimp fishery in Mozambique.¹⁴ The FAO in 2006 estimated losses of \$50 million and \$40 million in Angola and Mozambique respectively (Kamidza, 2012).¹⁵

In 2004 alone, the estimated unreported catch of toothfish derived from landings in South Africa and Mauritius ports was estimated to be 74,000 to 82,200 tonnes.¹⁶ Studies estimate that the total loss to IUU fishing in some African countries including Mozambique, Kenya, and the Seychelles amount to USD372 million or 19 per cent of the total value of the catch, while the probable value of IUU losses to Angola is about \$49 million.¹⁷

IUU fishing continues to be a problem worldwide, and is seen by many developing countries as a significant constraint to their attempts to sustainably manage their resources and provide food security or fisheries income. Rising global demand for fish has made African waters a magnet for fleets from around the world, thus exacerbating the IUU problem. IUU fishing is known to have negative economic, environmental, ecological, and social impacts. Apart from draining of revenue, IUU fishing reduces fish stocks, lowers local

¹⁰ <http://www.globaloceancommission.org/proposal-4-illegal-unreported-and-unregulated-fishing-closing-seas-ports-and-markets/>

¹¹ *Stop Illegal Fishing (2008), Stop Illegal Fishing in Southern Africa.*

¹² *Environmental Justice Foundation (EJF), Pirates and Profiteers: How Pirate fishing Fleets are Robbing People and Oceans, London, UK, 2005, www.ejfoundation.org*

¹³ David Evans, 'The Consequences of Illegal, Unreported and Unregulated Fishing for Fishery Data and Management', *Expert Consultation on Illegal, Unreported and Unregulated Fishing Organised by the Government of Australia in Cooperation with FAO, Sydney, Australia, 15-19 May 2000, AUS:IUU/2000/12, 2000, para. 3.*

¹⁴ MRAG, *Review of Impacts of Illegal, Unreported and Unregulated Fishing on Developing Countries: Final Report, (UK, 2005), p. 55.*

¹⁵ Kamidza R *European Union Fisheries Agreements: The case of Angola and Mozambique, 2010.*

¹⁶ D.J. Agnew, "The Illegal and Unregulated Fishery for Toothfish in the Southern Ocean, and the CCAMLR Catch Documentation Scheme," *Marine Policy* 24 (2000), p. 362.

¹⁷ MRAG, *Review of Impacts of IUU Fishing on Developing Countries, p. 44, 156.*

catches and harms the marine environment. It destroys communities, who lose opportunities to catch, process and trade fish.

For developing States, a major challenge in addressing IUU fishing is the limited capacity to manage vast expanse of waters. In Africa, the lack of enforcement capabilities also hinders the monitoring of fishing operations. ¹⁸Too often African nations lack the capacity to monitor and enforce compliance. They are weakened by the inaction of states that are unwilling or unable to carry out their regulatory responsibilities. Additionally, the situation in the region is exacerbated by ineffective observer programs for monitoring fishing activities of licensed vessels, poor logistics for offshore fisheries surveillance, weak systems for vessel registration and licensing, and lack of regional collaboration for the MCS systems. These gaps have considerably weakened the capacity of the African Continent to fully realize the socio-economic benefits associated with rational exploitation of its marine fisheries resources.

The Countries in the Southern African region vary in their status in regards to IUU fishing. For example, very little information is available on Angola IUU fishing, although the country has had a fisheries agreement with the EU which prosecutes a profitable fishery for deepwater rose shrimp in Angolan waters ¹⁹ and it did have some MCS capacity. In contrast, IUU fishing is probably at a low level in Namibia and South Africa as a result of the high levels of MCS in those states. ²⁰The exception is the domestic abalone fishery, which in South Africa is subject to very high levels of poaching. Estimates from Gordon & Cook are for IUU to be twice the level of legal catch in 2002, ²¹ and the South African authorities continue to arrest illegal abalone and lobster operations. ²² Namibian MCS activity is particularly high, with MCS expenditure in 2002 running at about 42% of revenue from fishing. ²³However, regional cooperation on MCS (especially between Namibia and South Africa) is good.

In 2010, the United Nations Office of Drugs and Crime (UNODC) has conducted a study on the existence of transnational crime in the fishing industry and highlighted some of the key links between organised crime and fisheries as follows:

- Fishers suffer severe abuse when they are trafficked for the purpose of forced labour on board fishing vessels;
- There is frequent child trafficking in the fishing industry;
- Transnational organised criminal groups are engaged in marine living resource crimes in relation to high value, low volume species bound for overseas restaurants and the aquarium industry, such as abalone, rock lobster, and some reef fishes, such as Napoleon wrasse;
- Laundering of illegally caught fish on to the market is often conducted through the use of at-sea transshipments and fraudulent catch documentation;
- Fishing vessels are used for the purpose of smuggling of migrants, illicit traffic in drugs (primarily cocaine), illicit traffic in weapons, and acts of terrorism; and
- Transnational fishing operators involved in marine living resource
- Fishing licensing and control system is vulnerable to corruption;
- Individuals are engaged in complex incorporation and vessel registration strategies and high degree of logistical coordination of vessel support services at sea.²⁴

¹⁸ WWF International Endangered Seas Campaign, *The Footprint of Distant Water Fleets on World Fisheries*. (Surrey: WWF, 1998), p. 23.

¹⁹ *Offshore fisheries in Angolan waters: report for BP by RRAG, Imperial College, 2002.*

²⁰ MRAG, *Review of Impacts of IUU Fishing on Developing Countries*, p. 40.

²¹ Gordon, H. R. and Cook, P.A. (2003). *World Abalone Supply, Markets And Pricing: Historical, Current And Future Prospectives*. Opening Speech: 5th International Abalone Symposium, Qingdao, China October 2003.

²² Anon (2004g) *Fishing boss jailed in US*. *Fishing News International* Vol. 43. No. 7 p.2 July 2004.

²³ Bergh, P.E., Davies, S.L. (2004) "Against all odds: taking control of Namibian fisheries". In Sumaila, U.R., S. I. Steinshamn, M. D. Skogen and D. Boyer (Eds.). *Namibian Fisheries: Ecological, Economic and Social Aspects*. Eburon Deft, Netherlands, in press.; U.R. Sumaila *The cost of being apprehended fishing illegally: empirical evidences and policy implications*. OECD workshop on IUU fishing paper AGR/FI/IUU(2004)11

²⁴ See UN Office of Drugs and Crime, *Transnational Organized Crime in the Fishing Industry: Focus on Trafficking in Persons, Smuggling of Migrants, Illicit*

The UNODC report also provides that fishers are often recruited by organized criminal groups due to their skills and knowledge of the sea and are seldom regarded as the masterminds behind organised criminal activities.²⁵ A number of factors have also been highlighted on what makes the fishing industry susceptible to transnational organised crime. These factors include the global reach of fishing vessels, ineffective monitoring of fishing vessels, lack of transparency on the identity of beneficial owners of vessels, continuous decline of global stocks, poor socio-economic conditions of fishers and fishing communities, lack of effective flag and port State jurisdiction, corruption, and lack of international regulation on the safety of fishing vessels and working conditions of fishers.²⁶ A number of countries in Africa have been included in the report as having reported incidents of fisheries crime.

It is therefore necessary to protect the rich fisheries resources of the Southern African region not only by addressing fisheries management issues and IUU fishing, but also by combating illegal fishing activities conducted by transnational criminal groups. This will ensure environmental sustainability and achievement of food security and socio-economic development. MCS as a key principle of fisheries management and a means to address IUU fishing can help Southern Africa protect and conserve its resources in a significant way for future generations.

1.4 Existing Studies, Workshop Reports, and Other Documents on MCS in Southern Africa

A number of studies and projects have been conducted by national and regional institutions within Southern Africa to address issues related to MCS and combating IUU fishing. Most of the projects have been funded by the Department for International Development of the UK (DFID), European Union, Norway (Nordenfjeldske Development Services) and international organisations such as the FAO and the World Bank, in cooperation with national governments and regional organisations. Examples of these studies are as follows:

Stop Illegal Fishing (SIF)

Stop Illegal Fishing, funded by DFID was launched in 2007 as a Working Group of the New Partnership for Africa's Development (NEPAD focusing on the marine fisheries of the coastal Southern Africa Development Community (SADC) states, resulting in the formulation of a policy for SADC; "the SADC Statement of Commitment on IUU fishing", to which the SADC Ministers responsible for marine fisheries committed in 2008. The initiative soon became a core component of the Partnership for African Fisheries, whose proposed purpose is to strengthen cooperation and coordination between governments and partners in order to support the African Union's and NEPAD Planning and Coordination Agency's agendas and other pan-African and international processes to stop illegal fishing in African waters.

SIF is now a registered not-for-profit organisation coordinating and supporting efforts to fight illegal fishing in African waters. The coordination team is based in Botswana, coordinated by Nordenfjeldske Development Services (NFDS) Africa. The organisation is working in partnership with governments, civil society, NGOs, intergovernmental organizations and the fishing industry to harness the necessary international support and growing African commitment to support positive change. As a result, various studies have been conducted and publications made on the status of IUU in Southern Africa and stopping IUU fishing in the region. One of its current flagship projects is the Fish-i Africa initiative.

In 2015, SIF was awarded the Margarita Lizárraga Medal Award by the Council of the United Nations Food and Agriculture Organization for the years 2014-2015. According to Árni M. Mathiesen, Assistant

Drug Trafficking (Vienna: UNODC, 2010), pp 1-3.

²⁵ *Ibid*

²⁶ *Ibid.*, p. 3.

Director-General, Fisheries and Aquaculture Department of the FAO, 'SIF was selected in recognition of an excellent African example of what can be achieved to stop IUU fishing by demonstrating that a lot can be accomplished with relatively small resources through good networking, the sharing of information, regional and international cooperation, and a strong commitment to stop IUU fishing. The contribution of SIF to the application of the Code is therefore outstanding, practical, tangible and sustainable as well as catalytic.'

²⁷ Its achievement was considered as a model of similar initiatives and to have a catalytic effect on other regions. Various documents including "Stop Illegal Fishing in Southern Africa", have been published.

SADC Protocol on Fisheries

The SADC Member States signed the Protocol on Fisheries in 2001 enabling the SADC Protocol on Fisheries to come into force in 2003. In signing this Protocol the Member States agreed to harmonise their domestic legislation with particular reference to fisheries and the management shared resources, to take adequate measure to optimize fisheries law enforcement resources and thus protect aquaculture and the aquatic environment and safeguard the livelihood of fishing communities.

The objective of the Protocol is: to promote the responsible use of the living aquatic resources to enhance food security and human health, safeguard the livelihood systems of fishing communities, and generate economic opportunities for nationals in the region and to ensure that future generations benefit from these resources. The Protocol emphasizes the responsibilities of Member States, international relations as well as the effective management of shared resources.

The Protocol on Fisheries implementation strategy approved in 2010 prioritises management of shared fisheries resources; and combating illegal, unregulated and unreported fishing. The Protocol also defines national and regional responsibilities for legislative and policy harmonisation, information sharing, and protection of fisheries from over-exploitation in the SADC region. Special attention is given to law enforcement, as illegal fishing has serious socio-economic consequences, and can compromise sustainable management efforts. In 2008, SADC signed a Statement of Commitment on IUU fishing, with the aim of strengthening inter-regional cooperation, fisheries governance, and monitoring, control and surveillance measures.²⁸

Establishment of a Regional Fisheries MSC Centre has been approved by the SADC member States, with the decision of Mozambique being its hosting country. The mission of the regional Center will be to coordinate MCS and enforcement activities (in port and at sea), to set up a regional platform for the conduction of regional Patrol Plan and for supporting the capacity building for harmonized implementation of the SADC protocol on fisheries and development of training. The statement includes the establishment of a Task Force to "identify and examine, having regard to any global initiative, and further actions and measures that could be undertaken at the regional level to intensify the fight against IUU fishing" and calls for "cooperation initiatives in fisheries MCS and law enforcement through improved coordination of MCS activities by establishing a regional MCS Centre". The project produced;

1. Guidelines for establishing the SADC Regional Fisheries MCS Coordination Centre which addresses the institutional set up options, the role of the Centre and the key services to be delivered as long as sustainability considerations and options in long term.
2. Project proposal for the start-up of the Centre, to be implemented in the short term while conditions for the installing of Regional Fisheries MCS Coordination Centre in the long run are created

²⁷ NFDS, <http://www.nfds.info/experience/stop-illegal-fishing/>. Sited on 07/01/2016.

²⁸ Southern African Development Community, <http://www.sadc.int/themes/agriculture-food-security/fisheries/> Sited 07/01/2016

ACP Fish II provided further support to carry out some of the identified priorities action as follows: a) An assessment of the implementation of the SADC Statement of Commitment to combat IUU Fishing; b) the development of the Financial Sustainability Plan for the Centre.

ACP Fish II Programme

This is a multi-year programme financed by the European Development Fund with five priority areas: effective management for sustainable fisheries, promoting optimal returns from fisheries trade, supporting food security in ACP countries, developing aquaculture and maintaining the environment. One of the outputs of this programme is a study providing the 'SADC and Member States with guidelines for the establishment of the Regional MCS Centre in order to prevent and combat illegal, unreported and unregulated (IUU) fishing in the region, facilitating cost-effective cooperation and coordination of MCS activities'.

Martin Sjöstedt & Aksel Sundström, Overfishing in Southern Africa: A Comparative Account of Regime Effectiveness and National Capacities, 2015

The international community has in recent decades supported the instalment of formal regulations and institutions for monitoring, control, and surveillance to decrease illegal, unreported, and unregulated fishing in African nations. Few studies have investigated the effectiveness of these reforms. This study conducts a systematic comparison of the enforcement of fisheries regulations in five Southern African Development Community (SADC) countries, and illustrates how the effectiveness of international agreements and regional commitments is fundamentally conditioned by national capacities. The empirical investigation also provides some tentative insights into the general dynamic process and mechanisms through which this can be understood.

Warwick H.H. Sauer, MCS Senior Management Workshop 2, 28-30 August 2012, Tanzania, SmartFish Meeting Report (Indian Ocean Commission, 2012)

This meeting identified priority MCS issues in the Eastern and Southern African and Indian Ocean (ESA-IO) region such as the lack of specific MCS strategic plans, resource limitations, lack of judicial training in dealing with fisheries offences, and other fisheries management issues such as the open access nature of fisheries and lack of effective national data strategy. The workshop recognized that by improving governance and management of fisheries and aquaculture development, other objectives can be achieved such as improving food security, social benefits, regional trade and increase of economic growth while protecting fisheries resources and ecosystems.

Republic of Mozambique, Ministry of Fisheries, Concept Paper MCS Regional Network for East and Southern Africa (Mozambique, 2007)

Mozambique has taken an active role in the Southwest Indian Ocean Fisheries Commission (SWIOFC) since its inception, especially in terms of implementing mechanisms for responsible fisheries management and the MCS scheme to combat IUU fishing. The country prepared a concept paper for consideration by SWIOFC members with respect to the establishment of a regional MCS Network at the operational level amongst members and interested and accepted parties and advisors. The proposed regional network aims to share information and ideas to promote cooperation and possible shared use of scarce MCS assets to combat IUU fishing. It also envisions an informal network of designated MCS operations personnel from Indian Ocean countries that would complement the International MCS Network and focus more on regional and bilateral MCS operations issues.

FAO, Report of the FAO Regional Workshop on the Elaboration of National Plans of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing: Southern and East Africa Subregion, Kariba, Zimbabwe, 24-28 November 2003, FAO Fisheries Report No. 730 (FAO, 2003)

This report highlights one of the key efforts of the FAO to conduct regional meetings to increase awareness amongst States on the implementation of the IPOA-IUU when it was newly adopted in 2001. This workshop also served as training for high level fisheries officials on the development of national plans of action to combat IUU fishing. A number of follow-up actions by countries were proposed during the workshop such as the development of a technical guideline for the implementation of the IPOA-IUU for inland fisheries. The Workshop also proposed the enhancement or establishment of systems of national vessel registration and maintenance of national records of registered vessels for all semi-industrial and industrial fishing vessels operating in marine and inland fisheries in the region. This registration process should be seen as a minimum requirement and countries are encouraged to register all fishing vessels.

Other Studies and Reports

Other workshop reports have also been published such as the Report of the FAO Regional Workshop on Port State Measures to Combat Illegal, Unreported and Unregulated Fishing, Cape Town, South Africa, 28-31 January 2008, FAO Fisheries Report No. 859 (FAO, 2008). The IOC has organised a number of MCS-related trainings and workshops while the NFDS has conducted a number of relevant projects such as the Technical assistance for implementation of a regional fisheries strategy for ESA-IO, Data harmonization options for fisheries MCS in the Indian Ocean, Sustainability plan for SADC MCS Regional Centre, and Preparation of training courses on patrol vessels, MCS and port State measures. Various publications and studies are also available under The New Partnership for Africa's Development (NEPAD) which implements the Partnership for African Fisheries (PAF).

In summary, these studies have focused on technical and institutional capacity assessment, as well as examination of domestic, sub-regional and regional IUU fishing issues. This Technical Report addresses a key gap in previous studies, which include an analysis of legal requirements to implement an effective MCS in Southern African States. This AU study therefore strongly supplements previous projects on the topic.

1.5 Project Approach and Methodology

In order to successfully achieve the objectives of the project, the approach taken involves four activities: desktop research, legal analysis, consultation through a survey questionnaire, and SWOT analysis. The desktop research has three aspects: 1) an identification of the international legal requirement on MCS from relevant binding and non-binding international agreements such as the LOSC, UN Fish Stocks Agreement, FAO Compliance Agreement, FAO Code of Conduct, IPOA-IUU, and FAO Port State Measures Agreement; 2) Analysis of regional capacity in implementing an MCS framework in Southern Africa; and 3) Assessment of state practice in Africa in the adoption of specific MCS measures such as vessel registration and licensing, observer program, vessel monitoring system, boarding and inspection, port State measures, and catch certification. The assessment will compare the international requirements vis-a-vis adoption of MCS measures by African States and identify difficulties and challenges for the region. A short scoping survey was developed and distributed to Southern African fisheries organisations to obtain information on the implementation of MCS in individual countries and the region and to ascertain the challenges confronted by Southern African States. However, survey responses have yet to be received. Annex I presents the two part survey prepared for this project. This Technical Report therefore relies on primary documents such as international binding and non-binding instruments, regional and bilateral agreements and policies, official

reports from relevant organisations, domestic laws and regulations, and studies conducted by various institutions.

The Final Technical Report provides a summary of relevant international fisheries-related instruments, legal requirements for implementing MCS tools, summary of relevant policies, legal measures and MCS activities by regional bodies and arrangements, and overview of country legal framework on fisheries MCS. The domestic framework is examined against the international and regional requirements and a brief SWOT analysis is provided for each country. Each major part of this Technical Report provides a summary of Recommendations based on available information, commencing on Part I Recommendations immediately below. Recommendations on the development of an MCS Strategy to Combat IUU under the auspices of the MCS Coordination Centre and other components of sub-regional cooperation are presented in the last section of this Technical Report.

Recommendations

Ascertain the priority IUU fishing issues in the Southern African sub-region, including possible incidents of fisheries crime

Identify specific fisheries and coastal and marine areas which are susceptible to IUU fishing in Southern Africa

Identify available MCS tools and assets in each Southern African state that may be used to address priority IUU fishing issues

Nominate or establish a repository of relevant studies, documents and other materials relating to fisheries in general, IUU fishing and MCS which will be readily available to Southern African States

2. INTERNATIONAL LEGAL FRAMEWORK ON MCS

2.1 Global Fisheries Instruments with MCS-related Provisions

The implementation of MCS systems has its legal basis in international instruments such as the LOSC, FAO Code of Conduct for Responsible Fisheries, FAO Compliance Agreement, the UN Fish Stocks Agreement and the FAO Port State Measures Agreement. Similarly, the IPOA-IUU provides the requirement for States to apply specific MCS-related measures from the commencement of the fishing activity to the final destination of caught fish. These measures include vessel registration, issuance of fishing licenses, record of fishing vessels, capacity-building, and implementation of vessel monitoring system, observer programmes, boarding and inspection regimes, and data collection and management. Based on these international instruments, the purpose of MCS systems is to ensure that general fisheries policies and conservation and management measures are implemented fully and expeditiously and to prevent, deter and eliminate IUU fishing.

United Nations Convention on the Law of the Sea

The United Nations Law of the Sea Convention (LOSC) provides a comprehensive framework for the management of all living marine resources. Most relevant to the promotion of responsible fishing are the regimes established under the LOSC on the exclusive economic zone (EEZ) and the high seas. The regime of the EEZ recognises the sovereign rights of coastal States in conserving and managing living resources in the area, including adopting laws and regulations that apply to foreign fishing vessels conducting fishing activities in the zone. The LOSC also contains provisions on fishing on the high seas, a significant part of which involves the implementation of flag State duties, as well as the duty to cooperate among States.

FAO Compliance Agreement

The Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (FAO Compliance Agreement) reiterates the provisions of the LOSC with respect to the need for effective control of fishing vessels on the high seas. This agreement applies to all fishing vessels over 24 metres in length and provides measures that flag States are required to implement to ensure the compliance of vessels conducting high seas fishing with international conservation and management measures. These measures include the issuance of authorisations to fish, maintenance of records of fishing vessels, and cooperation among States for the exchange of information.

UN Fish Stocks Agreement

The 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 (UNFSA) aims to facilitate the implementation of the provisions of the LOSC with regard to the management and conservation of straddling and highly migratory fish stocks. The UN Fish Stocks Agreement generally applies to high seas fisheries, although some of its provisions are also applicable to the EEZ based on the principle of compatibility of conservation and management measures. In addition to the flag State duties stipulated in the FAO Compliance Agreement, the UN Fish Stocks Agreement enumerates other flag State responsibilities such as the implementation of marking of fishing vessels and gear regulations, vessel monitoring systems, observer programs, boarding and inspection, and port State measures.

FAO Code of Conduct for Responsible Fishing

The FAO Code of Conduct for Responsible Fishing provides principles and standards applicable to the conservation, management and development of all fisheries. It covers capture fisheries, processing and

trade of fish and fishery products, fishing operations, aquaculture, fisheries research and the integration of fisheries into coastal area management. The Code is global in scope and although considered a voluntary instrument, it contains provisions that are reflected in binding instruments such as the LOSC, FAO Compliance Agreement, and the UN Fish Stocks Agreement.

IPOA-IUU

The International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) is the first voluntary international instrument formulated to specifically address IUU fishing. Its objective is “to prevent, deter, and eliminate IUU fishing by providing States with comprehensive, effective, and transparent measures by which to act, including through appropriate regional fisheries management organisations, established in accordance with international law.” The IPOA-IUU is considered a comprehensive “toolbox”, which has a full range of measures that can be used by flag States, port States, coastal States, and “market States” or States which engage in the international trade in fish to deal with various manifestations of IUU fishing within the jurisdiction of States and on the high seas. Measures that cut across the responsibilities of flag, coastal, port, and market States are categorised under “All State Responsibilities” such as the adoption of national plans of action to combat IUU fishing and effective MCS.

IPOA-Capacity

The International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity) is a voluntary instrument that applies to all States whose fishers engage in capture fisheries. It contains urgent actions and identifies mechanisms to promote the implementation of the international plan of action. Some of the urgent actions include the assessment and monitoring of fishing capacity and preparation and implementation of national plans.

IPOA-Seabirds

The International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds) is a voluntary instrument that sets out activities which implementing States are expected to carry out, including an assessment of whether a problem exists with respect to reducing the incidental catch of seabirds in longline fishery. The IPOA-Seabirds also calls on States to adopt national plans of action addressing the problem as well as procedures for national reviews and reporting requirements. It further provides a summary of appropriate mitigation measures which States may consider in the adoption of the national plans of action.

IPOA-Sharks

The International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) is a voluntary instrument that applies to all States whose fishers engage in shark fisheries. It provides a set of activities which implementing States are expected to carry out, including an assessment of whether a problem exists with respect to sharks and adoption of national plans of action as well as procedures for national reviews and reporting requirements.

FAO Model Scheme on Port State Measures

A Model Scheme on Port State Measures to Combat IUU Fishing was adopted by the FAO in 2004 which provides guidelines for carrying out inspections of foreign vessels in ports, a list of information that should be provided by vessels in advance to port States, expected results from port inspections, training of port inspectors, and a proposed information system among port States. The Model Scheme conforms to the measures adopted under the IPOA-IUU and all relevant rules of international law and assists States in developing common procedures for inspection and agreed measures against IUU fishing vessels.

FAO Port State Measures Agreement

The Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing was adopted in 2009 and aims to combat IUU fishing through the implementation of effective port State measures, giving emphasis to the role of port States in ensuring the long term conservation and sustainable use of living marine resources and ecosystems. The agreement applies to foreign vessels seeking entry into a coastal State's ports, except for vessels of a neighboring State that are engaged in artisanal fishing for subsistence, provided that the port State and the flag State cooperate to ensure that such vessels do not engage in IUU fishing. It also does not apply to container vessels that are not carrying fish, or if carrying fish, only fish that have been previously landed provided that there are no clear grounds for suspecting that such vessels have engaged in fishing activities in support of IUU fishing. The port State measures provided in the agreement include designation of ports where foreign vessels can seek entry, advanced notification of entry, port inspection, and port enforcement actions such as prohibition of landing and transshipment of fish, as well as denial of port entry.

The following table summarizes the ratification and accession of Southern African States to key international fisheries agreements.

Table 2: Table of Signature, Ratification, and/or Accession of Southern African States to International Fisheries-Related Agreements

Southern African State	LOSC (entered into force on 16 Nov 1994)	UN Fish Stocks Agreement (entered into force on 11 Dec 2001)	FAO Compliance Agreement (entered into force on 24 April 2003)	FAO Port State Measures Agreement (adopted August 2009)
Angola	5 December 1990 (R)	-	Ratified	22 Nov 2009 (S)
Democratic Republic of Congo	17 December 1989 (R)	-	-	-
Mozambique	13 March 1997 (R)	10 Dec 2008 (A)	Ratified	19 Aug 2014 (R)
Namibia	18 April 1983 (R)	8 April 1998 (R)	Ratified	-
South Africa	23 Dec 1997 (R)	14 Aug 2003 (A)	-	16 February 2016-
Tanzania	30 Sept 1985 (R)	-	Ratified	-

(S) Signature (R) Ratification (A) Accession (-) Neither signed nor ratified

2.2. Summary of Legal Requirements

Based on the binding and non-binding international fisheries-related instruments above, the following are the legal requirements for the adoption of MCS tools.

2.2.1 Vessel Registration and Licensing

The Law of the Sea Convention provides the right of every State to sail ships flying its flag on the high seas (art 90). This right is balanced with the obligation to fix the conditions for the grant of its nationality to ships, for the registration of ships in its territory, and for the right to fly its flag (art 91). The FAO Code of Conduct provides that a flag State needs to ensure that vessels to which it has allocated its flag carry onboard the original Certificate of Registry or a document that would attest to the nationality of the fishing vessels (art 8.2.2).

The LOSC provides the obligation of a flag State to effectively exercise its jurisdiction and control in administrative, technical, and social matters over ships flying its flag (art 94). Effective control and jurisdiction over fishing vessels are therefore not only limited to the registration of fishing vessels but also to generally accepted international regulations on the construction, equipment, seaworthiness of ships, safety at sea, and labour standards, which are embodied in International Maritime Organization (IMO) and International

Labour Organization (ILO) conventions, regulations, and standards. Most of the requirements of IMO conventions, however are not fully applicable to fishing vessels because of their unique design and nature of operations.

The uniform standards developed jointly by FAO, ILO, and IMO on the Code of Safety for Fishermen and Fishing Vessels provide some guidelines on promoting the improvement of safety and health on board fishing vessels. The Code provides information on the use of navigational equipment, mechanical equipment, and safety on deck. It also discusses measures on the safety of fishing operations, particularly trawling, purse seining, Danish seining, longline fishing, tuna pole and line fishing, and fish and ice handling, which are not discussed in any other international guidelines or codes. The FAO, ILO, and IMO have also formulated guidelines on the construction and design of smaller fishing vessels from 12 meters to 24 metres, as well as measures to protect and accommodate crew on these vessels.

Effective jurisdiction and control of States in social matters over ships flying their flags further involves the adherence to maritime labour standards, particularly on the minimum age, medical examination, accommodation, articles of agreement, competency certificates, vocational training, and hours of work, under the comprehensive Maritime Labour Convention of 2006 and the ILO Work in Fishing Convention 2007 (No. 188). These conventions provide the overall responsibility of flag States to ensure the rights of fishers in relation to their service on board fishing vessels, as well adopt laws and regulations that will ensure fishing vessel owners are responsible for making available to fishers agreements that will address their living and working conditions.

Another flag State duty is to establish requirements for the marking of fishing vessels in accordance with the FAO Standard Specifications for the Marking and Identification of Fishing Vessels. These standard specifications are based on the International Telecommunication Union Radio Call Signs (IRCS) system which is an established international system from which the identity and nationality of vessels can be readily determined. According to the FAO Standard Specification for the Marking and Identification of Fishing Vessels, apart from the name of the vessel or identification mark and the port of registry required by international practice or national legislation, the marking system shall be the only other vessel identification mark consisting of letters and numbers to be painted on the hull or superstructure. Flag States are also required to mark fishing gears in accordance with uniform and internationally recognisable vessel gear marking systems. The FAO has proposed legal and technical measures for the marking of fishing gears. The FAO Technical Guidelines for Responsible Fisheries provide that national legislation should contain a requirement for the marking of fishing gear and fishing implements, including nets, lines and fish aggregating devices (FADs), in order to identify the owner of the gear.

The IPOA-IUU enumerates other measures that a flag State needs to take into consideration when registering fishing vessels. It emphasises the requirement for the State to ensure that fishing vessels flying its flags, including chartered vessels, do not engage in IUU fishing (paras 34 and 37), avoid flagging vessels with a history of non-compliance (para 36), and deter vessels from reflagging or flag-hopping for the purposes of non-compliance with conservation and management measures (para 38). According to the IPOA-IUU, a flag State is required to avoid flagging vessels with a history of non-compliance except for two conditions. One, the ownership of the vessel has subsequently changed and the new owner has provided sufficient evidence demonstrating that the previous owner or operator has no further legal, beneficial or financial interest in, or control of, the vessel. Two, having taken into account all relevant facts, the flag State determines that flagging the vessel would not result in IUU fishing.

2.2.2 Authorization to Fish or Licensing

A flag State can exercise effective control over fishing vessels not only through vessel registration but also through the issuance of licenses or authorizations to fish. Paragraph 40 of the IPOA-IUU provides that flag States would need to consider conducting the separate functions of registration and licensing of fishing vessels in a manner that ensures each gives appropriate consideration to the other. For example, a flag State should consider making its decision to register a fishing vessel conditional upon it being prepared to provide an authorization to fish to that vessel. Furthermore, according to the FAO Compliance Agreement, if a fishing vessel that has been authorised to be used for fishing on the high seas by a Party to the Agreement ceases to be entitled to fly the flag of that Party, the authorisation to fish on the high seas shall be deemed to have been cancelled (art III). Since the functions of fishing vessel registration and licensing often fall under the jurisdiction of different authorities, cooperation and information sharing between responsible agencies are required.

A flag State has the duty to issue licences to fishing vessels conducting operations on the high seas, including areas managed by regional fisheries management organisations (RFMOs) to which the flag State is a member, and areas under the jurisdiction of a coastal State to the fishing vessels of a flag State are allowed to fish under an agreement or arrangement. Article III(5)(a) of the FAO Compliance Agreement specifically provides that no Party shall authorize any fishing vessel previously registered in the territory of another Party that has undermined the effectiveness of international conservation and management measures to be used for fishing on the high seas, unless it is satisfied that two conditions have been met. One, any period of suspension by another Party of an authorization to fish on the high seas has expired and two, no authorization to fish on the high seas for such fishing vessel has been withdrawn by another Party within the last three years.

The effectiveness of a fishing vessel licensing system to combat IUU fishing does not solely depend on the issuance of a valid authorization to fish, but more specifically on the enforcement of the terms and conditions of a fishing license. The UN Fish Stocks Agreement provides that one of the duties of a flag State is to establish regulations for the application of certain terms and conditions on a fishing license (art 18). The IPOA-IUU provides some of the conditions under which a fishing license may be issued. A fishing license contains basic information such as the name of the vessel, and where appropriate, the natural or legal person authorized to fish, as well as the areas, scope and duration of the authorization, and authorized species and fishing gear and other applicable management measures (para 46). Other requirements may also be imposed on a fishing license, such as:

- vessel monitoring systems;
- catch reporting conditions;
- conditions related to transshipment, if permitted;
- observer coverage;
- maintenance of fishing and related logbooks;
- navigational equipment;
- marking of fishing vessels and gears according to international standards;
- use of internationally recognised fishing vessel identification number; and
- compliance with measures related to maritime safety, protection of the marine environment, and other conservation and management measures (para 47).

2.2.3 Vessel Monitoring System

The IPOA-IUU encourages States to implement vessel monitoring systems which includes requiring their vessels to carry VMS equipment on board (para 24). The LOSC provides the right of a coastal State to

require vessels of other States that fish in its EEZ to submit certain information, such as vessel position reports (art 62). Similarly, the UN Fish Stocks Agreement provides that one of the duties of flag States with respect to MCS is the development and implementation of VMS in accordance with regional, sub-regional or global programmes (art 18). While the LOSC largely regulates foreign vessels conducting fishing operation in the EEZs of coastal States, the IPOA-IUU and the UN Fish Stocks Agreement are also applied to national vessels; thus having a wider application.

VMS responds to the international requirement of collecting and verifying fish catch and effort, and other fishing activities for more effective fisheries management. There are different types of VMSs. The more conventional type of VMSs relies on vessel movement report through radio, aerial or surface surveillance, land-based radar, sea-based sonar, observer programs or incidental reports by other fishing vessels or airplanes. This type of VMS is used to monitor areas in the immediate vicinity and is therefore more local in coverage. The other type of VMS is satellite-based. In general, VMS provides monitoring agencies with accurate locations, at periodic time intervals, of fishing vessels participating in the VMS. Newer technologies such as satellite-based VMS which provides real time information from fishing vessels supplement catch reporting and assist towards integrated fisheries monitoring (IFM). The integration of VMS in fisheries regulations highlights its importance as a management tool and assists in ensuring compliance of fishing vessels with national laws and regulations.

2.2.4 Observer Program

In order to ensure that fishing operations are documented and that fishing vessels comply with conservation and management measures, States are encouraged to establish observer programs. Under the LOSC, States have the right to place observers on board vessels in exercising their sovereign right over marine resources in their EEZs (art 62). This provision applies to foreign vessels fishing in the EEZs of coastal States. There is also a duty under the UN Fish Stocks Agreement to implement national observer programmes, participate in sub-regional or regional observer programs, and permit observers of other States to carry out functions agreed under such programs (art 18). These international instruments, however, do not provide the specific functions of and the process involved in conducting observer programs.

The primary advantage of conducting an observer program is that it collects data required for determining the status of living marine resources and the consequences of commercial fishing operations. Observer programs are usually implemented in order to generate data for fishery science and compliance purposes.²⁹ Implementation of an observer programme for fishery science involves the estimation of total catch and effort, including by-catch and discards, and biological sampling of catches. To ensure compliance with fisheries laws and regulations, observers may be given the right to validate logbooks and inspect documents, visit fishing vessels, and collect catch data. The information obtained from both types of observer programmes is necessary for effective fisheries management.

As a component of MCS, an observer program allows for the verification of reported fisheries data, such as information recorded by fishing vessels in their logbooks, which is an effective means to detect unreported fishing. Observer records and information may also be required as evidence in the prosecution of a violation by a vessel, owner or company. Such evidence will be more admissible if the observer program has developed standardized formats, methods and protocols for recording and handling compliance-related issues. For the purpose of using observer reports in establishing a fisheries violation, there is a need for the competence of observers to be established, particularly in the event of litigation, by means of standard

²⁹ Sandy I. Davies; J. Eric Reynolds, (eds.), *Guidelines for Developing an At-Sea Fishery Observer Programme*, FAO Fisheries Technical Paper No. 414 (Rome: FAO, 2002), p. 5.

training. ³⁰Aside from the proper execution of his or her rights and responsibilities, there is also a need for an observer to have a common understanding of the interpretation of the provisions of relevant legal instruments or agreements.

2.2.5 Boarding and Inspection

The IPOA-IUU encourages States to implement national and internationally-agreed boarding and inspection regimes consistent with international law (paras 24.10 and 80.8). Article 73(1) of the LOSC provides that a coastal State may undertake measures such as boarding and inspection in exercising its rights to conserve and manage living resources in the EEZ. The LOSC does not provide specific measures as to how a coastal State may implement its boarding and inspection scheme. In general, however, a boarding and inspection scheme involves five key steps: detection, approach, boarding, inspection, and disembarkation. ³¹It may involve a routine boarding and inspection or boarding with suspected violation.

Another aspect of a boarding and inspection scheme is the use of force. Under the LOSC, States are required to fulfil their obligations under the Convention in good faith and exercise their rights, jurisdiction and freedoms in a manner that would not constitute an abuse of right (art 300). Furthermore, States are required to refrain from any threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the principles of international law embodied in the Charter of the United Nations (art 301). These provisions must be considered by a coastal State in using force with respect to exercising its right to board and inspect foreign fishing vessels. While observer programs are most effective in detecting unreported fishing, boarding and inspection regimes are more crucial in determining if an illegal or unregulated fishing activity has occurred. However, as can be gleaned from State practice, an effective legal regime for boarding and inspection in the EEZ does not stop with the acts of boarding and inspection. It also involves seizure of vessels, fishing gears and other fishing implements, and documents and other records, as well as the prosecution of fisheries offenders and application of sanctions and penalties.

A coastal State is also given the right to conduct boarding and inspection on the high seas subject to certain conditions. The UN Fish Stocks Agreement contains elaborate provisions on boarding and inspection on the high seas to ensure the conservation and proper management of straddling and highly migratory fish stocks, some of the provisions of which are applicable with respect to coastal State jurisdiction. The UN Fish Stocks Agreement provides the duties and responsibilities of the inspecting State (and inspectors) and flag States (and vessel masters) in the course of boarding and inspection. Members of RFMOs are given the right to board and inspect fishing vessels flying the flag of another State Party to a regional fisheries agreement subject to agreed boarding and inspection provisions of the RFMO, or the basic procedures for boarding and inspection set out in Articles 21 and 22 of the UN Fish Stocks Agreement. These rights are limited to the inspection of the vessel, its license, gear, equipment, records, facilities, fish and fish products and any documents necessary to verify compliance with relevant conservation and management measures. An inspecting State may also investigate if there is a possible violation conducted by the vessel. If there are clear grounds for believing that a vessel has engaged in any activity contrary to regulations of an RFMO, the inspecting State is required to notify the flag State to enable the latter to investigate and take action, if evidence warrants, against the vessel. The inspecting State may only take an enforcement action against the vessel only after the flag State fails to act on the alleged violation, such as bringing the vessel to the nearest port. A flag State has the obligation to ensure that vessel masters cooperate with and assist in the inspection of the vessel.

³⁰ Karl Laubstein, "Fisheries Observers on Fishing Vessels," in CP Nolan, ed., *Proceedings of the International Conference on Integrated Fisheries Monitoring*, Sydney, Australia, 01-05 February 1999.

³¹ C. Mees, "Points to Remember in Connection with Armed Boardings," *Technical Papers Presented at the Regional Workshop on Fisheries Monitoring, Control, and Surveillance*, Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June-3 July 1998, GCP/INT/648/NOR1, pp. 147-150.

2.2.6 Port State Measures

International law recognises the sovereignty of States over their territories and nationals. Once a vessel has voluntarily entered a port, it becomes subject to the laws, regulations and enforcement powers applicable in the internal waters of a port State. Under the LOSC, a port State has the right to take necessary steps to prevent any breach of the conditions associated with a port call (art 25). It may also undertake investigations or institute proceedings with respect to any vessel discharge in violation of applicable rules of international law when a vessel is voluntarily in its port or offshore terminal.

The UN Fish Stocks Agreement establishes the role of port States in fisheries. Article 23(1) of the UN Fish Stocks Agreement provides for the right and duty of a port State to take measures to promote the effectiveness of sub-regional, regional and global conservation and management measures. A port State is given the right to inspect documents, fishing gear and catch on board fishing vessels when a fishing vessel is in its ports or offshore terminals. The UN Fish Stocks Agreement also allows a port State to undertake enforcement actions such as the prohibition of landings and transshipments if it has been established that the catch has been taken in a manner which undermines the effectiveness of a conservation and management measure on the high seas. Such measures need to be applied in a fair, transparent, and non-discriminatory manner.

Examples of measures and enforcement actions that may be applied by port States include: advanced notice of port entry, designation of ports, inspection of fishing vessels, prohibition of fish landing and transshipment, and denial of port entry.

Advanced notice of entry

The IPOA-IUU provides the requirement for fishing vessels and vessels involved in fishing-related activities to provide a reasonable advance notice of their entry into port, a copy of their authorization to fish, details of their fishing trip and quantities of fish on board (para 55). The FAO Model Scheme provides a list of specific information which States may require from foreign fishing vessels prior to their entry into ports, which include details related to the identity of the vessel, purpose of port access, details on fishing authorisation, information about the trip, and information on species caught.

Designation of Ports

Foreign fishing vessels generally call into ports where services are available for their landing and transshipment needs. It is therefore necessary for States to designate ports where such foreign fishing vessels may be admitted. Based on the IPOA-IUU, part of the responsibility to designate ports where foreign fishing vessels may be permitted admission is the need to publicize such ports, and more importantly, ensure that such ports have the capacity to conduct inspections (para 57).

Inspection of Fishing Vessels

Under the IPOA-IUU and FAO Model Scheme, a port State is required to carry out inspections of foreign fishing vessels for the purpose of monitoring compliance with relevant conservation and management measures. There are different elements comprising the inspection of foreign fishing vessels. These elements include the procedure for inspection, what to inspect, the precautions that need to be taken when inspecting vessels, information that needs to be collected, reporting of information to relevant authorities, and safeguarding and confidentiality of information. The procedure starts with vessel identification, inspection of authorisation to fish and other documentation, and examination of fishing gear and fish and fishery products. Vessel identification involves the verification of the validity of the identity documents and confirmation of information through appropriate contacts with flag States and RFMOs. It also includes an

examination of whether the vessel has changed flag and its port of registration and ownership. The FAO Model Scheme provides for the rights of the master of the vessel during the inspection, as well as his or her obligation in providing all the necessary assistance and information to the inspector.

After port inspection of a foreign fishing vessel, its documents, fishing gears and other equipment, and fish and fish products onboard the vessel, it is necessary to report the results of the inspection. A port State needs to ensure that the results of the inspection are presented to the master of the vessel and signed by both the inspector and the master. The master would also need to be provided the opportunity to add any comment to the report and contact the relevant authorities of the flag State if he or she is encountering serious difficulties in understanding the report. The FAO Model Scheme also provides that the port State should report on the results of its inspections to the flag State of the inspected vessel, other relevant States, and to relevant RFMOs.

Enforcement Actions

Following an inspection, if there are clear grounds that a foreign vessel in port has engaged in or supported IUU fishing, there are two examples of port enforcement actions that may be undertaken. One of the enforcement actions that may be taken based on the IPOA-IUU (para 56) and UN Fish Stocks Agreement (art 23) is the prohibition of landing and transshipment of fish. This is the most common enforcement action applied by port States. The other action, based on the FAO Port State Measures Agreement is the denial of port access (art 11). Denial of port entry follows the principle that the port State exercises full sovereignty in its ports. In case of force majeure, a port State has the obligation to give port access to fishing vessels. These measures are accompanied by the obligation to report the matter to the flag State of the vessel.

2.2.7 Catch Certification

Based on the IPOA-IUU, trade-related measures to reduce or eliminate trade in fish and fish products derived from IUU fishing could include multilateral catch documentation and certification requirements, as well as other appropriate multilaterally-agreed measures such as import and export controls or prohibitions (para 69). Catch certification is one of the schemes used by RFMOs that require documentation to accompany particular fish and fish products bound for international trade. In RFMO practice, trade documents accompany fish and fish products that enter through international trade by identifying the origin of fish for the purpose of ascertaining levels of unreported fishing. Catch certification is issued by relevant national authorities at the point of harvesting and covers all fish to be landed or transhipped.

The European Union, being one of major importers of fish, has adopted an IUU fishing regulation (EC 1005/2008) that provides for the prohibition of the importation of fishery products obtained from IUU fishing. This objective is implemented through a catch certification scheme. In general, the importation of fishery products into the EU is only allowed when accompanied by a catch certificate, completed by the master of the fishing vessel and validated by the flag State of the vessel. To be valid, the catch certificate must contain all information specified in the template documents shown in Annex II of the EU IUU Regulation, including:

- • basic information such as the name of the fishing vessel, home port and registration number, call sign, licence number, Inmarsat number and IMO number (if issued);
- • information on the product (the type of species, catch areas and dates, estimated live weight and verified weight landed, as well as the applicable conservation and management measures and any transshipment at sea is also required); and
- • information and declaration on export and import of the fishery product (including the vessel name and flag, flight number airway bill number, truck nationality and registration number, other transport

documents and container number).

The indirect importation and exportation of fishery products are subject to the validation of a catch certificate by the competent authorities of the flag State of the vessel.

Table 2 summarises the measures adopted under the IPOA-IUU to combat IUU fishing. It shows that the key coastal State measure required to address IUU fishing is an effective MCS. However, in general MCS is a measure that all States are required to adopt and that tools such as vessel registration, authorization to fish, record of fishing vessels, VMS, observer program, boarding and inspection, catch certification and port State measures are specific tools within the MCS system.

Table 3: Measures to Address IUU Fishing under the IPOA-IUU

Flag State Responsibilities	Coastal State Measures	Port State Measures	Internationally-agreed Market Measures	All State Measures	RFMO Measures
Fishing vessel registration	Effective MCS in the EEZ - Regulation of fishing access - At-sea transshipment - Maintenance of logbooks - Authorisation to fish	Prior to entry requirements	Import and export controls	Ratification, adoption and implementation of international instruments	Record of fishing vessels
Record of fishing vessels		Designation of ports	Stock or species specific trade-related measures	Effective control over nationals	IUU vessel listing
Authorisation to fish		Port inspection	Traceability of fish	Action against vessels without nationality	Effective MCS
Chartering arrangement measures		Denial of port access	Harmonized Commodity Description and Coding System	Application of sanctions of sufficient severity	Boarding and inspection
		Prohibition of landing and transshipment of fish	Catch certification and documentation	Avoid conferring economic incentives to IUU fishing	Observer programme
				Effective MCS	Development of action plans
				National legislation to address IUU fishing	Measures for non-contracting parties
				Adoption of NPOA-IUU	
				Cooperation between States	

2.2.8 Other Measures

There are other MCS measures provided in international fisheries-related instruments that may be used to prevent, deter and eliminate IUU fishing. These measures include the development of national plans of action, effective data collection system, application of sanctions of sufficient severity, exercise of the right of hot pursuit, use of evidentiary standards and admissibility of electronic evidence and new technologies in court, and market-related measures.

2.3 Global Cooperation on MCS to Combat IUU Fishing

2.3.1 International MCS Network

The International Monitoring, Control, and Surveillance (IMCS) Network was established as a voluntary organization in 2001 to provide a mechanism for fisheries law enforcement professionals to share information and experiences to improve the effectiveness of fisheries-related MCS activities through enhanced cooperation, coordination, information collection and exchange among national organizations and institutions responsible for MCS. The IMCS Network operates informally and encourages participation from fisheries managers, investigators, lawyers, foreign service officers, and forensics specialists. In order to enhance cooperation, the IMCS Network focuses on the following activities:

- Collection and hosting of relevant documents, reports, and laws on the Network website;
- Production and dissemination of a Network Newsletter, containing both news articles and original pieces;
- Production and implementation of a country MCS Needs Assessment;
- Organization of a biennial Global Fisheries Enforcement Training Workshop for MCS practitioners to network and exchange information, experiences and lessons learned;
- Organization and implementation of MCS trainings and other capacity building efforts to improve the MCS abilities of member governments;
- Production of analytical responses to “Requests for Information” received from member governments and relevant stakeholders;
- Production of original analytical pieces on IUU trends, new MCS technologies, and additional topics of interest; and
- Development of relationships, cooperation, and information sharing capabilities among members and additional MCS practitioners.

A number of relevant studies, documents, and links on IUU fishing and MCS are available at the IMCS website (www.imcsnet.org).

Mozambique, South Africa and Tanzania are part of the IMCS network.

2.3.2 INTERPOL Fisheries Crime Working Group

There is also increasing recognition that illegal fishing has escalated to involve transnational criminal groups. Hence in 2013, INTERPOL launched Project Scale to detect, suppress, and combat fisheries crime. The Project’s objectives include:

- generating awareness regarding fisheries crime and its consequences;
- establishing National Environment Security Task Forces to ensure cooperation between national and international agencies;
- assessing the needs of vulnerable member countries to effectively combat fisheries crimes; and
- conducting operations to suppress crime, disrupt trafficking routes, and ensure the enforcement of national legislation.

INTERPOL established a Fisheries Crime Working Group under this initiative to develop the capacity, capability, and cooperation of member countries to effectively address fisheries crimes. The Fisheries Crime Working Group aims to facilitate the exchange of information, intelligence, and technical expertise between countries for purposes of fisheries law enforcement. Several countries have cooperated within the INTERPOL network and have called upon the international organization to issue 'Purple Notices' to illegal fishing vessels. INTERPOL's Purple Notices are used to seek or provide information on the modus operandi, objects, devices, and methods used by criminals.

Recommendations

Encourage Southern African nations to accede to relevant international fisheries agreements, particularly the LOSC, UNFSA and the 2009 FAO Port State Measures Agreement

Develop and/or review national plans of action to prevent, deter and eliminate IUU fishing in order to ensure that identified priority issues are addressed (Only Namibia has finalised and officially adopted NPOA-IUU). Each NPOA-IUU should include a whole-of-government capacity building strategy to support its full implementation

Review legislation and/or develop specific regulations to implement MCS tools such as fishing vessel registration and licensing, record of fishing vessels, vessel monitoring system, observer program, boarding and inspection, port State measures, and catch certification

Encourage all Southern African States to participate in the International MCS Network and INTERPOL initiatives to address fisheries crime

3. REGIONAL FRAMEWORK ON FISHERIES MCS

As discussed in Part 2, the development of MCS tools, as well as cooperation among nations has been emphasized strongly in international instruments. The Southern African maritime region runs across the central and south eastern Atlantic Ocean, and the south west Indian Ocean. The marine fisheries are part of a larger marine ecosystem shared by all countries of the Southern African region. The effective conservation and management of shared international fisheries resources calls for actions to be undertaken at the regional and sub-regional levels. A number of regional organizations and institutions provide the context and basis for the development and implementation of coordinated MCS measures among the Southern African coastal States including the existing Regional Economic Communities (RECs) and Regional Fisheries Bodies (RFBs). RFBs play a primary role in the sustainable management and utilization of fisheries resources by means of facilitating regional cooperation. The role of these organizations and institutions in MCS implementation is discussed below.

The African Union has also developed a Policy Framework and Strategy for Reform of Fisheries and Aquaculture, which was adopted by 23rd summit of African Heads of States and Governments in Malabo, Equatorial Guinea, in June 2014. This framework aims to effectively reverse the current trend of loss in order to derive benefits from fisheries resources in African States. The framework established a number of policy areas vital to the management of fisheries in Africa. The key policy areas relevant to this study are as follows:

Conservation and Sustainable Resource Use³²

This policy area seeks to establish national and sub-national governance and institutional arrangements that ensure that the societal contribution generated by Africa's sectors have the greatest impacts at the most appropriate level. The main outcomes expected for the African countries include inter alia:

- the establishment of strategies for the generation and sustainability of societal benefits;
- adoption of participatory fisheries management mechanisms/approaches;
- fisheries management programmes that account for and integrate ecological interactions, by-catch, habitat quality, and socio-economic concerns; and,
- effective and sustainable regional MCS systems operating in all regions.

Various strategies and actions were identified as crucial for the implementation of this policy area, including inter alia:

- creating an enabling environment for sustainable management and for generating the potential of the resources;
- designing and applying appropriate users rights-based systems;
- conducting fisheries within enforceable regulatory frameworks through an appropriate statutory/regulatory framework that is clearly understood, enforceable and supported by resource users and others. Hence, the development and strengthening of the institutional framework for MCS for combating IUU fishing is key;
- strengthening information systems; and
- designing and applying risk management framework.

Regional and Sub-Regional Cooperation³³

It is crucial that the fisheries in African States are managed effectively throughout their range, both within and between national exclusive economic zones, and on the high seas. Unrestrained exploitation

³² AUC-NEPAD (2014). *The Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa*

³³ *Ibid.*

in a particular exclusive economic zone or on the high seas has the potential to significantly impact on catches elsewhere with potentially devastating consequences for these States. It is crucial that RECs, RFBs and consultative commissions of large marine ecosystems (LMEs) commissions or projects, examples BCC, CCLME, GCLME collaborate in order to build appropriately integrated and iterative systems of governance nationally and internationally. Regional cooperation presents an opportunity for States to mutually enhance their capacities in various areas such as MCS, and to strengthen relationships, promote integrated management, sustainable development and protect shared resources.

The objective of this policy area is to Strengthen South-South (bilateral and regional) cooperation, and to develop coordinated mechanisms among RECs, RFBs and LME-based commissions to ensure coherence of fisheries policies and aquaculture development and their adoption and adaptation. The expected outcomes include inter alia;

- transparency, accountability and effective participation of stakeholders;
- coherent and harmonised international fisheries issues at regional levels;
- harmonised approaches to the management and development of shared fisheries and ecosystems; and
- RECs and RFBs are positive forces for regional economic integration.

The strategies and actions identified as crucial for the implementation of this policy area include inter alia;

- increased strategic cooperation in several areas of capture fisheries and aquaculture development to be pursued by Member States, e.g. by improving inter-regional collaboration and networking between regional organizations to ensure synergy and coherence, strengthening the capacity of regional organizations for information development, analysis and dissemination and encouraging Africa's RFBs to apply internally recognized best practice for regional fishery bodies;
- creating synergies and complementarities in the programmes at regional level;
- establishing and reinforcing the role of RECs and RFBs and such other arrangements as positive forces in regional economic integration e.g. by developing and implementing, as appropriate, coherent policy on international fisheries such as for promoting regional fish trade, common MCS systems, and minimum conditions of access and by ensuring regional MCS systems are adequately staffed and financed; and,
- enhancing the role of RECs and RFBs and arrangements in creating integrated and iterative systems of governance.

High Seas Fisheries³⁴

Regional cooperation, mainly across sectors, is a key requirement for successful high seas management and the conservation and sustainable use of high seas biodiversity. RFMOs are key players in this endeavour as they provide a platform for States to cooperate regionally and develop management principles and procedures. However, there are difficulties associated with obtaining membership in several RFMOs by non-Member States and entities and also a lack of consolidated positions at the RFMO meetings by AU Member States, rendering the participation of AU member states ineffective and therefore resulting in poor benefits from their membership.

The conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction (ABNJ) is a great challenge. The special legal status of the high seas as a global commons also contributes to the difficulties in achieving the conservation and sustainable use of marine biodiversity in ABNJ. With no legal instruments adequately addressing the conservation and sustainable use of marine biodiversity in ABNJ, there is a pressing need to find ways to address obstacles to marine biodiversity conservation in ABNJ. The strengthening of the legal and institutional framework at the regional level provides such an option.

³⁴ *Ibid*

The High Seas Fisheries Policy seeks to increase and consolidate the African Voice in the governance and management of high seas fisheries thus providing a greater African Voice in high seas fisheries and increasing the membership of African countries in RFMOs.

The strategies and actions identified as crucial for the implementation of this policy area include inter alia;

- encouraging African countries to become members or cooperating parties of appropriate RFMOs;
- encouraging African countries to ratify United Nations Convention on the Law of the Sea and the FAO Port States Measures Agreement;
- consulting and harmonising positions on key issues before meetings of RFMOs;
- participating in the ABNJ programme to promote efficient and sustainable management of fisheries resources and biodiversity conservation in the ABNJ; and
- participating in the newly established Global Partnership for Oceans; build relationships and political, financial and scientific support in the region for high seas fisheries.

To contribute to the implementation of this Policy Framework and Strategy of Reform, the African Union has received support from the European Union to implement a project on “Strengthening institutional capacity to improve the governance of the fisheries and aquaculture sector in Africa”. A key component of improving governance in fisheries is the adoption of an effective MCS system at both the national and regional levels.

3.1 Regional Requirements on MCS

Regional cooperation in MCS is crucial if effective fisheries management, particularly of shared stocks is to be achieved. Bilateral, sub-regional and regional cooperation on MCS can include the exchange of fisheries data, harmonized legislation, implementation of flag and port State control agreements, and combined measures to address IUU fishing. However, regional or sub-regional cooperation entails a number of additional responsibilities for States. These responsibilities include the security of sensitive data, how differences between participating States will be resolved in order to present a unified regional position, and how to take into account differences in economic situations of member States when devising cost sharing arrangements to support the implementation of a regional MCS system. Despite challenges, there are examples of regional organizations which have successfully dealt with issues related to the implementation of MCS measures, such as the South Pacific Forum Fisheries Agency (FFA), the Organisation of Eastern Caribbean States (OECS) Fisheries Unit, the Caribbean International Community (CARICOM) Fisheries Resource Assessment and Management Programme (CFRAMP), the Northwest Africa Subregional Fisheries Commission (SRFC), and the Indian Ocean Tuna Commission (IOTC).

Based on the IPOA-IUU, in order to successfully combat IUU fishing, States, acting through relevant RFMOs may adopt a number of measures:

- strengthen institutional framework with a view to enhancing their capacity to address IUU fishing;
- develop compliance measures in conformity with international law;
- develop and implement comprehensive arrangements for mandatory reporting;
- cooperate in exchanging information on vessels engaged in or supporting IUU fishing;
- maintain records of vessels fishing in the area of competence of a relevant regional fisheries management organization, including both those authorized to fish and those engaged in or supporting IUU fishing;
- develop methods of compiling and using trade information to monitor IUU fishing;
- develop MCS, including real time catch and vessel monitoring systems, other new technologies, monitoring of landings, port control, and inspections and regulation of transshipment, as appropriate;
- develop within a RFMO, where appropriate, boarding and inspection regimes consistent with

- international law, recognizing the rights and obligations of masters and inspection officers;
- develop observer programs;
- where appropriate, market-related measures in accordance with the IPOA;
- define circumstances in which vessels will be presumed to have engaged in or to have supported IUU fishing;
- develop education and public awareness programmes;
- develop action plans; and
- where agreed by their members, examine chartering arrangements, if there is concern that these may result in IUU fishing (para 80).

It should be noted though that these measures are generally adopted by RFBs with management functions. However these measures may also be adopted as a matter of policy in other regional organisations to facilitate cooperation amongst States on MCS.

In Table 2 of this Technical Report, it can be observed that the MCS measures that States, acting collectively within relevant RFMOs, may be able to adopt to address IUU fishing are very similar to those discussed in Part 2 of this Report. An exception would be the development of IUU vessel listing. The IPOA-IUU clearly supports the listing of IUU vessels in RFMOs which were developed by States in a collective and fair and transparent manner. The IPOA-IUU does not provide for the listing of IUU vessels by individual countries.

3.2 Analysis of MCS Capability for Relevant Regional Organizations and Arrangements

Regional organisations have a central role to play in preventing, deterring and eliminating IUU fishing. Many of the world's most valuable stocks of fish, and a large number of those stocks most subject to significant IUU fishing, fall under the purview of RFMOs. Accordingly, RFMOs are uniquely positioned to promote and coordinate efforts to implement the IPOA-IUU.

MCS are key factors to compliance with internationally or regionally agreed frameworks, policies, plans or strategies for the management and conservation of fisheries resources. Its absence or ineffectiveness is a major result of a poor or insufficient fisheries management. Improved inter-State, State, and regional coordination and information exchange, and support of resource users are known to be foremost factors to success in addition to effective implementation of MCS systems.

In response to the global request for international cooperation against IUU fishing, many States have enforced (following considerable legislative, regulatory, policy and enforcement adjustments) different types of regulatory measures in order to prevent, deter, and eliminate IUU fishing. At the regional level, efforts have also been intensified over the last decades against IUU fishing, particularly through the RFBs by establishing MCS frameworks.

The EEZs surrounding the region fall into two regional management bodies, that of the South West Indian Ocean Fisheries Commission (SWIOFC) and the Benguela Current Commission (BCC), while the areas outside of the EEZs but adjacent to the SADC EEZs fall into the South East Atlantic Fisheries Organisation (SEAFO), CCAMLR for general fisheries management and International Convention on the Conservation of Atlantic Tuna (ICCAT) and the Indian Ocean Tuna Commission (IOTC) for tuna and tuna like species.

3.2.1 Southwest Indian Ocean Fisheries Commission (SWIOFC)

The SWIOFC is a regional fisheries body established under Article VI of the FAO Constitution. With its Secretariat based in Mozambique, it promotes the application of the provisions of the FAO Code of

Conduct on Responsible Fisheries, including the precautionary approach and the ecosystem approach to fisheries management.

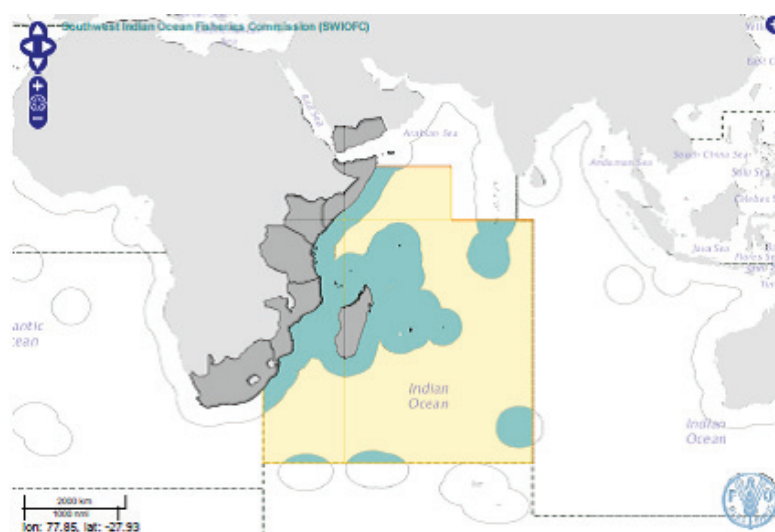
Among the functions and responsibilities of the Commission relevant to MCS are:

- to contribute to improved governance through institutional arrangements that encourage cooperation amongst members;
- to keep under review the state of the fishery resources in the area and the industries based on them;
- to promote the collection, exchange, dissemination and analysis or study of statistical, biological, environmental and socio-economic data and other marine fishery information;
- to provide advice and promote co-operation on monitoring, control and surveillance, including joint activities, especially as regards issues of a regional or sub-regional nature.³⁵

Member States include **Mozambique, South Africa, and Tanzania**. The membership of SWIOFC includes four of the five countries with the largest coastlines of the African continent (Madagascar, Somalia, **South Africa, Mozambique**, and Egypt), five countries with the largest EEZs of the continent (**South Africa**, Seychelles, Mauritius, Madagascar, and Somalia), and three of the five countries with the largest continental shelves of the continent (**South Africa**, Morocco, Madagascar, **Mozambique**, and **Namibia**).³⁶

SWIOFC has played a crucial role in promoting and facilitating collaboration and cooperation in the region with regard to fisheries issues, serving as a platform for the development of several regional projects. Hence, SWIOFC has provided an important forum for sharing information on MCS and has thus helped promote a better regional coordination of MCS activities that are being done by organizations such as the Indian Ocean Commission (IOC) and the South African Development Community (SADC), as well as by SWIOFC Member States. Coordination on MCS is however challenged by the different MCS capabilities of Member States.

Through funding by the World Bank Group including a total of US\$75.5 million the SWIOFC will contribute towards improvement of fishing-related activities for families living in the coastal communities of the South West Indian Ocean region, thus increasing their economic benefits.³⁷



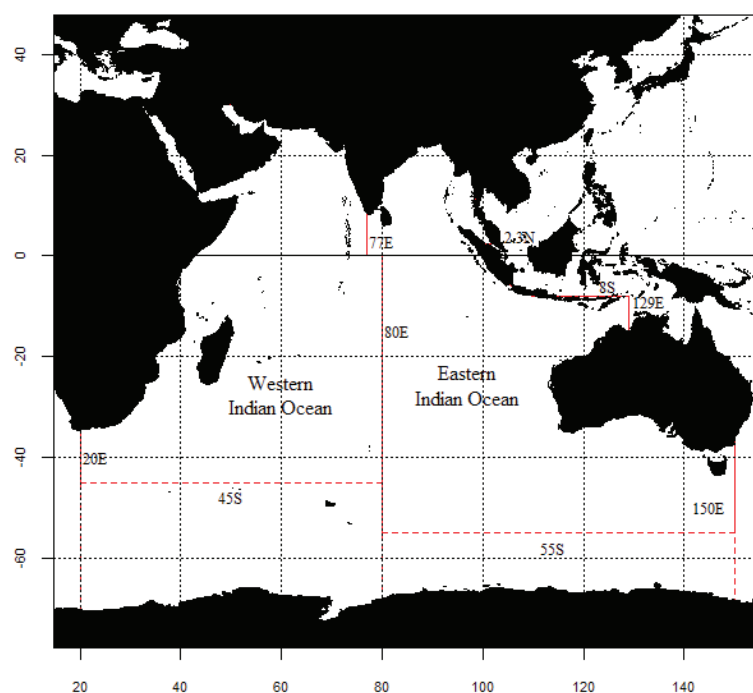
³⁵ Southwest Indian Ocean Fisheries Commission, <http://www.fao.org/fishery/rfb/swiofc/en>

³⁶ Aubrey Harris and Domingos Gove, *Ten Years Promoting And Strengthening Regional Cooperation For Securing Sustainable Fisheries In South West Indian Ocean (SWIO) Region*, South West Indian Fisheries Commission.

³⁷ *The First South West Indian Ocean Fisheries Governance and Shared Growth Project (SWIOFish I)* aims at improving regional cooperation for the nine African countries that border the waters of the South West Indian Ocean. The project will support regional coordination among these countries, in order to improve the health and sustainability of the fisheries. <http://www.worldbank.org/en/news/press-release/2015/02/27/world-bank-boosts-fisheries-in-south-west-indian-ocean-african-countries>.

3.2.2 The Indian Ocean Tuna Commission (IOTC)³⁸

The IOTC in Southern Africa provides the mechanism for achieving cooperation between and among States participating in tuna fisheries. The IOTC has a responsibility for conserving and managing the tuna stocks in its area of competence. The adoption of conservation and management measures is central to the work of the IOTC, which Member States are required to implement. The adoption of such measures is facilitated through the decision-making procedures of the IOTC. The effectiveness of these measures is reliant upon the commitment of Member States to address issues that are critical to the sustainability of tuna resources under the management mandate of the IOTC. Fundamental to the enforcement of RFMO conservation measures is effective MCS.



The IOTC has adopted a number of MCS related measures including; landing of catch, port inspection and transshipments, vessel registers and information relating to IUU fishing, inspection and enforcement, VMS, and cooperation with non-members thus:

- i. Record of authorized vessels (IOTC Resolution 15/04) – The IOTC requires the establishment and maintenance of a record of vessels that are authorized to fish for tuna and tuna-like species in the IOTC Area. Vessel records are essential for the Commission to establish its fishing capacity goals. A record of active vessels and list of IUU vessels are also maintained. IOTC Resolution 11/03 establishes a list of vessels presumed to have carried out illegal, unreported and unregulated fishing in the IOTC area of competence, thus being able to coordinate measures against them;
- ii. Port State Measures (IOTC Resolution 10/11) – This measure was developed consistent with the FAO Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing;
- iii. Vessel registration (IOTC Resolution 15/04) - Regarding vessels registration, the IOTC requires fishing vessels to carry on board documents issued and certified by the competent authority in respect of authorization to fish, vessel name, port in which registered and number of registration, international call sign, names and addresses of owner, length and engine power of vessel. Fishing vessels should also be appropriately marked in conformity with international standards such as the FAO Standard Specification for the Marking and Identification of Fishing Vessels and Gears. Fishing vessels are also required to keep a bound fishing logbook. At the 18th session Members proposed the need to address the challenge of IUU fishing by streamlining the application of the IMO numbers to all vessels greater

- than 100GT across all RFMOs and making unique vessel identifiers mandatory by 2016;
- iv. Vessel monitoring system (IOTC Resolution 15/03) - The IOTC requires Members to adopt a satellite-based VMS for vessels greater than 24 metres in length overall, registered on the IOTC Record of Vessels which operate in the IOTC Area and which fish on the high seas, or in case of vessels less than 24 meters, those operating in waters outside the Economic Exclusive Zone of the Flag State fishing for species covered by the IOTC Agreement. At the 18th Session which took place from 1-5 June 2014 in Colombo, Sri Lanka one of the proposals from the CPcs was to improve VMS and observer coverage in order to strengthen MCS in the IOTC;
 - v. Regional observer scheme (IOTC Resolution 11/04) – This Resolution establishes a Regional Observer Scheme that includes observers on board fishing vessels and port sampling for artisanal fisheries.³⁹The scheme aims to collect verified catch data and other scientific data related to the fisheries for tuna and tuna-like species in the IOTC area of competence.⁴⁰ The observer scheme has the dual role of collecting data and monitoring compliance with IOTC conservation and management measures.⁴¹ Thus, the observer is required, inter alia, to observe and estimate catches in order to identify catch composition and monitor discards and by-catches, as well as record the gear types, mesh size, and attachments employed by the master. Resolution 14/06 provides for a regional observer programme to monitor at sea transshipments, by placing observers on carrier vessels.⁴²

Compliance with Resolutions, particularly by industrial and semi-industrial fleets using purse seine, longline and gillnets, is fundamental to the development of rigorous conservation and management strategies in the IOTC. As worthy as the above measures and proposals are, any conservation and management measures adopted by regional bodies such as the IOTC are only effective if member States and cooperating non-members comply with the requirements.

Organizations such as International Seafood Sustainability Foundation (ISSF) and World Wide Fund for Nature (WWF) have concerns at the level of non-compliance with IOTC Resolution 14/06 on transshipment by large-scale tuna vessels because strengthening compliance with transshipment is critical to the successful elimination of IUU fishing activities.⁴³ These organisations still call for increasing observer coverage on purse seiners to 100 per cent and increasing the coverage on longline vessels via human or electronic means.

3.2.3 The International Commission for the Conservation of Atlantic Tuna (ICCAT)⁴⁴

The ICCAT is responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas. ICCAT can thus undertake studies including research on biometry, ecology, and oceanography, with a principal focus on the effects of fishing on stock abundance. The Commission collects and analyses statistical information relative to current conditions and trends of the fishery resources in the Convention area, and also compiles data for other fish species that are caught during tuna fishing in the Convention area, and which are not investigated by another international fishery organization. **Angola** and **Namibia** are members of ICCAT.

ICCAT through its decision making process has adopted a number of MCS related measures including; landing of catch, port inspection and transshipments, vessel registers and information relating to IUU fishing, inspection and enforcement, VMS, and cooperation with non-members.

³⁹ IOTC, Resolution 11/04, para 4.

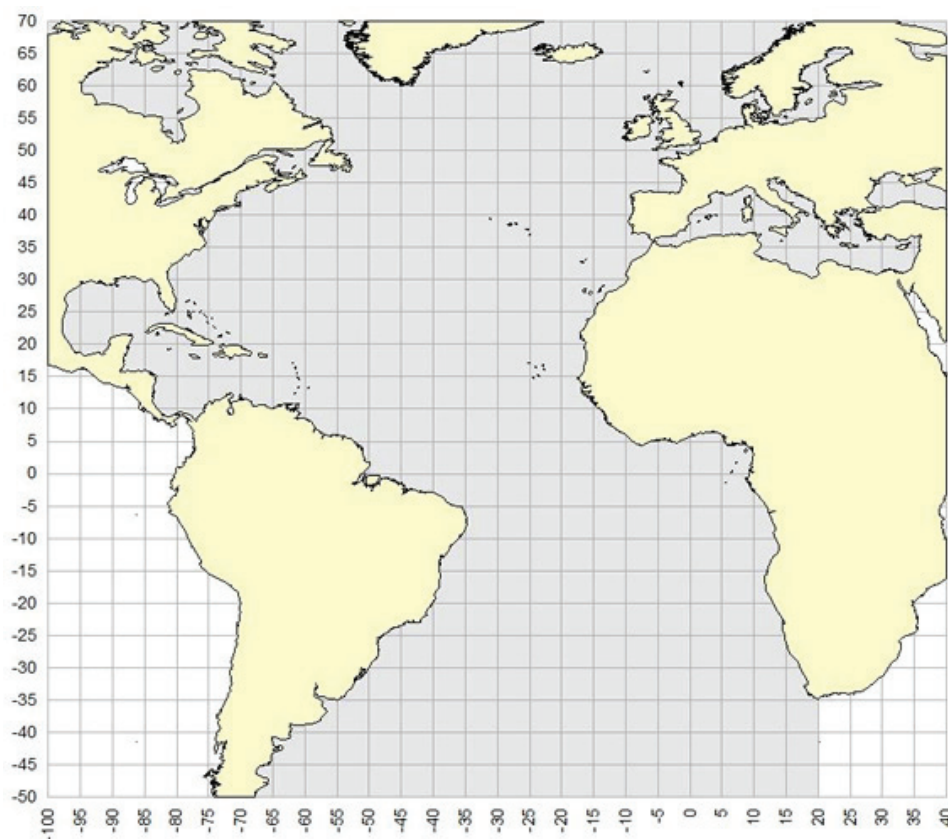
⁴⁰ IOTC, Resolution 11/04, para 1.

⁴¹ IOTC, Resolution 11/04, para. 10(b and c).

⁴² IOTC, Resolution 14/06, para 17.

⁴³ International Seafood Sustainability Foundation, IOTC Turns 18, 26 May 2014, <http://iss-foundation.org/2014/05/25/iotc-turns-18/>

⁴⁴ <https://iccat.int/en/>



The MCS related measures by ICCAT are as follows:

- i. Port State Measures (ICCAT Recommendation 12-07) – Like the IOTC, this measure was developed consistent with the FAO Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. ICCAT requires members wishing to grant access to its ports to foreign fishing vessels, to establish designated ports, and possess the necessary capacity to carry out inspections of all tuna fishing vessels in their ports, including vessels of ICCAT members. Foreign fishing vessels seeking to use such ports for the purpose of landing and/or transshipment are to provide prior notification;
- ii. Record of authorized vessels (ICCAT Recommendation 13-13) – ICCAT requires a record of fishing vessels authorized to fish for tuna and tuna-like species in the Convention Area. Effective 1 January 2016 all vessels must have a unique IMO number or a number in the seven - digit numbering sequence allocated by IHS- Fairplay (LR Number),⁴⁵ unless excepted. Such a unique identification number makes them readily identifiable and provides a common reference point from which to tell whether they have been duly authorised to fish by their flag States. ICCAT Recommendation 11-18 requires a list of IUU vessels to be maintained, while the provisions of ICCAT Resolution 14-11 requires the commission to maintain contacts with the Secretariats of other RFMOs managing tuna or tuna-like species in order to obtain copies of these RFMOs' IUU vessel lists. This goes towards building a global information-sharing platform for real-time sharing of data on high seas fishing vessels and their activities so as to deter IUU fishing and promote traceability.
- iii. Scientific observer programs (ICCAT Recommendation 10-12) – ICCAT has established minimum standards for domestic fishing vessel scientific observer programs, requiring a minimum of 5% observer coverage of fishing effort in the pelagic longline, purse seine, and baitboat fisheries.⁴⁶ The observer is required to collect data that quantifies total target catch and by-catch, size composition, disposition status (i.e., retained, discarded dead, released alive), and the collection of biological samples for life history studies,⁴⁷ and also fishing operation information such as inter alia, area of catch by latitude

⁴⁵ ICCAT, Recommendation 13-13, para 5tris.

⁴⁶ ICCAT, Recommendation 10-10 para 1a

⁴⁷ ICCAT, Recommendation 10-10 para 2a(i)

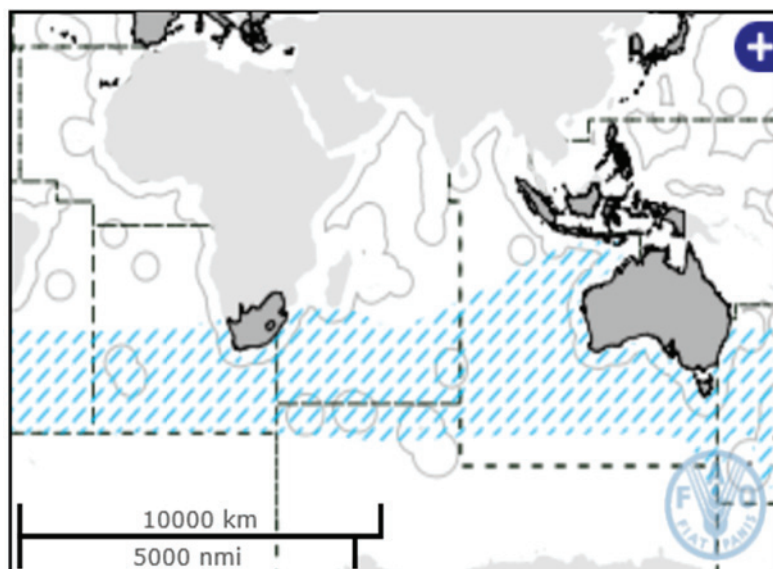
and longitude and fishing effort. ⁴⁸Additionally, ICCAT Recommendation 12-06 provides for a regional observer programme to monitor at sea transshipments, by placing observers on carrier vessels. Vessels shall therefore not commence or continuing transshipping in the ICCAT Convention area without a regional observer on board, except in cases of force majeure duly notified to the ICCAT Secretariat. ⁴⁹

iv. Vessel Monitoring System (ICCAT Recommendation 14-09) requires members to implement an autonomous VMS which is able to automatically transmit a message to the Fisheries Monitoring Center, for fishing vessels exceeding 20 meters between perpendiculars or 24 meters length overall. VMS provides monitoring agencies with accurate locations, of fishing vessels that are participating in the VMS. It informs the monitoring agency where a vessel is and where it was at periodic time intervals. The position information can be provided to the monitoring agency in near real time (less than 30 minutes) no matter where the vessel is located in the world.

3.2.4 Commission for the Conservation of Southern Bluefin Tuna (CCSBT)⁵⁰

CCSBT is responsible for the management of southern bluefin tuna throughout its distribution. South Africa is a Cooperating Non-Member of CCSBT. Such a member can participate fully in the business of the CCSBT but cannot vote. They have to adhere to the management and conservation objectives of the CCSBT and agreed catch limits.

The Compliance plan adopted by CCSBT provides a framework for the CCSBT, Members and Cooperating Non-Members to improve compliance, and over time, achieve full compliance with CCSBT's conservation and management measures. The Compliance Plan also includes a three-year action plan to address priority compliance risks.



South Africa is one of only four countries cooperating with CCSBT that has this species occurring within its Exclusive Economic Zone (EEZ), but at present South Africa is only a Cooperating Non-contracting Party with a 40 t quota. However, South Africa did not comply with CCSBT Resolutions by consistently exceeding its annual allocation of 40t of SBT. ⁵¹In addition, monthly catch reports continued to be submitted significantly late. South Africa did not submit annual reports to the Extended Scientific Commission (ESC) in 2015 (nor in 2014).

CCSBT is a member of IMCS.

⁴⁸ ICCAT, Recommendation 10-10 para 2a(ii)

⁴⁹ ICCAT, Recommendation 11-06 para 19 & 20

⁵⁰ ccsbt.org

⁵¹ South Africa submitted revised estimates for both its 2013 and 2014 catches of 65.61t (exceeding its allocation by 25.61t) and 50.5t respectively. Therefore for the five year period 2010 – 2014 inclusive, South Africa's reported SBT catch of 275.7t exceeded its allocation by 75.71t, i.e. by 37.9%. South Africa's reported catch of 50.5t for 2014 has exceeded its allocation by 10.5t.

CCSBT has adopted the following measures in regards to MCS;

- i. Record of authorised vessels – Resolution on a CCSBT Record of Vessels Authorised to Fish for Southern Bluefin Tuna (SBT) has established a list of vessels/carrier vessels authorised to fish for/carry southern Bluefin tuna. Effective from 1 January 2017, all fishing vessels (except wooden and fibreglass vessels) that are authorised to catch SBT, and that are at least 100GT/GRT in size, must have IMO numbers issued to them. Resolution on Establishing a Program for Transshipment by Large-Scale Fishing Vessels requires a list of the Carrier Vessels that are authorised to receive transshipments. The have to provide Lloyds/ IMO Number (if available) as part of Members'/CNMs' CCSBT authorised CV submissions. The provision of IMO numbers has been improving since it became a requirement.⁵² CCSBT has a Memorandum of Understanding with the IOTC for monitoring transshipment at sea involving SBT. As substantial amounts of SBT have been and are caught for farming, Resolution on the Establishment of a Record of Authorised Farms establishes a record of farming facilities authorized to operate for farming of SBT. CCSBT has also requires the identification and record of the vessels carrying out IUU activities;
- ii. Port State Measures - Resolution for a CCSBT Scheme for Minimum Standards for Inspection in Port requires Members to designate ports to which foreign fishing vessels may request entry, port inspections and prior notification and port inspections of vessels.
- iii. Vessel Monitoring System - Resolution on the development and implementation of a Vessel Monitoring System – requires Members to develop and implement satellite-linked Vessel Monitoring Systems for fishing vessels catching SBT. Resolution on establishing the CCSBT Vessel Monitoring System requires implementation of VMS for such vessels fishing in the IOTC, WCPFC, CCAMLR, ICCAT areas;
- iv. Scientific Observer Programme - 10% vessel coverage;
- v. Catch Documentation Scheme - Resolution on the Implementation of a CCSBT Catch Documentation Scheme establishes a record of all catch of SBT regardless of whether the SBT were traded in order to document the movement of all SBT. The information to be contained in the CCSBT CDS documentation includes inter alia: information on the catch, towing and farming; transfers of SBT between farms; catch, landing, transshipment, export, and import of all SBT regardless of whether farmed; or not, including unexpected catch.

CCSBT is in regular contact with both ICCAT and IOTC regarding their shared transshipment (at sea) observer programme.

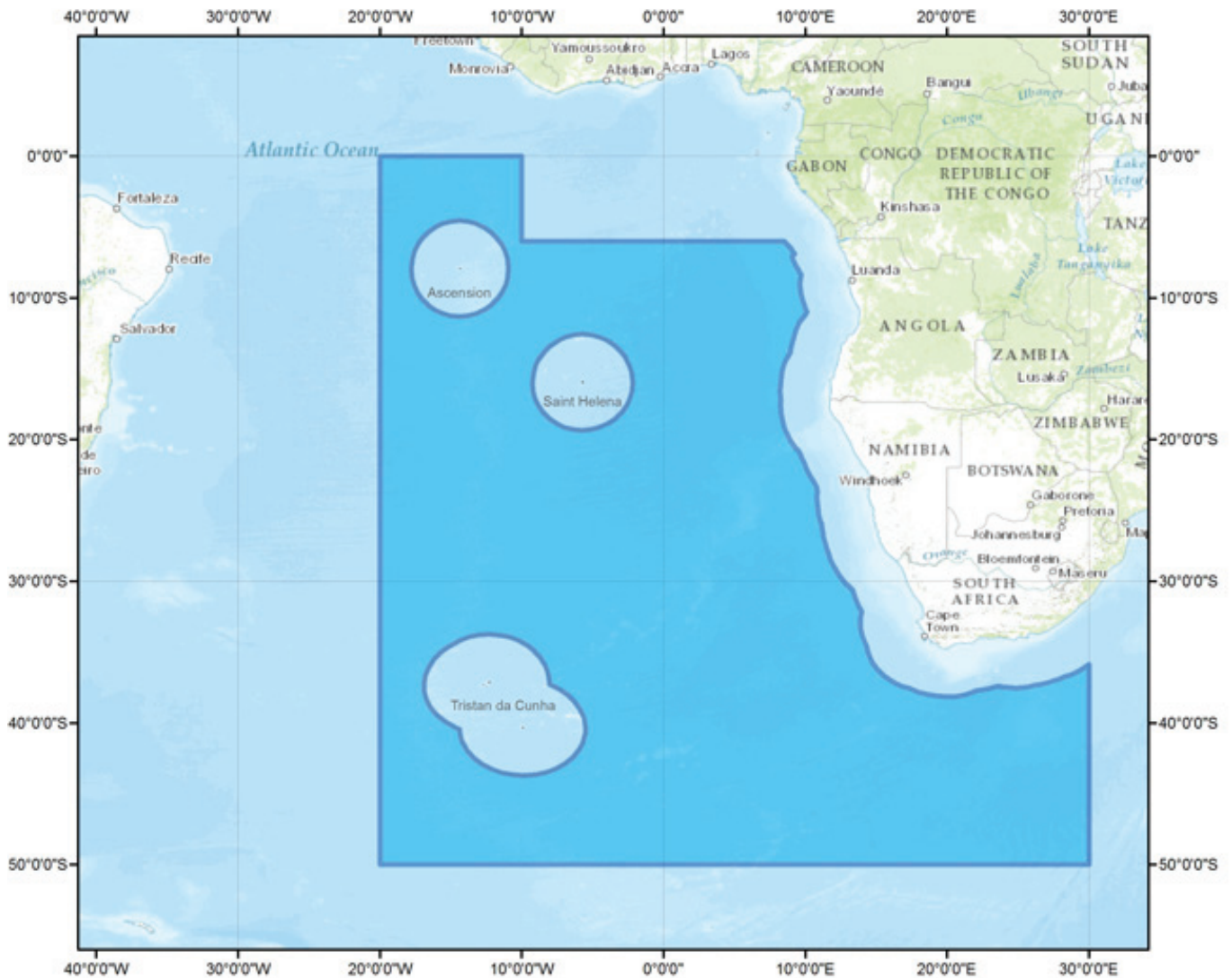
3.2.5 South East Atlantic Fisheries Organisation (SEAFO)

SEAFO's primary purpose is to ensure the long-term conservation and sustainable use of all living marine resources in the South East Atlantic Ocean, and to safeguard the environment and marine ecosystems in which the resources occur. The Convention Area covers all waters beyond areas of national jurisdiction in the region thus, excluding exclusive economic zones of the coastal states in the region. **Angola, Namibia and South Africa** are Contracting Parties of SEAFO.

SEAFO at its 10th annual meeting in 2013 adopted a recommendation for Conservation Measures and reporting obligations under the "System of Observation, Inspection, Compliance and Enforcement" (SEAFO SYSTEM). The updated system was adopted on 3rd December 2015 at the 12th annual meeting of the commission in Swakopmund, Namibia, will enter into force on 15th February 2016.⁵³ This is a system of control measures; monitoring of fisheries; at sea inspection; observer programme; port state control, and measures to promote compliance.

⁵² In March 2015, 98.7% of all CCSBT authorised CVs were greater than or equal to 100GT/GRT in size, and IMO numbers had only been provided for 48.0% of these. In September 2015, 100% of all CCSBT CV authorisations were for CVs greater than or equal to 100GT/GRT in size, and IMO numbers had been provided for 91.3% of these CVs.

⁵³ SEAFO, Report of the 12th Annual Meeting of the Commission, 30 November – 03 December 2015, Swakopmund, Namibia.



Source: <http://www.seafo.org/>

The MCS related measures adopted by SEAFO include;

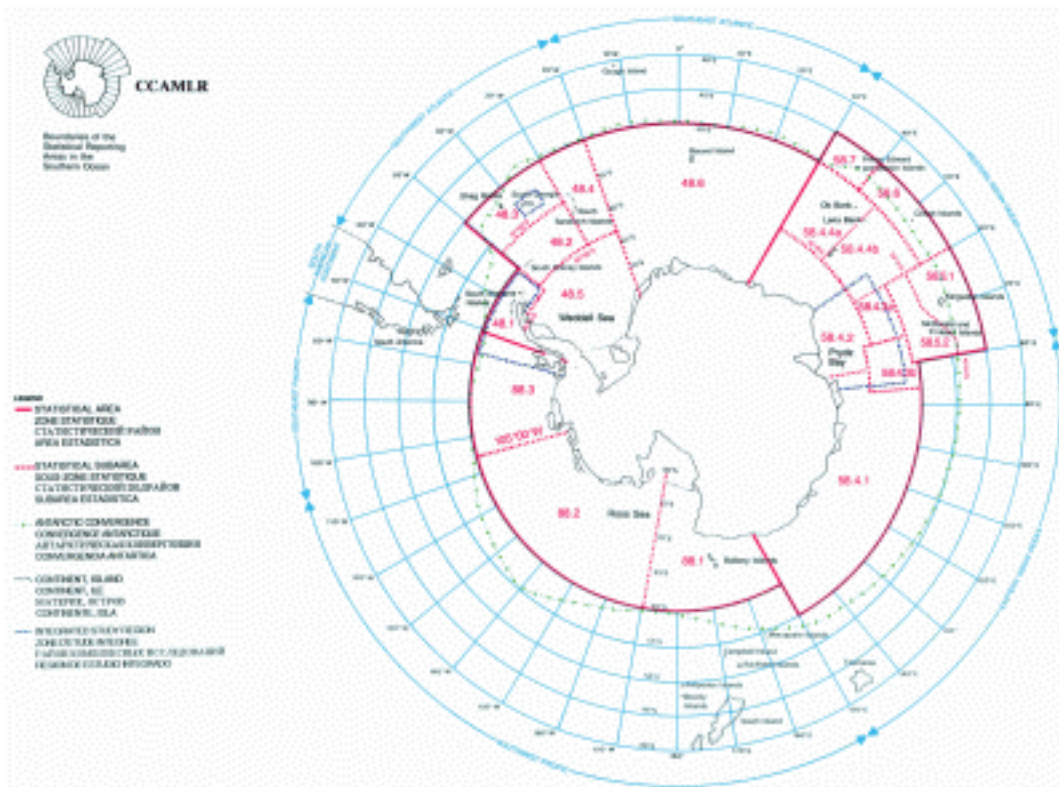
- i. SEAFO System Art. 28 establishes an IUU vessel list. This scheme designed to combat IUU fishing, sets out activities that should be taken into account when a vessel is considered for the inclusion on a list, procedures for listing and de-listing, measures to be taken against listed vessels as well as recognition of IUU vessel lists established by CCAMLR, Northwest Atlantic Fisheries Organisation (NAFO) and the North-East Atlantic Fisheries Commission (NEAFC). NAFO and NEAFC recognise the SEAFO IUU Vessel List, available on the SEAFO website., cf. numbers 25 and 26 of Conservation Measure 07/06;
- ii. Vessel Monitoring System – SEAFO System Art. 13.1-13.3 requires members’ vessels to implement a satellite based vessel monitoring system;
- iii. Observer program – SEAFO System Art. 18.1, 18.2 requires vessels operating in the Convention Area to carry scientific observers and submit relevant data in the specified format;
- iv. Port State Control - SEAFO System Art. 20.1 establishes the designation of ports; Art. 21, Annex vi require advance request for port entry of foreign vessels and the information to be provided in advance; Art. 22.3/Art. 23.3 addresses denial of entry of vessels into port and notification of denial to the flag state;
- v. SEAFO Conservation Measure 13/09 relates to transshipment at SEA in the SEAFO Convention Area;
- vi. Authorized Vessel List – SEAFO System Art. 4.1, 4.2 requires Members to provide the Secretariat with a list of vessels authorized to fish in the SEAFO Convention Area, and also to report on any sighting

of fishing vessels flying the flag of a non-Contracting Party operating in the Convention Area (SEAFO System Art. 4.7);

IUU fishing activity in the SEAFO Convention Area has been reported to the Secretariat latest in 2012, but the extent of IUU fishing is at present unknown. Contracting Parties did not report any sightings of IUU vessels during 2015. The Secretariat has submitted a draft and provisional IUU Vessel list to Contracting Parties for approval.

3.2.6 Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)⁵⁴

CCAMLR was established in 1982 with a primary objective of the conservation of Antarctic living resources, including fish, where conservation includes rational use of those resources. South Africa and Namibia are members of CCAMLR. CCAMLR practises an ecosystem-based management approach. The Commission agrees a set of conservation measures that determine the use of marine living resources in the Antarctic. CCAMLR also uses non-binding resolutions which complement the measures and Members are encouraged to implement each resolution where possible.



CCAMLR seeks to achieve optimal levels of compliance with conservation measures and has been pioneering in its endeavours to achieve this. CCAMLR is a member of IMCS. CCAMLR conservation measures support a suite of monitoring and compliance systems and tools. Members implement compliance systems that include:

- i. IUU Vessel List - CCAMLR Conservation Measure 10-07 establishes a Non-Contracting Party IUU Vessel List; CCAMLR Conservation Measure 10-06 establishes a Contracting Party IUU Vessel List;
- ii. Vessels licencing – CCAMLR Conservation Measure 10-02 requires contracting parties to licence fishing vessels flying their flags;
- iii. Vessel Monitoring System - CCAMLR Conservation Measure 10-04 establishes the requirement for an automated satellite-linked Vessel Monitoring Systems;
- iv. Monitoring of vessel transshipments - CCAMLR Conservation Measure 10-09 establishes a notification system for transshipments within the Convention Area. Members are required to notify the Secretariat

⁵⁴ <https://www.ccamlr.org/en>

- in advance if any of its vessels intend to tranship and give information on: name and registration number; international radio call sign; Flag State; type of vessels; length, gross registered tonnage (GRT) and carrying capacity; and proposed time and position of transhipment;
- v. Inspection – CCAMLR Conservation Measure 10-03 requires contracting parties to undertake inspections of all fishing vessels carrying *Dissostichus* spp species which enters their ports. The inspection is for the purpose of determining that if the vessel carried out harvesting activities in the Convention Area, these activities were carried out in accordance with CCAMLR conservation measures, and that if it intends to land or tranship *Dissostichus* spp., the catch to be unloaded or transhipped is accompanied by a *Dissostichus* catch document (DCD) required by Conservation Measure 10-05 and that the catch agrees with the information recorded on the document.

3.3 Other Regional Institutions

Other regional initiatives should be noted, such as the Stop Illegal Fishing Program and the activities of the Indian Ocean and Benguela Current Commissions. Additionally, the following Regional Economic Organisations have developed a strategy on fisheries: the Southern African Development Community (SADC) and the Common Market for Eastern and Southern Africa (COMESA).

3.3.1 Stop Illegal Fishing⁵⁵

The Stop Illegal Fishing Programme (SIF) is working across Africa with all stakeholders to stop illegal fishing. The SIF Programme focuses on building knowledge and experience of tools, systems and policy requirements to tackle illegal fisheries.

The SIF Programme is achieving these aims by:

- building a better knowledge of the issues around illegal fishing and a better understanding of the impacts of illegal fishing on individuals, group, countries and regions;
- building human and institutional capacity to implement policy reform or to operate systems;
- developing effective mechanisms for operational cooperation;
- increasing awareness for engagement and change; and
- forming and communicating the African Voice.

A SIF initiative Fish-i Africa was established to strengthen regional fishery related information and intelligence sharing in order to enable countries of Africa to implement the recommendations from the first Conference of African Ministers of Fisheries and Aquaculture (CAMFA) 'that MCS systems and regional cooperation should be strengthened and that urgent actions at national and regional levels are required to deter and eradicate IUU Fishing' as well as other regional and international commitments such as the SADC Statement of Commitment to Combat IUU Fishing and the IOTC Resolution on Port State Measures.

FISH-i Africa is a task force uniting seven Southeast African coastal States along the Western Indian Ocean that enables authorities to identify and act against large-scale IUU fishing. These are Comoros, Kenya, **Mozambique**, Seychelles, **Tanzania**, and Madagascar and Mauritius. This initiative has shown that regional cooperation, coupled with dedicated data analysis and technical expertise can stop illegal fish catch getting into the market, and prevent criminal fishers pursuing their business unhindered.

Under this initiative, Comoros, Kenya, Madagascar, Mauritius, **Mozambique**, Seychelles and Tanzania share vessel data real-time and access satellite tracking expertise. FISH-i Africa partners with various agencies to deliver its mandate. The Stop Illegal Fishing (SIF) working group of the New Partnership for Africa's Development (NEPAD) Planning and Coordination Agency coordinates FISH-i Africa. Hence, NEPAD

⁵⁵ <http://www.stopillegalifishing.com/>

provides FISH-i Africa with both legitimacy and a role within the wider policy and strategic framework of African fisheries. FISH-i Africa, since its foundation in 2012, has created a strong network of members committed to working together to end illegal fishing in the Western Indian Ocean and beyond. The sharing and exchange of information between members continues to be key to the success of the Task Force in identifying high-risk vessels and coordinating inspection and enforcement action. The FISH-i Africa model has potential and could be replicated in other African regions.

SIF plays a central role in strengthening cooperation and coordination between governments and partners in order to support the African Union's and NEPAD's agendas and other pan-African and international processes to stop illegal fishing in African waters. PEW Charitable Trusts is also a partner under its wider Ending Illegal Fishing Project. The Norway-based Fisheries Analytical Capacity Tank (FACT) helps to identify and track fishing vessels, analyze fishing fleets, ownership structures and crimes associated with illegal fishing. Thus, FISH-i Africa has carried out investigations of cases involving individuals from Asia to Africa to the Middle East in regards to port measures, document checks, de-registering fishing vessels, vessel identification checks, and vessel tracking and location.

3.3.2 Indian Ocean Commission (IOC)⁵⁶

The IOC is working toward sustainability through their programme for the Coastal, Marine and Island Specific Biodiversity Management in the Eastern and Southern Africa and Indian Ocean region (ESA-IO region). This project aims to maintain the region's biodiversity through improvements in policy, education, and data networking systems, and the implementation of Biodiversity Thematic Centers. To reduce IUU fishing in the region, the IOC works through the Regional Fisheries Surveillance Plan (RFSP) and the SmartFish programme. Additionally, RFSP promotes regional sustainable fisheries management and development.

SmartFish aims to improve fisheries governance and management using the Action Plan that has been prepared for fisheries management and development for the ESA-IO region. SmartFish seeks to develop greater public awareness of issues of fisheries management in the Eastern, Southern Africa and Indian Ocean Region. SmartFish seeks to develop effective monitoring, control and surveillance capabilities. The programme investigates and assesses the capacity of individual countries to implement MCS and is establishing individual needs and expectations. The programme also promotes compliance with regional and international instruments and agreements. SmartFish seeks to sustain MCS activities and ensure a reliable institutionalization. Among SmartFish's MCS activities are: Data-sharing, Flag State and Port State measures.

The IOC comprises Comoros, France/Reunion Island, Madagascar, Mauritius and Seychelles (not part of this report). The IOC Regional Fisheries Surveillance Plan (RFSP) seeks to pool and share existing capacities of coastal states in the region to consolidate and perpetuate the regional MCS strategy by monitoring regional fisheries through targeted and deterrent controls based on risk analysis. In support of this goal the RFSP coordinates regional and national patrols, plans joint aerial and maritime patrols, sets monitoring priorities and annual action plans. As of February 2014 the program has held 39 joint patrols, deployed 350 inspectors at sea, logged 1,100 maritime patrol days and 850 aerial patrol hours, conducted more than 420 inspections at sea of fishing vessels - a number of which are vessels that do not go to port, and cited 10 fishing vessel arrests and 40 infringements.

The Secretariat of the Commission is located in Mauritius. The organisation has a system of rotating presidency of each Member State and the Presidency is currently held by Comoros. The EU is the main development partner of the IOC and accounts for more than 80 per cent of total financial support to

⁵⁶ <http://securefisheries.org/indian-ocean-commission-ioc>

Under the SmartFish Programme, the IOC Member States have been provided with support in addressing issues associated with IUU fishing through regional MCS cooperation. The Member States are therefore able to achieve the following;

- Exchanging VMS and satellite positioning data;
- Collection of data by IOC;
- Collection of observer data;
- Data from neighbouring States (South Africa, Mozambique, Kenya, Tanzania, Somalia);
- Data of vessels licensed; and
- Specific support to national control and monitoring of fisheries centre of the Union of Comoros.

This program is aimed at sustaining MCS activities and ensuring its reliable institutionalization. In addition, smaller regional initiatives established by some countries can be evaluated and expanded, such as the SADC heads of MCS Operation meetings, hosted by the Mozambican Ministry of Fisheries.

There has also been considerable intergovernmental liaison, particularly between some SADC Members, and many concepts have been test driven such as regional multilateral patrols in **South Africa, Mozambique, Namibia** and **Tanzania**. These joint patrols have highlighted the multilateral requirement for harmonized action and forged contact on an operational and political level between countries.⁵⁸ The participation of Tanzania in surveillance missions shows the commitment that unites the region in its efforts to combat IUU fishing. It is also noted that traditionally MCS in the ESA-IO region has focused mainly on industrial fisheries, but as artisanal fisheries may well reach similar total landings as larger fleets, these small scale fisheries have also been included on the overall MCS approach. Close collaboration with SWIOFP, SWIOFC and SADC has been forged.

Although many fisheries data collection systems are in place in the region, there is little coordination, except through FAO, IOTC and a lesser extent SWIOFC. In the broader regional context, no such data sharing initiative exists at present. This too presents a great opportunity for strengthening regional cooperation and sharing of resources in collective fisheries management. The Programme also addresses flag State and port State measures in relation to MCS and its objectives.

The IOC implements its regional strategy for surveillance of fisheries through the regional plan for fisheries surveillance. The plan aims to improve the capacities of the Indian Ocean countries to develop, adopt and implement MCS strategies. The plan should strengthen existing national efforts through pooling of resources, improved co-ordination and data sharing.⁵⁹ The measures implemented through the strategy include a ban against transshipment at sea and denial of access to ports for vessels that have been blacklisted by any RFMO, or that which is not included on the “white list” of registered vessels. Measures also include harmonization of national legislation against IUU fisheries, and setting fines at a level that deter illegal activities.⁶⁰ MCS training has also been conducted, including a module development workshop to address the MCS capacity needs of members of the IOC.

⁵⁷ Delegation of the European Union to the Republic of Mauritius, to the Union of the Comoros and to the Republic of Seychelles, http://eeas.europa.eu/delegations/mauritius/regional_integration/indian_ocean_commission/index_en.htm.

⁵⁸ General Description of the SmartFish Programme, http://www.agrotec-spa.net/General_Description.pdf

⁵⁹ European Commission, EU supports Indian Ocean countries' fight against illegal fishing in the region, 24 January 2007, http://europa.eu/rapid/press-release_IP-07-85_en.htm

⁶⁰ Ibid.

3.3.3 Benguela Current Commission (BCC) ⁶¹

The Benguela Current Commission (BCC) is a multi-sectoral inter-governmental, initiative of Angola, Namibia and South Africa. It promotes the vision of the Benguela Current Large Marine Ecosystem (BCLME) sustaining human and ecosystem well-being for generation after generation. The BCC provides a means for the countries of the region to introduce an ecosystem approach to ocean governance. Hence, it enables cooperation between the three countries to work together to manage the marine environment.

The BCC is based on the Large Marine Ecosystem (LME) approach to ocean governance. It is focused on five strategic areas, including ocean governance, stakeholder participation, marketing and resource mobilization, capacity building and corporate governance.

The BCLME extends from east of the Cape of Good Hope, northwards to Cabinda Province in Angola and encompasses the full extent of Namibia's marine environment. It is a major coastal upwelling ecosystem and an important centre of marine biodiversity and marine food production. It is estimated that coastal and marine resources contribute approximately US\$269 billion per year to the economies of Angola, Namibia and South Africa.



The BCLME Programme was implemented in the Benguela region between 2002 and 2008. Its objective was to improve the structures and capacities of Namibia, Angola and South Africa to deal with the environmental problems that occur across national boundaries, in order that the BCLME may be managed in a coordinated and integrated way. The BCLME Programme has been funded by the Global Environment Facility (GEF) which contributed USD15.2 million through the United Nations Development Programme (UNDP) for the regional initiative.

The BCC was established in 2007 through the signing of an Interim Agreement. In 2013, the governments of Angola, Namibia and South Africa signed the Benguela Current Convention, making the Benguela Current Commission a permanent inter-governmental organisation. Projects such as the BCLME Strategic Action Programme Implementation project (the SAP-Imp project) made an important contribution to building and strengthening the structure and efficiencies of the Benguela Current Commission (BCC). The project was funded by the Global Environment Facility. The SAP Imp project initiated and funded the development of a Strategic Plan, Business Plan and a Resource Mobilisation Strategy for the BCC. The project also

⁶¹ <http://www.benguelacc.org/>

aimed to assist the three countries to review and harmonize national policies, legislation and operational practices to ensure a regional transboundary management approach to the LME.

The project supported inter alia;

- the negotiation of the Benguela Current Convention;
- development of a Strategic Plan, Business Plan and a Resource Mobilisation Strategy for the BCC;
- supported several training and institutional strengthening initiatives;
- encouraged the adoption of appropriate financial mechanisms and partnership agreements by the BCC; and
- improved stakeholder participation across all sectors.

Additionally, the Benguela Environment Fisheries Interaction and Training Programme (BENEFIT) which was a 10 year programme since 1999, was established to promote the optimal and sustainable utilisation of the Benguela LME's living resources by:

- Increasing knowledge of fluctuations in important living marine resources of the Benguela Current and improving understanding of the way in which environmental factors influence these fluctuations;
- Developing human capacity and infrastructure for marine science and technology in Angola and Namibia; and
- Providing system-wide data and information for the management of both national and shared resources.

The Secretariat of the BCC is based in Swakopmund, Namibia. Partners of the BCC working with the three countries include; the governments of Norway, Iceland, Germany, the European Union, the Global Environmental facility and the EAF-Nansen Project of FAO.

3.3.4 Southern African Development Community (SADC)

SADC aims to achieve regional integration and eradicate poverty within the Southern African region.⁶²The IPOA has inspired the SADC Protocol on Fisheries, which is a statement of commitment on IUU fishing by SADC ministers responsible for marine fisheries, signed in Windhoek, Namibia, in July 2008. In this protocol, the ministers declare they would strengthen fisheries governance and legal frameworks to eliminate illegal fishing and strengthen MCS capacity – and resolve to commit to effective implementation of existing MCS measures.

SADC Member States signed the Protocol on Fisheries in 2001 which entered into force on 8 August 2003. The Protocol emphasizes the responsibilities of Member States, international relations as well as the effective management of shared resources.⁶³ The Southern African States with membership in SADC are **Angola, Mozambique, Namibia, South Africa, and Tanzania.**

The objectives of the Protocol on Fisheries are to promote responsible and sustainable use of the living aquatic resources and aquatic ecosystems of interest to State Parties in order to:

- promote and enhance food security and human health;
- safeguard the livelihood of fishing communities;
- generate economic opportunities for nationals in the region;
- ensure that future generations benefit from these renewable resources; and
- alleviate poverty with the ultimate objective of its eradication.⁶⁴

⁶² SADC Overview, <http://www.sadc.int/about-sadc/overview/>.

⁶³ International Waters Governance, Southern African Development Community (SADC), <http://www.internationalwatersgovernance.com/southern-african-development-community-sadc.html>.

⁶⁴ Ibid.

By signing the SADC Protocol the Member States agreed to harmonize their domestic legislation with particular reference to fisheries and the management of shared resources, to take adequate measures to optimize fisheries law enforcement resources in order to protect aquaculture and the aquatic environment and safeguard the livelihood of fishing communities⁶⁵



SADC has undertaken activities related to the establishment of effective cooperation on MCS among the SADC coastal Member States. A Regional Fisheries Monitoring project funded by the African Development Bank is ongoing. The SADC Regional Fisheries Monitoring project seeks to develop a regional MCS strategy and regional plan of action in relation to IUU fishing. Regional MCS activities are to be coordinated at the SADC MCS Centre to be established in Maputo, Mozambique. Among the regional activities are enhanced information sharing, the development of a regional fishing vessel register, and regional VMS framework. It is also envisaged that national capacity for MCS activities among member states will be improved.⁶⁶

Under the regional initiative the intention is to improve regional and inter-regional cooperation with a view to eradicating IUU fishing; strengthen fisheries governance and legal frameworks to eliminate illegal fishing; develop a regional MCS strategy and a regional plan of action in relation to IUU fishing; and strengthen fisheries MCS capacity.⁶⁷

On 4 July 2008, the ‘SADC Statement of Commitment on IUU Fishing’ was signed by Ministers at the Ministerial Conference and it was later endorsed by the SADC Summit. This commitment was followed by various implementing actions:⁶⁸

- Strengthened and successful implementation of SADC coastal State laws relating to IUU fishing;
- Strengthened policy and legal frameworks to address the issue of IUU fishing;
- Stop illegal Fishing – established to support this process was deemed a success; and
- SADC IUU fishing Task Force was appointed in 2011.

Part of the Stop Illegal Fishing campaign is the first ever multilateral patrol involving four neighbouring countries of South Africa, Mozambique, Tanzania and Kenya.

Monitoring the landings of IUU vessels has dramatically improved in South Africa and in other ports in countries that are signatories to the SADC Fisheries Protocol. SADC countries have signed a protocol

⁶⁵ Southern African Development Community (SADC). Protocol on Fisheries. Maputo, Mozambique, 14 August 2002.

⁶⁶ Oceans Beyond Piracy, South African Development Community: Regional Fisheries Monitoring, <http://oceansbeyondpiracy.org/matrix/south-african-development-community-regional-fisheries-monitoring>

⁶⁷ African Development Bank Group, SADC Regional Fisheries Monitoring, <http://www.afdb.org/en/projects-and-operations/project-portfolio/project/p-z/aa-f-008/>.

⁶⁸ NEPAD, Stop Illegal Fishing Case Study Series No. 6.

on data exchange which has not been implemented due to technical difficulties and the low number of countries with fully functioning VMS systems. In the broader regional context, no such data sharing initiative exists at present. This presents an opportunity for deepening regional cooperation and sharing of resources in collective fisheries management.

3.3.5 Common Market for Eastern and Southern Africa (COMESA)

COMESA was formed in December 1994. It is a free trade area with twenty member states. COMESA is one of the pillars of the African Economic Community. In 2008, COMESA expanded the free-trade zone including members of two other African trade blocs, the East African Community (EAC) and the Southern Africa Development Community (SADC). COMESA plays an active role in improving trade facilitation, and in close dialogue with other RECs: EAC, IOC, SADC and IGAD.

It is COMESA's ambition to introduce trade facilitation tools and methods gradually and in a prioritised order. In the case of fish products the first step is harmonisation of standards and SPS procedures, which is almost fully agreed in principle but slow in implementation.

The COMESA context fisheries production and exports of derived products is a strategically important area to develop as it contributes to food security, and provides foreign currency and jobs. COMESA is an important contributor towards development on pan African fisheries framework such as the African Union/NEPAD lead interventions. ⁶⁹DRC is a member of COMESA.

Table 4: Membership and Participation in Regional Organizations, Arrangements and Initiatives

Country	SWIOFC	IOTC	Fish-I	ICCAT	CCSBT	IOC	BCC	SADC	SEAFO	COMESA
Angola	-	-	-	X	-	-	X	X	X	-
DR. Congo	-	-		-	-	-		X		X
Mozambique	X	X	X	-	-			X		-
Namibia	-	-	-	X	-	X	X	X	X	-
South Africa	X	CNCP	-	-	X	X	X	X	X	-
Tanzania	X	X	X	-	-	X		X		-

(X) Member or participates (-) Not a Member or does not participate (CNCP) Cooperating Non-Contracting Party

3.4 Regional Cooperation in Fisheries

There are many reasons for Southern African States to cooperate in establishing a regional MCS system, particularly where the States have a rich marine resource base that is vulnerable to IUU fishing. Regional cooperation among the Southern African developing States can yield: the exchange of fisheries data for MCS and fisheries management purposes; harmonized legislation; extradition agreements; cost savings and increased negotiating power; implementation of flag and port State control agreements; and combined measures to address IUU fishing activities. In practice, the cost of implementing MCS measures is often a decisive factor in encouraging States to join sub-regional and regional MCS initiatives.

Regional or sub-regional cooperation will often be more successful when:

- there is an existing organization that will serve the purpose;
- the States in the area have a common interest in fisheries;
- there is a common language and/or cultural ties;
- fish stocks are shared;
- maritime boundary delimitation issues between the States in question have been resolved or pending resolution, the States involved are willing to cooperate; and

⁶⁹ See 'Action Plan for the Development of African Fisheries and Aquaculture', AU/NEPAD, 2010. This plan is part of the Comprehensive Africa Agriculture Programme.

- the political ideologies and policies of the governments are either compatible or well understood and respected.

Regional cooperation will also create additional responsibilities, including: the security of sensitive data; how differences between the participating States will be resolved in order to present a unified regional position; and how to take into account the difference in the economic situations of potential member States when devising cost-sharing arrangements to support an international organization.

These instruments combined have not only created a broader range of international obligations, standards and approaches to which fisheries laws are intended to aspire, but they have also generated comprehensive new standards and approaches to how fisheries laws, including in relation to MCS, are drafted. Each State must balance the advantages and disadvantages before deciding whether to make a commitment to regional, subregional, or bilateral cooperation regarding international fisheries and MCS activities.

3.5 Other Levels of Cooperation

While considerable benefits exist in cooperation at the regional level, significant benefits can also accrue through cooperation at other levels – e.g. sub-regional, bilateral and intra-national. Given the transboundary nature of fish stocks and the global nature of modern fishing fleets, considerable potential benefits also exist through cooperation within external States and agencies (e.g. cooperative port State monitoring and enforcement, flag State action).

For example, Mozambique has entered into a bilateral agreement with the EU for purposes of fisheries access. Through this Fisheries Partnership Agreement (FPA), the EU provides financial and technical support in exchange of fishing rights. FPAs comprise two parts: access rights to the EEZ and sectoral financial support. The sectoral support promotes sustainable fisheries development in the partner countries by strengthening their administrative and scientific capacity through sustainable fisheries management and MCS. The protocols to the individual FPAs contain provisions relating to MCS tools such as authorization to fish, terms and conditions for licences of both fishing and support vessels, record of vessels, recording and communication of catch, fishing gear specification, landing of catch, transshipment of fish, VMS, scientific observer program, application of sanctions, arrest and detention of vessels, information exchange, and settlement of arrest and detention of vessels.

Recommendations

Determine sub-regional priorities in MCS implementation that transcends different memberships and participation in various regional organizations and arrangements.

Strengthen sub-regional cooperation on MCS amongst Southern African States by:

- i. Establishing formal arrangements and protocols between regional fisheries bodies and arrangements with policy and management functions (i.e., SWIOFC, IOTC, ICCAT and CCSBT) that will facilitate exchange of information on IUU fishing and data obtained from MCS tools
- ii. Develop joint initiatives between regional fisheries bodies and arrangements and economic integration organisations (i.e. SADC, COMESA) involving Southern African States by exchanging information that will achieve common fisheries objectives
- iii. Adopt policy measures within the purview of Regional Economic Communities to encourage cooperation against fisheries crime
- iv. Adopt lessons learnt from successful fisheries programs such as FISH-i Africa and IOC's SmartFish at the sub-regional level

- v. Engage in MCS activities with other States of the region
- vi. Ensure regionally consistent forms of training and certification to promote the efficient use of shared resources across the region
- vii. Conduct regional training on both the legal and practical aspects of Vessel Monitoring System and Observer Program to facilitate cooperation among legal and technical personnel

Ensure that any formal arrangement that will be developed within the Southern African sub-region have provisions that will enable wider cooperation with other African sub-regions

Investigate how the planned SADC Regional Fisheries MCS Coordinate Centre can facilitate MCS cooperation with other African States

Incorporate provisions of fisheries partnership agreement and other bilateral cooperation arrangements in domestic legislation

4. DOMESTIC FRAMEWORK ON MCS

The basis for any fisheries management and MCS regime is a robust legal framework. A modern, comprehensive fisheries law, consistent with rights and obligations under global and regional fisheries agreements and internationally recognized “best practice” models would be expected to incorporate key principles of fisheries management such as ecosystem approach to fisheries, precautionary approach to fisheries, environmental impact assessment, effective data collection and management, and effective MCS. With respect to MCS, a fisheries legislation would need to have provisions on the following matters:

- the authorisation of, powers, functions and duties of inspectors, authorized officers and observers (including powers to search, seize items, require vessels to go to port, etc.);
- establishment of observer schemes, port State inspection schemes, and VMS (including provisions on how these schemes are to be applied);
- establishment of a record of fishing vessels (for both commercial and small scale fisheries);
- complementary licensing controls, including authorization to fish on the high seas;
- Data collection and submission, including confidentiality of information;
- judicial proceedings for fisheries offences and treatment of evidence, including electronic evidence; and
- application of administrative and criminal sanctions, as applicable.

International agreements impose obligations on States that must be translated into specific enforceable legal rules backed up by sanctions in national laws. Thus, an essential part of implementing international agreements is for each State to pass legislation to give effect to the obligations contained in treaties to which it is bound. In practice, MCS is primarily concerned with ensuring compliance with these domestic law rules rather than with the provisions of treaties.

Domestic legislation plays an important role in the effective development and implementation of MCS measures. Apart from providing for the powers of authorized officers, the key roles of domestic law include increasing regional and international cooperation in order to reduce the incidence of IUU fishing, increasing the transparency of fishing activity by improving monitoring programs, particularly through VMS; identifying enforcement issues relating to maritime boundaries and delimitation; facilitating the use of information derived from monitoring and surveillance to promote compliance; and promoting safety procedures for fisheries officers in undertaking MCS-related functions.

In strengthening an MCS system it is essential to review the existing domestic legislation to ensure that it prescribes norms that are appropriate to achieve the desired fisheries management objectives and contains provisions that facilitate effective enforcement. In practice, the effectiveness of an MCS system in ensuring compliance with the law will depend very heavily on whether or not domestic laws provide appropriate mechanisms to facilitate this task.

4.1 Analysis of MCS Framework for Southern African States

The MCS frameworks for Angola, Democratic Republic of Congo, Mozambique, Namibia, South Africa and Tanzania are examined below.

4.1.1 Angola

In 2012, fisheries represented about 1.7 percent of the GDP of Angola, where it remains a very important sector to the national economy after oil and mining. The fisheries potential is estimated to be about 360 000 tonnes per year, comprising 285 000 tonnes of small pelagic species, such as horse mackerel and

sardinellas, and 55 000 tonnes of various demersal species, including 7 000 tonnes of deep-water shrimps. Although the Angola and Benguela currents create a strong upwelling system that supports a high primary production of marine resources along the Angolan coastline, overfishing and changes in hydro-climatic conditions have strongly reduced the economic contribution of fisheries to the economy.

The Angolan commercial fisheries are worth about US\$178 million. Most of the fish caught (more than 90%) is sold on the national market, as per capita demand for fish is high and not fully satisfied. The fishery sector is a major source of employment for many Angolans. In 2000, about 41 000 people were employed directly in the fishery sector, with another 85 000 people in fishing-related activities. Angola has a combination of industrialised fishing and artisanal fisheries, with most fishers involved in the artisanal.

The responsibility for managing marine resources lies with the Ministry of Fisheries and the Aquatic Biological Resources Act from 2005 regulates fisheries. The fisheries policy of Angola provides an overall strategic perspective for the sector and aims to attain the crucial objectives of food security, increase net foreign exchange earnings, and reduce unemployment and achieve poverty alleviation. MCS activities are limited, but include fishery control officers and VMS systems. Enforcement capacity in Angola is comparatively low, with no observer scheme and no formal catch inspection scheme. Although ten new patrol vessels were bought some years ago, measures undertaken to ensure that regulations are complied with are generally inadequate. Angola has very low offshore sea patrol capacity due to absence of a designated patrol vessel for this purpose and dockside inspections are limited as navy, police, and port authorities do not cooperate in joint MCS activities.

The legal basis of the Angolan fisheries is given by the Fisheries law N.6-A/04 of 8 October 2004 and subsequent regulations. It provides for a fisheries management regime based on TAC/quotas and a limited entry regulation (licensing/effort allocation) accomplished by closed seasons and mesh size regulation. These management measures are revised periodically with a view to keeping them effective, inter alia based on results of stock assessments and estimates of the economic performance of the fleet.

The Presidential Decree No. 284/14 approves the Regulation on protecting measures to fight and eliminate illegal fishing activity. The regulation aims at establishing the legal regime for the IUU fishing, as well as regulating the access to Angolan ports of foreign fishing vessels.

Due to the lack of availability of relevant legislation and documents in the English language, very little assessment on the legal framework was conducted in this project.

4.1.2 Democratic Republic of Congo (DRC)

The Democratic Republic of Congo (DRC) has a very small Atlantic Ocean coastline, and marine production accounts only for an estimated 2% of total national fish harvests. Almost all of the marine production in the DRC is derived from artisanal fisheries units using canoes and beach seines. The majority of fishing activity in the DRC occurs in the large inland lakes.

Both the marine and inland sectors overall have undergone significant decline due to the highly unstable political and economic circumstances that have prevailed in the country over the past decade. The poor economic climate has led to the physical deterioration of the marine fishing fleet, due to the lack of inter alia, maintenance, spares, and fuel supplies. Most of the marine fishing is done by canoe or beach seine and there are no dedicated fisheries ports.

The DRC fisheries policy emphasises the need to increase fish production to provide animal protein for local populations and thus ensure food security. The basic legislation on fisheries is the 1937 Decree on Fishing and Hunting (as amended for its fisheries provisions by a decree of 17 January 1957, a legislative ordinance No. 52/273 of 24 June 1958 and a decree of 27 June 1960). This decree was applied throughout the territories then administered by Belgium (Rwanda-Burundi and Belgian Congo). The Ordinance No. 432/Agri. of 26 December 1947 (as amended in 1952 and 1954) provides for the status and powers of fish controllers.

Monitoring, Control and Surveillance tools are extremely limited. Very little data exists on IUU activities taking place in DRC marine waters. However, it is likely that there are foreign vessels fishing without licenses in the DRC EEZ. In addition, the artisanal fishery is unregulated and is not known to report any catches.

A copy of DRC fisheries related legislation in English was not obtained, hence the analysis is only limited to available information found in secondary references.

4.1.3 Mozambique

Mozambique has rich fisheries resources, which are divided into marine capture, inland capture and aquaculture. Marine fisheries account for more than 90 per cent of the total fisheries production with an average annual catch of about 120,000 tonnes, 80 per cent of which are caught by artisanal fishers. The main marine resources compose of crustaceans (prawns, deepwater shrimp, crayfish, lobsters and crabs), marine finfish (demersal and pelagic species mainly grouper, snapper, emperor and sea bream also high migratory tuna species of yellow fin, big eye and albacore, swordfish and shark) and cephalopods and molluscs (squid, octopus, sea cucumbers, bivalves), which are of great commercial value and most of which are bound for the export market. EU remains the largest market for Mozambican fishery products. Even though there is a significant catch by artisanal vessels, foreign fishing access is also a critical aspect of the fisheries development of Mozambique.

The legal basis of the Mozambican fisheries is the Fisheries Law 3/90 which provides for a fisheries management regime based on total allowable catch and quotas and limited entry regulations through licensing and effort allocation. There are also specific regulations on closed seasons and mesh size. The management measures are revised on a regular basis using results of stock assessment and economic performance of fleet. The Fisheries Regulations Decree 43-2003 not only contains details on input and output control and technical fisheries conservation measures, but also provide requirements on vessel construction, marking of fishing gears, vessel charter for both Mozambique and foreign vessels, and data collection. Specific MCS regulations are also available such as licensing for artisanal, semi-industrial and industrial fishing vessels, authorization to fish on the high seas, transshipment in port or at sea, departure from Mozambique waters, port entry and departure, landing of fish by foreign vessels, inspection of vessels, and port State enforcement. Regulations are also available on the monitoring of fishing activities which are mainly conducted through daily fishing logbooks, catch reports, satellite based VMS, and embarkation reports. In the Fisheries Regulations Decree 43-2003, there are also general obligations of vessel masters with respect to allowing embarkation officers to perform their duties.

Under the Mozambique fisheries law, the Fisheries Management Commission is the consultative body of the Fisheries Administration that provides advice on fisheries conservation and management. A Fishing Co-management Committee was also established as the participatory management forum at local, district and provincial levels.

Within the framework of the Fisheries Cooperation Programme between Mozambique and Norway, the Nordenfjeldske Development Services (NFDS) has established a permanent presence in Mozambique since 2006. It provides fisheries MCS experts to the Ministry of Fisheries to assist in the coordination, planning, delivery and training to implement the National MCS Strategy. As a result, Mozambique has been a key player in other projects such as FISH-i Africa. Mozambique is also to be the host country for the SADC Regional Fisheries MSC Coordination Centre. This regional centre's mission will be to coordinate fisheries MCS and enforcement activities, set up a platform for the implementation of a regional Patrol Plan, support capacity building for implementation of the SADC Protocol on Fisheries, and develop training modules.

Mozambique is currently enacting an updated fisheries legislation, however as the copy obtained is not in the English language, this Technical Report has not included an analysis of the new law.

4.1.4 Namibia

Namibia is located in the central region of the Benguela Current System, and therefore under the direct influence of the Benguela Current System. Hence, Namibian waters are characterized by a considerable level of productivity with available and abundant supply of nutrients in the upper layers which promote a large production of plankton and small pelagic fishes (pilchard, anchovy, mackerel etc.) that feed upon it. Further offshore, large stocks of hake inhabit the deeper waters near the seabed, along with other species such as monkfish, sole and crab.

The Namibian marine fisheries sector accounts for 5% of the Gross Domestic Product (GDP), and is exclusively industrial. Fisheries contribute more than 25% of the value of our exports. No artisanal fishing occurs in Namibia. The demersal fishery targets mainly hake in deep waters and species such as monkfish and sole closer to the coast. The mid-water trawlers target horse mackerel, purse-seiners target pilchard, juvenile horse mackerel and anchovy. Other fisheries at the industrial level include tuna fishing, rock lobster and deep-sea red crab fishing. Hake is by far the most important of Namibia's fisheries.

Prior to the independence of the country in 1990, the fisheries sector was dominated by foreign fleets that fished in the Namibia EEZ under access agreements and allegedly quite often illegally. During this period, the main targeted stocks (sardine, hake, horse mackerel, etc.) were subject to massive overexploitation. From 1960 onwards, Namibian fish stocks experienced one of the most spectacular crashes witnessed within fisheries worldwide.

The hake Total Allowable Catch has been continually and systematically reduced. In October 2007, a month-long closed season was introduced for the first time to protect the juvenile hake and thereby reduce pressure on the hake stocks.

The commercial fishing industry in Namibia is worth an estimated US\$389 million. The fish and fish products that are exported to international markets include, inter alia, hake, horse mackerel, crab, rock lobster, tuna, sole and monk, king clip, orange roughy, oysters, tuna, pilchards, seaweed, anchovy, red-eye, snoek, panga, John dory, angelfish, shark, swordfish, squid, and octopus. Namibia is one of the few countries that have succeeded in capturing economic rent from the establishment of quota fees to fish.

Marine resources in Namibia fall under the Ministry of Fisheries and Marine Resources (MFMR). The Directorate of Operation and Surveillance is responsible for monitoring, control and surveillance measures and implementation. The goals pursued by the MFMR entail four main directives (Nichols, 2004):

- Rebuilding fish stocks

- Building a national fishing and processing industry
- Implementing a Namibianisation policy in order to ensure that the benefits of rebuilding stocks and building a fishing industry in the country accrue primarily to Namibians through increased ownership of fishing companies, replacement of foreign labour by national labour; and
- Empowerment, to ensure an equitable balance of participation and increasing employment for Namibians.

The Namibian rebuilding fisheries strategy was founded on an efficient MCS system. Hence, the MFMR gave a particular emphasis to strengthening the MCS system through various training courses. Namibia's MCS system comprises an integrated programme of inspection and patrol at sea, on land and in the air, to ensure continuing compliance with Namibia's fisheries laws. With two inspectorates in Walvis Bay and Luderitz, each station is tasked to deploying fisheries officers to air, sea or land operations; deploying observers on board fishing vessels; analysing past operations and outputs or planning future operations. 230 observers are employed in what is considered the largest observer programme south of the equator. The operating costs of the MCS system are a major part of the total costs of fisheries management. The MCS system is known to be very effective. Generally, levels of compliance by licensed vessels appear high, meaning that there is a good evidential basis for the validation of landings.

The Marine Resources Act (MRA, 2000), along with the Regulations Relating to the Exploitation of Marine Resources' Act (section 61(I) of the Marine Resources Act, 2000) provide the current legal framework for management and regulation of the marine fisheries sector. The Marine Resources Act (2000) is comprehensive legislation conforming with international guidelines on sustainable, ecosystem-based fisheries management. In 2000, Namibia introduced a rights-based and scientific approach to fisheries management, thereby significantly reducing bycatch and illegal fishing. The Marine Resources Act, 2000 has been awarded various awards, including the 2012 Future Policy Silver Award for instituting an ecologically and economically viable fishing industry, based on scientific evidence and a rights-based management system awarded by the World Future Council. The rights-based management system incorporated a highly effective, cost efficient MCS system. The Marine Resources Act of 2000 is set for a review later this year in July.

The MCS system in Namibia involves the following:

- On-board observer programmes: observer programme has gradually extended to cover 70% to 100% of large fishing vessels; the Marine Resources Act has established a dedicated agency, the Fisheries Observer Agency, which is now operational;
- Sea, air and shore patrols: systematic at-sea inspections by sea patrols are carried out as the legislation provides for the empowerment of fisheries inspectors; air patrols help detect and monitor IUU fishing activities in Namibia's EEZ while sea patrols can then track and arrest; shore patrols ensure compliance with conservation measures for both recreational and commercial fishers;
- Monitoring of landings: complete monitoring of all landings are carried out at the commercial fishing ports; this is to ensure compliance with quota limits and fees payments while monitoring activities of individual vessels (transshipping at sea is forbidden as per Section 50 of the Marine resources Act, 2000);
- Vessel reporting: this is an important part of the MCS system; all activities must be reported (EEZ exits and entries, daily catches, effort reports, etc.);
- Vessel monitoring system: enables day-by-day monitoring and cross-checking between reports and observations of vessels in the system; in 2007, all vessels targeting hake were fitted with an Automatic Location Communicator (ALC).

Namibia is known to have reduced IUU threats and incidences to a minimum. The observer scheme and the catch inspections scheme are largely deemed efficient. However, no sanction is prescribed for repeat offenders and goals of compliance are somewhat hampered by the low fines and the delay between crime and punishment.

4.1.5 South Africa

South Africa has the second largest coastline on continental Africa and is the only African country whose coastline borders two oceans, therefore holding an important role in the movement of fishing vessels on the continent. South Africa has a vast EEZ that is home to a rich diversity of fisheries resources. In 2007, the reported fish production in South African waters exceeded 600,000 tonnes with a value of more than USD200 million dollars in net fish exports. South African fisheries are worth approximately US\$520 million per year. Because of the different ecosystems and irregular coastline, South Africa's marine fisheries are diversified both with respect to species caught and gear deployed. There are 22 commercial fisheries, but the small pelagic fishery is the largest by volume and forms the bulk of fish production. Per capita fish production in South Africa is relatively low and most of the fish is processed and exported. Although fisheries play an important role in coastal economies, the contribution of the sector to the national GDP is comparatively small. The country's marine resource management program is divided into four fishing sectors: offshore and high seas, small scale, recreational fishing, and inshore.

The main pelagic species are anchovy, pilchard, round herring and horse mackerel. The main demersal species harvested is hake. The Patagonian toothfish and orange roughy, which are deep-water and Antarctic fishes are also currently exploited. Tuna is caught by the national fleet and foreign Japanese and Taiwanese longliners. The majority of South African fisheries are fully exploited.

The legal basis for fisheries management in South Africa is the Marine Living Resources Act 18 of 1998. It provides for the conservation of the marine ecosystem, the long term sustainable utilization of the marine living resources and access to exploitation, utilization and protection of certain marine living resources in a fair and equitable manner. The Act provides the comprehensive framework for the determination of allowable catch and priority fisheries and fishing areas, as well as the licensing regime for local, foreign and high seas fishing. The country has adopted a number of regulations implementing provisions of the Act, such as on marine recreational fishing, use of fishing harbours, levy on fish products, and fishery-specific regulations. South Africa has also enacted a number of relevant environmental and biodiversity legislation, particularly on seabirds and seals and marine protected areas. A draft regulation on small scale fisheries is currently undergoing public consultations.

Fisheries are one of the key functions of the Department of Agriculture, Forestry and Fisheries. The Marine Living Resources Act establishes various institutions that will ensure that the country meets its socio-economic and management objectives such as the Fisheries Transformation Council. The Department has several directorates that have specific responsibilities related to fisheries.

South Africa has an established MCS program which implements the Marine Living Resources Act 18 of 1998 and has three key components: Compliance, Monitoring and Surveillance, and deployment of Fisheries Protection Vessels. South Africa has a monitoring and compliance program for specific fisheries such as hake longline, hake trawl, hake handline, abalone, shark longline, swordfish longline, toothfish, small pelagic purse seine, West coast, nearshore, offshore and South Coast rock lobster, traditional linefish, squid, and recreation and subsistence fisheries. Monitoring and compliance is conducted by fishery control officers

who have the power to inspect local commercial fishing vessels at landing sites, as well as foreign fishing and fish carrier vessels. Measures to increase regulatory compliance have also included efforts to create trust among fishermen and delegation of authority.

Their responsibilities include verifying if fish quota allocation is not exceeded, checking compliance with terms and conditions of a fishing licence, verification of relevant documents during inspection, confirming if vessels are carrying a functional VMS transmitter onboard, monitoring of catch during offloading and transshipment. These officers also ensure that vessels comply with relevant RFMO conservation and management measures. They also detect serious offences and issue fines for minor offences; otherwise serious and repeated offenders are referred to the enforcement committee. Fishery control officers also check by-catch against the total hake landings and every import and export documents, health certificates and certificates of origin. As part of intensifying enforcement efforts, South Africa conducts inspections on fish processing establishments to determine legality of fish, conduct coastal patrols, road blocks and vehicle control points and inspect restaurants and fish shops for illegal catch.

The Monitoring and Surveillance Directorate (which was previously the Special Investigations Unit) was established to investigate and persuade prosecution of high profile offenders and syndicates contravening the provisions of the fisheries law. The Monitoring and Surveillance directorate places great emphasis on individuals in the fishing industry including organized crime syndicates. The Unit is authorized to undertake investigative operations both on a national and international level and is not bound by any area of jurisdiction. The Monitoring and Surveillance Directorate has operational relationships with other law enforcement agencies such as the National Prosecuting Authority, Organized Crime Unit, Asset Forfeiture Unit, South African Revenue Services, South African National Defence Force, South African National Parks, and South African Police Services, as well as improving ties with regional and international law enforcement agencies.

The Directorate for Fisheries Protection Vessels has been operational in the South African EEZ since 2005. Three of the four vessels patrol the inshore waters, while the fourth one patrols the high seas and the remote reaches of the South African EEZ. The FPVs conduct fisheries inspections at sea, from as far as the border of Orange River, in the Atlantic Ocean, extending to the Indian Ocean to as far as the Mozambican Border. The Directorate conducts joint patrols with SADC countries. This Directorate operates an intricate vessel monitoring system that has been operational since 2000.

Regardless, the widespread IUU fishing in South Africa is estimated to cost US\$815 million annually. Heavy poaching of lobsters is also a major problem. Significant levels of illegal fishing exist in linefish and abalone fisheries. This has in turn had an impact on the health of marine ecosystems. According to the International Union for Conservation of Nature (IUCN) red list, almost 70 fish species are threatened (UNEP 2008, p. 301). Accordingly, “the majority of South African fisheries are described as fully exploited, with little room for further development”.

4.1.6 Tanzania

Fisheries in Tanzania contribute 1.3 per cent of the national GDP, and they provide 347,166 metric tonnes (MT) in 2010. This total comprises 52,683 MT from the marine sector. Both artisanal fisheries and industrial fisheries are represented. Fish contributes to 27 per cent of the total animal protein consumption and about 2.9 per cent to the GDP in the country. Since 1998 to date, the Government of Tanzania has been licensing foreign purse seines and longline vessels, including EU and Japan under private licenses to fish in its EEZ. The main IUU fishing problems in Tanzania include dynamite fishing, coral mining along the coast, and incursions of non-licensed Asian and European tuna fleets into the Tanzanian EEZ.

The Fisheries Act No. 22 of 2003, an Amendment of the Fisheries Act No. 6 of 1970 is the main legislation for fisheries management which provides for the power of the Minister of Livestock and Fisheries Development to impose conditions relating to traditional fishing, registration and licensing of fishing vessels, of fish, area and season closures, prohibition of fishing in designated areas, monitoring capacity of the fishing fleet, landing of fish, and trade in fish. Part IX of the Act also lays down fisheries offences and corresponding penalties. The Act similarly provides for the creation of a Surveillance Unit with the officers having powers to board and inspect fishing vessels, direct the master of fishing vessels to stop fishing, inspect documents and direct vessels to come to port or a landing station. Such officers have the power to board and inspect vessels, enter premises, and seize or remove fish with or without a warrant. Specific regulations have also been adopted in Tanzania on fishing marine reserves, use of explosives, poisons and water pollution, vessel licensing, and fish quality.

MCS operations are carried out by the Ministry of Livestock and Fisheries Development through the Directorate of Fisheries Resource Protection. A similar authority of the Revolutionary government of Zanzibar deals with fisheries within the jurisdiction of the islands. The Deep Sea Fishing Authority in Zanzibar is responsible for all MCS activities towards the pelagic (mainly tuna) fishery.

Fisheries management jurisdiction is split between the mainland and Zanzibar. In Zanzibar, the Ministry of Agriculture, Livestock and Natural Resources cover the fisheries sector. There are 26 patrol vessels and 4x4 vehicles that are available for use in freshwater and near coastal MCS. The Deep Sea Fishing Authority operates a monitoring centre which has an operational VMS. The government has no means to conduct at-sea inspections or investigations. MCS is carried out by 175 people, with 45 dedicated inspectors, 50 observers for the inland and coastal fishery, and 82 people in administrative roles.

The record of MCS however has been quite weak. Although an observer program has been implemented, it is not clear how surveillance operations are sustained. Legal processes have a poor record. Many offenders pay smaller fines instead of being prosecuted in a court, offenses are not graduated according to their degree of seriousness, and violators who are prosecuted are rarely punished.

4.2 Trends in Domestic Framework for MCS in Fisheries: Institutional and Practical Challenges

Managing ecosystems along the length of the Southern African coastline and within many more kilometres of estuarine and freshwater environments presents considerable challenges to the individual Southern African countries, and also collectively in the region. In recent decades the challenges of managing fisheries have resulted in fisheries suffering seriously from overexploitation and ecological stress, endangering the livelihoods of some of the poorest segments of society, putting pressure on public finances, and also threatening the overall health of the oceans. These challenges have mainly been attributed to institutional failures. One such crucial institutional aspect is argued to be systems of monitoring, control, and surveillance. Consequently, international organizations have supported developing countries in their efforts to install MCS systems. In Southern Africa, the EU and FAO have supported SADC in its efforts to install MCS systems and a regional commitment to combat IUU fishing activities.

The SADC regional Protocol on Fisheries and its action plan is a regional commitment, informed by an international agreement to counter illegal fishing and install MCS measures, and its effectiveness is affected by the respective country's national capacity to implement the agreements. In this regard, the enforcement of fisheries regulations in each of the Southern African countries is vital.

In order to strengthen MCS systems towards fighting IUU activities, it is essential to strengthen the existing domestic legislation to ensure that it prescribes measures that are appropriate to achieve the desired fisheries management objectives and contains provisions that facilitate effective enforcement. The effectiveness of Southern African countries' MCS systems in ensuring compliance with the international obligations will depend very heavily on whether or not domestic laws provide appropriate mechanisms to facilitate this task. While all SADC countries have agreed on the regional Protocol on Fisheries and its action plan, the effectiveness of this regional commitment is affected by the respective country's national capacity to implement the agreements. Although IUU fishing can be addressed by implementing individual flag, coastal, port and market measures, a more comprehensive MCS framework will provide increased benefits to States.

Generally, Southern African States have in place basic legal framework for the adoption of an MCS strategy or program. This legal framework, primarily through national fisheries laws and regulations provide for fisheries management and conservation measures, licensing of vessels and fishing activities, duties and responsibilities of fisheries authorities, enforcement powers, and fisheries offences and appropriate sanctions. There are limitations in some Southern African State fisheries legislation including gaps in the development of specific regulations that would detail the implementation of MCS tools, such as: vessel registration and licensing, VMS, observer program, boarding and inspection, port State measures, catch certification and other measures.

Amongst the Southern African states included in this project, Namibia and South Africa have the most comprehensive legal framework for fisheries in general, and MCS in particular. Both these countries have effective MCS capacity and they insist that most vessels fishing in their waters have to fly their flags, ensuring better flag state control over their activities. Namibia has a dedicated section of the Ministry devoted to MCS measures and implementation. Namibia's MCS system which has been known to be very effective includes all components of a functional MCS system such as inspection and patrol at sea, on land and in the air. The legislation is also backed by observer and VMS programs and monitoring of landings at fishing ports to ensure compliance with quota limits and fees payments. Namibian licensed and flagged vessels also carry observers on 100% of their trips, increasing the sea-based monitoring capabilities of Namibia's fisheries authorities.

In South Africa, the legal framework is supported by a fully operational MCS unit which takes into account monitoring and compliance of individual commercial fisheries, surveillance operations, including VMS, and at sea inspection and patrols as well as other key MCS tools, such as observer programs, port inspection, and monitoring of trade to ensure that only those which have been obtained through legal means enter the market. Observers are deployed on 20% of national flag vessels and 100% of foreign flag vessels. South Africa also conducts MCS activities that address illegal activities perpetrated by organised criminal groups.

Other Southern African States such as Mozambique have relatively updated legislation on fisheries with specific regulations detailing some MCS measures. The legislation distinguishes between "regular" infringements, more serious infringements, and recurring offenders. However, such regulations do not fully implement all global and regional requirements examined in Parts 2 and 3 of this Technical Report. Tanzania has a more basic MCS fisheries framework in place and very little regulations and evidence of implementation. DRC and Angola have limited MCS capacity. In the absence of other MCS tools, these countries can develop measures that are based on the strength of their legislation, which would encourage self-compliance amongst fishers.

Amongst the global and regional requirements for MCS, the most well adopted measures amongst Southern African States are vessel registration and licensing, VMS, and boarding and inspection. These States have also adopted regulations for the implementation of these measures.

Not all countries have observer programs, particularly Angola and DRC, and in Angola there is no formal catch inspection scheme. An evaluation of the UN Code of Conduct for Responsible Fishing rates the country at the lower end in regard to compliance to the code. Namibia, South Africa and Mozambique have elaborate observer programs. The Fishery Observer Agency in Namibia compliments the Government's MCS and scientific activities by placing fisheries observers on-board fishing vessels to monitor the harvesting operations (to ensure compliance with legislation) and collect biological and scientific data. The Agency strives to have a 100% observer coverage. In South Africa observers on boats have been deployed in the pelagic fishery, to provide data relating to catch weight and locality, catch composition, and length frequencies of important species, in addition to collecting some biological data. Because observers monitor each haul, their data have an increased spatial and temporal resolution compared to that collected by inspectors and scale monitors, who collect data from one sample per landing, regardless of the number of hauls that that landing represents. Observer data have been used to validate catch data (primarily catch weight and species composition) recorded by fisheries inspectors at landing sites, and to compare the fishing behaviour of observed versus unobserved vessels. This latter analysis has revealed that vessels carrying observers show significantly higher catch rates compared to those that do not have observers.

In Mozambique a Scientific Observer programme is being carried out in the national fleet targeting shallow water shrimps, deep-water shrimps and on those for demersal fish (line fishery). It has also been implemented on the national flagged tuna longliners. The Fishery Research Institute in Mozambique has eight scientific observers who have been trained under the SWIOFP. Most of these observers are above 45 years of age and therefore a course for training new scientific observers for tuna fisheries has been planned for 2016. The 2015 Tanzanian Report to the IOTC indicates that there has been neither Observer nor Port sampling programmes because Tanzanian Ports do not have facilities for handling commercial deep sea fishing vessels, though part of the funding from SWIOFISH, World Bank funded project will be used to train and deploy observers from 2016.

All of the SADC states with the exception of DRC and Angola have operational VMS systems which have been designed to address national requirements, specifically to monitor both domestic and licensed foreign vessels. Hence, there are no 'effective' regional standards (including minimum specifications etc.) for exchange of VMS information between states. Although VMS standards are included in the SADC Protocol, it has been reported that due to continuous staff changes, and the absence of a single responsible agency to make sure they are implemented, their effectiveness is minimal. The existing VMS capacity in its current form cannot address the regional monitoring challenges.

Regarding inspection of fishing vessels, Namibia's regulations empower fisheries inspectors to stop, board fishing vessels, search and inspect, carry out hot pursuit, seize items used in the commission of an offence and effect arrest. In South Africa, fishery control officers under Marine and Coastal Management are responsible for fishing vessel monitoring and inspection in South African ports. The Directorate: Fisheries Protection Vessels (FPVs) is operational throughout the entire South African EEZ. The FPVs conduct fisheries inspections at sea, from as far as the border of Orange River, in the Atlantic Ocean, extending to the Indian Ocean to as far as the Mozambican Border. The Directorate plays a crucial role in building stronger relationship with neighbouring countries of the SADC, by conducting joint operations with the SADC Countries, including patrols to Prince Edward and Marion Islands. A robust approach is taken to

port inspection for fishing vessels and the legislation enables action to be taken, including the confiscation of catch and seizure of vessels suspected to have violated South African national laws.

In Mozambique, inspection powers under the fisheries regulations include search, entry, seizure of fish and of vessels and custody of seized articles. The MCS activity is a shared responsibility between the National Fisheries Administration (ADNAP), responsible for i.e. subjects for licensing and legal issues, and the National Directorate of Fisheries Surveillance (DNFP) for operation and law enforcement. This is not an optimal solution for a country that still is developing their services and control at sea. By centralising these functions to DNFP, the effect will increase and the DNFP will be able to ensure the necessary overview and obtain sufficient resources to develop the future control and surveillance operations. Two governmental bodies responsible for the MSC-activities cause confusion and ineffective management. Although the tasks of the inspectors are well defined, an independent review of fisheries surveillance operations in Mozambique revealed that inspectors carry out their tasks unsatisfactorily. The review also noted that there was no effective control of foreign fishing vessels leaving Mozambican EEZ after termination of fishing and recommended that inspection zones be created to ease inspections, thereby resulting in higher numbers of effective controls. Hence, fishing vessels must pass a defined zone in the surveillance area and inform the fishing inspection authorities in advance. Tanzania's fisheries regulations confer powers upon fish inspectors to enter inspect and search fishing vessels in order to ensure compliance. Hence, they can take samples of any fish or fishery product for verifying standards and specifications and also seize.

Most Southern African States had very few provisions in their legislation on port State measures and catch certification. In terms of operational capacity, Namibia, Mozambique and South Africa, have the strongest MCS operations in the region while Angola, DRC and Tanzania have partial to weak capacity. DRC has the weakest MCS capacity.

Effective MCS requires a comprehensive legislative framework that supports all relevant MCS components by taking into account each of the elements of monitoring, control and surveillance. The gaps in domestic framework on MCS for fisheries, as well as institutional and practical challenges raise a number of opportunities for cooperation amongst Southern African States, particularly in terms of utilizing existing regional arrangements and initiatives discussed in Part 3, and assistance provided by international organisations such as the FAO in developing a robust legal framework, sharing of fisheries enforcement data, and conducting joint patrols. Southern African States which have more updated laws and sound MCS strategies may also serve as model framework for those requiring revision of fisheries laws. Table 4 presents the SWOT analysis for the domestic MCS framework of Southern African States.

It is clear that the Southern African countries stand in contrast to each other in how well they have managed to address the problem of IUU fishing. Namibia has clearly been the most successful case. While Tanzania and Mozambique seem to have problems related to foreign actors in their EEZ, South Africa's problems relate more to widespread non-compliance among domestic actors. Material and geographical conditions also seem to affect the capacity for successful implementation. The successful case of Namibia illustrates that it is easier to monitor two harbours than the dispersed landing sites of, for example, Angola or Mozambique. It is evident that the Southern African countries all have quite far-reaching legislation in place. However, there are considerable differences in what type of measures are prescribed, ranging from rights-based approaches to licensing systems and varying degrees of protected areas. It is apparent that the five countries also differ in the implementation of these policies, and they have adopted MCS measures with a varying degree of firmness. While the approach by Namibia was characterized by steadfastness in terms of allocated resources to monitoring and punishment of offenders, Angola is an example of a country

where MCS measures were implemented gradually and late, with few resources available for monitoring and where sanctions were not functioning as intended. It is evident that national capacities to implement and enforce the existing regulations fundamentally condition their effectiveness.

The effectiveness of regional and sub-regional frameworks for cooperation relies heavily upon the ability of national fisheries and enforcement agencies to implement their obligations. Strong national frameworks will generally include mature legislation, robust licensing systems, formalized frameworks for domestic cooperation such as inter-agency MCS committees and MOUs, the existence of structured MCS plan, policies and procedures and an information system to facilitate operational communication between stakeholders.

Recommendations

Review, update and harmonise domestic fisheries legislation to ensure compliance with global and regional obligations. Allow for flexibility through subordinate legislation such as regulations, conditions of license and gazette notices as circumstances arise

Incorporate provisions in legislation;

- making it an offence to trade in fish caught by IUU fishing vessels
- enabling the adoption of MCS measures including multilateral catch documentation and certification requirements as a means of eliminating trade in fish derived from IUU fishing
- allowing cooperation with neighbouring States on MCS matters

Develop harmonized national MCS strategies and plans with long-, medium- and short-term objectives consistent with relevant legislation and policies and regional objectives

Include a risk assessment framework within national MCS strategies and plans

Develop joint management plans for all major transboundary fish stocks

Adopt sound regulations on vessel registration and licensing, VMS, observer program, boarding and inspection, port State measures, catch certification and other MCS measures

Implement an effective penalty system with adequate severity for fisheries offences which will deprive those that benefit from IUU fishing. Such a system should provide sanctions that allow for the refusal, withdrawal or suspension of licenses and authorizations to fish in response to non-compliance by licensed fishing vessels with conservation and management measures

Ensure that an MCS system is supported by a compliance and enforcement mechanism

Use participatory management, including co-management and community based management, as an approach to fisheries compliance, particularly in terms of data submission and incident reporting. Informal institutions have an important role to play

Establish formal collaborative arrangements between institutions with fisheries-related functions which will facilitate sharing of relevant information

Conduct legal and technical training to improve human capacity in MCS implementation, through

whole-of government capacity building strategies ((i.e. ensuring that all relevant agencies [Fisheries, Police, Navy, Attorney Generals, etc.] have the necessary capacity to implement their MCS responsibilities).)

Table 5: Analysis of Strengths, Weaknesses, Opportunities, and Threats in Southern African State MCS for Fisheries

Southern African State	Strengths	Weaknesses	Opportunities	Threats/Challenges
Angola	<p>Regulatory measures include right-based systems</p> <p>Rich fishing resources</p> <p>Member of relevant regional organisations and participates in regional initiatives relating to fisheries</p>	<p>Very limited MCS tools or measures in place with limited infrastructure</p> <p>VMS not effective/operational and may not be operational</p> <p>Observer and catch inspection schemes not operational</p> <p>Dockside inspections and patrols vessels limited especially for offshore fisheries</p> <p>The courts do not provide much oversight over fishing industry</p>	<p>Can benefit strongly from sub-regional MCS cooperation</p>	<p>Has low enforcement capacity compared to other Southern African States</p> <p>Expansion in IUU fishing</p>
DRC		<p>No effective VMS/MCS</p> <p>No detailed regulations adopted on MCS measures</p> <p>Most of the marine production derived from artisanal so industrial fishers may not be well licenced</p>	<p>Can benefit strongly from sub-regional MCS cooperation</p> <p>Participatory management can be used to promote compliance amongst fisherfolks in the absence of MCS technology</p>	<p>Focus in fisheries is mainly in inland lakes, hence marine fisheries has not been given priority. marine production accounts for estimated 2% of total national fish harvests</p> <p>Part of the coastline waters are reserved for oil mining</p> <p>Minimal data on IUU activities</p> <p>No dedicated fisheries ports</p> <p>Effective implementation of an MCS strategy is a long term process</p>

Southern African State	Strengths	Weaknesses	Opportunities	Threats/Challenges
Mozambique	<p>Has a comprehensive legal framework for fisheries that contains management and conservation measures, fisheries offences, and MCS and enforcement</p> <p>Licensing regime not only for industrial but also artisanal vessels</p> <p>Has port State measures comparable to those required under relevant international agreements</p>	<p>Some MCS regulations are not as detailed as provided in global and regional instruments</p> <p>Limited patrol and arraignment capability</p>	<p>A solid national MCS framework can provide the basis for developing more specific regulations and activities necessary to effectively implement the system</p>	<p>Sustainability of MCS program without overseas aid</p>
Namibia	<p>Has an established legal framework for fisheries that contains management measures, MCS and enforcement</p> <p>MCS legal framework is supported by an operational MCS system</p> <p>Has specific regulations for the control of foreign fishing vessels</p> <p>TACs are set for all major species</p>	<p>Some MCS regulations are not as detailed as provided in global and regional instruments</p> <p>Trade-related regulations do not seem to detail catch certification requirements</p>	<p>A solid national MCS framework can provide the basis for developing more specific regulations, protocols, and activities necessary to effectively implement the system</p>	<p>To have an MCS system that is applied in various fisheries of the country</p> <p>To transform national MCS into a model for implementation in the sub-region</p> <p>unlicensed pirate vessels, engaged in illegal border hopping operations,</p>
South Africa	<p>Has an established legal framework for fisheries that contains management measures, MCS and enforcement</p> <p>The legal framework not only address fisheries management concerns but also fisheries crime</p> <p>MCS framework provides for the implementation of international and regional requirements</p>	<p>Consistent review of fisheries allocation measures to ensure equitable allocation of rights in a broad spectrum of commercial fisheries</p> <p>Few weakness in the legal framework compared to other Southern African States</p>	<p>An established legal framework can assist in developing specific protocols for the implementation of an integrated set of MCS measures across various fisheries (e.g. market data analysis and confidentiality of fisheries data)</p>	<p>Transboundary issues in fisheries may take longer to resolve as it requires strong cooperation amongst States and increased institutional capacity</p> <p>To transform national MCS into a model for implementation in the sub-region</p>

Southern African State	Strengths	Weaknesses	Opportunities	Threats/Challenges
	<p>MCS legal framework is supported by an operational system that clearly implements the three components of MCS</p> <p>Has fishery-specific regulations and monitoring and compliance program</p> <p>Clear cooperation mechanisms with other national agencies and international organizations</p>			
Tanzania	<p>Has basic legal framework for fisheries that provides for management and conservation measures and some MCS measures, including the powers of authorized officers</p> <p>Has an operational VMS</p> <p>Commitment to better VMS/MCS</p>	<p>No comprehensive regulations on MCS implementation</p> <p>Not all MCS tools are in place such as observer program and effective port State measures, and catch certification</p> <p>No means to conduct at sea inspections</p>	<p>The basic legal framework can form the basis for updating fisheries provisions in order to ensure compliance with international and regional obligations</p>	<p>Development and effective implementation of an MCS strategy is a long term and continuous process</p>

5. SYNTHESIS AND RECOMMENDATIONS: TOWARDS A REGIONAL MCS IN SOUTHERN AFRICA

The MCS system is identified as the weakest link in fisheries governance since it is extremely costly and not deterrent enough to stop IUU fishing practices. MCS Systems Better enable fisheries and other enforcement agencies (at national, sub-regional, regional and international levels) to quickly share information on vessel details (vessel location, name, species on board, ownership, and fishing history), ports used (home port, unloading port and/or transshipment at sea) and other relevant information and intelligence. MCS measures should be supported with a thorough legislative framework and consistent control capabilities and resources.

Functional MCS systems rely heavily on advanced technology such as satellite – based vessel monitoring systems, and catch documentation schemes which enable traceability (chain of custody) of both vessel and catch from the point of catch to the point of landing. Mechanisms to enhance regional cooperation with such MCS systems are critical for the long- term sustainable protection of the living marine resource and marine environment in Southern Africa. An MCS system, at both a national and regional level, supports and underpins a robust fisheries management regime. Although some of the root causes of the depletion of fisheries can be addressed at the national level, many can only be successfully addressed through regional action. This is particularly the case in the areas with interdependent marine ecosystems, adjoining maritime boundaries and shared or migrating fish stocks.

As seen in Part 4 of this Technical Report, there is a significant contrast in the way Southern African countries have been formulating and implementing MCS measures to counter IUU fishing. These countries stand in contrast to each other in how well they have managed to address the problem of IUU fishing. While some countries have set very significant global benchmarks in MCS implementation, others are struggling with MCS implementation due to significant institutional and capacity weaknesses.

Country-specific characteristics impact on the diffusion and implementation of the international norm requiring them to counter illegal fishing and establishing MCS measures. Limited funding in responsible agencies as well as differences in enforcement capacities are crucial aspects of the implementation challenges. Limited operational assets have also hindered States from fully monitoring fishing vessels in their waters. Hence, regional and sub-regional cooperation on Global and regional cooperation in MCS present an effective solution to addressing challenges in national MCS systems. MCS is necessary in Southern Africa to help reduce surveillance costs and help reduce IUU fishing. Such cooperation would enhance the ability of Southern African countries to implement effective fisheries management, monitor fishing activities in port and at sea, enforce regulations, maintain up to date legislation and comply with regional commitments. The availability and exchange of information may also help improve the monitoring of vessel movement and fishing activities in the region. Southern African countries will require strong institutional and governance capabilities to effectively implement all the MCS components that are necessary to protect, manage and benefit from their fisheries.

In Parts 1 to 4 of this Technical Report, a number of recommendations which are based on the MCS requirements established at the global and regional levels, as well as the assessment of domestic legislation and best practice, have been raised. These Recommendations relate to the identification of priority IUU fishing issues and available MCS tools and assets in the Southern Africa, implementation of global and regional fisheries obligations, strengthening of sub-regional cooperation, and development of harmonized national framework on MCS.

The Southern African countries in this Technical report have all been subject to a global norm and resulting international efforts to improve MCS. The SADC members have signed a regional protocol where they commit to combat IUU fishing. As indicated in Part 3.3.4 of this Technical Report, the SADC Member States have recognised the need to devise a Regional MCS Strategy and a Regional Plan of Action to combat IUU fishing. In this regard, a Regional Fisheries Monitoring project funded by the African Development Bank is ongoing.

5.1 The SADC Regional MCS Centre

The SADC Regional Fisheries Monitoring project seeks to develop a regional MCS strategy and regional plan of action in relation to IUU fishing. Regional MCS activities are to be coordinated at the SADC MCS Centre based in Maputo, Mozambique. The objective of setting up a regional MCS centre is to eliminate illegal fishing in southern Africa through improved regional and inter-regional cooperation, fisheries governance and legal frameworks and national MCS capacity. The MCS activities are to be prioritised as follows:

- Improving regional and inter-regional cooperation with a view to eradicating IUU fishing;
- Strengthening fisheries governance and legal frameworks to eliminate illegal fishing;
- Developing a regional MCS strategy and a regional plan of action in relation to IUU fishing;
- Strengthening fisheries MCS capacity.

As a Technical Coordination Centre for SADC fishery MCS related issues, the following services were deemed suitable and aligned with the SADC Protocol on Fisheries and the SADC Statement of Commitment on IUU Fishing by the NFDS Assessment Study:

- Regional fishing vessel register - harmonised regional register of fishing vessels that operate within SADC state waters, or are flagged by SADC states;
- Regional fishing vessel monitoring system - regionally harmonised fishing vessel monitoring systems (VMS), to facilitate the sharing of national VMS information under agreed protocols;
- Fisheries MCS data and information sharing - sharing of fisheries MCS related data and information between SADC states, RFBs and other entities by agreed protocols;
- Regional fisheries MCS information portal - central web based portal where fisheries MCS information can be accessed;
- Regional fishery observer coordination - regional coordination and harmonisation of national observer standards, observers and observer reporting;
- Regional fisheries surveillance coordination - regional coordination of assets used for fisheries surveillance;
- Fisheries law enforcement and legal support - coordination and provision of advice and support for fishery law enforcement activities;
- Port state measures support - facilitation and support towards implementation of standards and capacity building for port state measures; and
- Build and support national MCS capacity to facilitate regional integration - provision and support of institutional and human capacity building to improve national MCS capability.

The first meeting of the SADC IUU Task Force in Maputo, Mozambique held from the 12 - 14 September 2011 was an important step in mapping out the strategy for the establishment of the SADC Regional MCS Fisheries Coordination Centre.

5.2 Regional MCS Strategy to Combat IUU

The development of a regional strategic framework for MCS is inherent, and would best be informed by the current status of MCS of the individual Southern African countries, in order to assess the relevance of regional interventions identified in the SADC Regional Fisheries Monitoring project for the establishment of the SADC Regional Fisheries MCS Coordination Centre. An analysis of a scoping survey from Southern African countries will provide the MCS status. Hence, such a strategy will take into consideration the capabilities of each country as indicated in the SWOT Analysis in Part 4 (Table 4), the nature of IUU activities, and the role and capacities of the existing regional institutions, while building on the principles of the various instruments discussed in Part 2 of the Technical Report. The course of action proposed would thus be achievable and realistic if suitably aligned with national and regional institutional capacities and therefore prioritised accordingly. The national capacities of Southern African countries will need to be necessarily enhanced for the strategic action to be implemented successfully at national level.

It will be necessary to establish the different forms of IUU fishing that exist in the Southern African countries, their impacts and associated risks. Part 3 of the technical Report identifies various regional bodies supporting the development of MCS capacity in the Southern African countries. These organisations have varied strengths. The IUU situation in the region could be addressed by leveraging these strengths. The role of the strategy would be both to strengthen MCS in some of the Southern African countries on the one hand, and also build the MCS capabilities of other countries with limited MCS systems.

Essential elements to be considered in a Regional MCS Strategy include;

- Review and/or amend fisheries sector legislation to ensure all elements of MCS are addressed and based on best practice;
- Review and/or amend bilateral / multi-lateral agreements among Southern African countries to ensure improved coordination among multiple government agencies in countries that need to work together to address IUU fishing for fisheries protection and MCS activities;
- Support the development and implementation of NPOA-IUUs – MCS activities in the region will be based on the provisions of the NPOA-IUU.

The Regional MCS coordinating centre will enhance national MCS programmes. As the SADC countries are committed to establish the SADC MCS coordination centre, their governments must have the political will and equally commit to provide the required support including adequate funding to MCS. Overall, the fisheries management regime in the region will need to be strengthened to support the efforts to establish and operationalise a comprehensive MCS strategy in the region. The Strategy ought to be consistent with the SADC Protocol on Fisheries and the SADC Statement of Commitment on IUU Fishing.

Given the highly mobile nature of IUU fishing, sub-regional approaches are also essential. South African countries can cooperate to develop and implement Subregional frameworks under regional organizations and arrangements that meet international requirements. Such frameworks could focus on the following:

- Development of National MCS frameworks
- Improving management and Sharing of information, taking into account confidentiality and security of data;
- Integrating MCS advice in fisheries management plans
- Financial support for regional or sub-regional MCS; and
- Training and professional development for MCS legal and technical staff including institutional and enforcement aspects.

5.3 Development of National MCS frameworks

National MCS frameworks should be based on best practice risk assessment. It is essential to identify, analyse and evaluate the risks posed by IUU fishing, in order to establish the appropriate national MCS frameworks. Risk analysis creates an understanding of identified risks. It involves the examination of the identified risks, the potential consequences (impacts) associated with each risk and the likelihood (probability) of that consequence occurring. The combination of these two factors produces an estimated level of comparative risk that is used for assessing and determining suitable management responses. A risk evaluation will then help in making decisions, based on the outcomes of the risk analysis, about which risks need treatment and the priority for treatment implementation. The MCS coordination centre will need to continually improve the availability and quality of information accessible to national and regional officials upon which to assess relative risk and plan MCS activities.

5.4 Improving management and regional Sharing of Information

A key function of MCS is to ensure accurate and timely information is available for scientific assessments to ensure managers can make informed decisions. Data management is also a key challenge to the effective operation of various MCS components. Sharing of information is one of the key areas of cooperation amongst States. Information collected by the various MCS components and external sources needs to be formatted such that it can be effectively analysed and cross verified with limited effort based on the resources of national administrations. It is important to have clarity over data ownership and also to manage that data most efficiently.

A number of arrangements exist in the region for the exchange of information, such as fisheries data available in the FAO database, the listing of IUU vessels by RFMOs, information shared through the International MCS network, activities under the FISH-I, BCC and various reports and studies available on the internet. However, for better sharing of information relating to fishing areas, licensing conditions and offences, boarding and inspection reports, flagging history, history of IUU fishing, and other information that may lead to the successful prosecution of illegal fishing offenders across jurisdiction, a more formal arrangement to share such information would be necessary.

A formal regional or sub-regional information management arrangement on information sharing (such as an information exchange model) would allow for the sharing of timely and accurate MCS information and support planning and targeting of MCS activities. Such an arrangement can include procedures for access and transfer of data and a network of similar bilateral data access agreements between Southern African States, and potential data access with relevant organizations outside the sub-region. The formal arrangement should also include guidelines on the types of data to be shared, the authorities responsible for data access and sharing, and provisions for the confidentiality and security of information.

5.5 Incorporating MCS advice in fisheries management plans

MCS functions are essential in supporting effective fisheries management and therefore MCS concerns need to be considered when accessing any proposed plans. MCS strategies established by South African countries should include the need to contribute towards the development of management plans (and therefore control measures) through the provision of information that is key to the evaluation of different management measures. Compliance with conservation-based measures is essential for proper management of fishery resources. It is advisable to consider factors that will encourage compliance rather than demanding enforcement and what the requirements to develop these, and whether they are feasible. The consequences of non-compliance (i.e. violations of the set controls) must be considered in relation to the effect that these will have on the status and viability of the fishery, therefore the level of compliance that is required

in order to support the management plan should be considered. The Southern African countries will need to relate the MCS activities to specific management objectives. Hence, clear management statements are required to develop MCS systems to the appropriate levels and at an appropriate cost. Information about management priorities, management measures and the available resources will also be needed.

5.6 Financial Support of Regional or Sub-regional MCS

A successful MCS framework at a sub-regional or regional level requires adequate funding which may not be readily available to all Southern African States. A few options, or a combination of options, for financial arrangements may therefore be considered:

- National governments fund MCS activities in the region through regular contributions;
- Contributions from the local or foreign fishing industry;
- Foreign licensing fees or contributions from FPAs;
- Payment from users of MCS services, such as fishing vessels for the use of VMS;
- Host Southern African State to pay for the cost of an MCS activity held within their jurisdiction; and
- Overseas aid and sponsor organizations.

National contributions may be calculated based on economic position, size of the fishing fleet availing of the MCS service, and other criteria or formula. MCS-related studies may also be funded through international non-government organizations.

5.7 Training and Professional and Institutional Development

Training of MCS personnel (legal and technical) is important if an integrated system is to be developed that will allow an effective monitoring of fishing activities, at the same time use and management of MCS data for the arrest and prosecution of offenders. Institutional development/strengthening is also essential to ensure national agencies function fully and are operational within a legal and institutional framework that supports the achievement of management goals at national, regional and international levels.

An MCS training program must promote understanding of the following:

- a practical grounding in the concept of MCS to support sustainable fisheries;
- MCS systems, required elements, implications, and suitability for specific situations;
- Legal aspects of technical MCS tools such as VMS and observer programs;
- practical at-sea and port inspections, reporting and prosecution matters, such as detection of violations, prosecution, rules of evidence, some of which are already being conducted in the region; and
- developing an analytical approach to develop appropriate MCS mechanisms.

MCS training can be conducted at the sub-regional level and replicated at the national level.

REFERENCES

- Afonso, P. S., 2004, Country review: Mozambique, in: D. Young (Ed) Review of the State of World Marine Capture Fisheries Management: Indian Ocean. FAO Fisheries Technical Paper. No. 488 (Rome: FAO).
- Agnew, D.J. "The Illegal and Unregulated Fishery for Toothfish in the Southern Ocean, and the CCAMLR Catch Documentation Scheme," *Marine Policy* 24 (2000).
- Amador, T., 2005, Elements for harmonization of fisheries legislation from an MCS perspective. Working paper no. 36, 1st legal workshop, the SADC-EU MCS programme, South African Development Community: Namibia.
- Alcock, F., 2002, Bargaining, uncertainty and property rights in fisheries. *World Politics*, 54(3), pp. 437–461.
- Amador, T., 2004, Review and audit of the legal provisions and institutional arrangements that impact on the artisanal fisheries sector in the BCLME region, final report for IPA, Artisanal Fishing Institute of Angola.
- AUC-NEPAD (2014). The Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa
- Bailey, R., 1988, Third world fisheries: Prospects and problems. *World Development*, 16(6), pp. 751–7
- BCLME, 2005, An analysis of fisheries management protocols in the BCLME countries. BCLME Project LMR/ SE/03/03.
- Bergh, Per Erik. Indian Ocean Commission, SmartFish Programme, Implementation of a Regional Fisheries Strategy for the Eastern-Southern Africa and Indian Ocean Region, Comprehensive Review of MCS Capacity in the ESA-IO Region, SF/2012/14 (IOC, 2012).
- Davies, Sandy I.; J. Eric Reynolds, (eds.), *Guidelines for Developing an At-Sea Fishery Observer Programme*, FAO Fisheries Technical Paper No. 414 (Rome: FAO, 2002)
- Environmental Justice Foundation (EJF). *Pirates and Profiteers: How Pirate fishing Fleets are Robbing People and Oceans*, London, UK, 2005, www.ejfoundation.org
- Evans, David. 'The Consequences of Illegal, Unreported and Unregulated Fishing for Fishery Data and Management', Expert Consultation on Illegal, Unreported and Unregulated Fishing Organised by the Government of Australia in Cooperation with FAO, Sydney, Australia, 15-19 May 2000, AUS:IUU/2000/12, 2000.
- FAO Regional Workshop on Port State Measures to Combat Illegal, Unreported and Unregulated Fishing, Cape Town, South Africa, 28-31 January 2008, FAO Fisheries Report No. 859 (FAO, 2008).
- FAO, Report of the FAO Regional Workshop on the Elaboration of National Plans of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing: Southern and East Africa Subregion, Kariba, Zimbabwe, 24-28 November 2003, FAO Fisheries Report No. 730 (FAO, 2003)
- FAO, 2006, *The State of World Fisheries and Aquaculture 2006* (Rome: FAO)

Flewellling, Peter. An Introduction to Monitoring, Control and Surveillance for Capture Fisheries. FAO Fisheries Technical Paper No. 338. Rome, FAO, 1995

Flewellling, Peter, Cormac Cullinan, David Balton, Raymond P. Sautter and J. Eric Reynolds. Guide to Monitoring, Control, and Surveillance Systems for Coastal and Offshore Capture Fisheries, FAO Fisheries Technical Paper. No. 415 (Rome: Italy, 2003).

Food and Agriculture Organization. International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) (FAO, 2001).

Gibson, C. C., Williams, J.T. and Ostrom, E., 2005, Local enforcement and better forests. World Development, 33(2), pp. 273–284

IOTC, Tanzania National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2015

Kelleher, K. The Costs of Monitoring, Control and Surveillance of Fisheries in Developing Countries, FAO Fisheries Circular No. 976 (FAO, 2002)

Laubstein, Karl. "Fisheries Observers on Fishing Vessels," in CP Nolan, ed., Proceedings of the International Conference on Integrated Fisheries Monitoring, Sydney, Australia, 01-05 February 1999.

Mauritius, Report on Tuna Fisheries in Mauritius , IOTC Thirteenth Session of the Scientific Committee, Mahé, Seychelles, 6-10 December 2010.

Mees, C. 'Points to Remember in Connection with Armed Boardings,' Technical Papers Presented at the Regional workshop on Fisheries Monitoring, Control, and Surveillance, Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June-3 July 1998, GCP/INT/648/NOR I.

Moolla, S., 2010, Illegal fishing of marine resources in South African waters: In search of solutions. Draft paper, Institute for Security Studies.

Mozambique National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2015

MRAG. Review of Impacts of Illegal, Unreported and Unregulated Fishing on Developing Countries: Final Report, (UK, 2005).

Myers, R. A. and Worm, B., 2003, Rapid worldwide depletion of predatory fish communities. Nature, 423, pp. 280–283

Offshore fisheries in Angolan waters: report for BP by RRAG, Imperial College, 2002

Palma, M.A.; M. Tsamenyi; and W. Edeson. Promoting Responsible Fisheries: The International Legal and Policy Framework to Combat IUU Fishing (Brill, 2010).

Pitcher, T.J., Kalikoski, D., Pramod, G. and Short, K., 2008, Safe Conduct? Twelve Years Fishing Under the UN Code (Switzerland): WWF, Gland).

Pramod, G., 2011, Evaluations of Monitoring, Control and Surveillance in marine fisheries of 41 countries, MCS Case Studies Report, Fisheries Centre, University of British Columbia, Canada, 222 p. p.181.

Pramod, G., Pitcher, T. J., Pearce, J. and Agnew, D., 2008, Sources of Information Supporting Estimates of Unreported Fishery Catches (IUU) For 59 Countries and the High Seas Fisheries, Research Report 16 Number 4, Fisheries Centre, University of British Columbia: Canada.

UN Office of Drugs and Crime, Transnational Organized Crime in the Fishing Industry: Focus on Trafficking in Persons, Smuggling of Migrants, Illicit Drug Trafficking (Vienna: UNODC, 2010).

USAID, Competitiveness of Mozambique's Fisheries Sector (USAID, 2010).

Walmsley, S F; C T Barnes; I A Payne; and C A Howard, Comparative Study of the Impact of Fisheries Partnership Agreements (2007). Technical Report (MRAG, CRE & NRI, 2007).

World Bank, 2004, Saving Fish and Fishers: Toward Sustainable and Equitable Governance of the Global Fishing Sector. Report No. 29090-GLB (Washington, DC: World Bank).

WWF International Corals Initiative, East African Marine Region (WWF, 2003)

WWF International Endangered Seas Campaign. The Footprint of Distant Water Fleets on World Fisheries. (Surrey: WWF, 1998)



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