



# USING INNOVATIVE TECHNOLOGY TO INCREASE OVERSIGHT FOR SAFE, FAIR AND LEGAL FISHERIES



**FCWC  
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## The importance of safe, fair and legal fisheries

The fisheries sector in West Africa is a key source of employment, a significant contributor to food security, and vital means of subsistence as the most important source of animal protein for the coastal communities of the region.

However, West Africa is also a global hotspot for illegal fishing with estimated losses of \$1.3 billion, of which the six the Fisheries Committee for the West Central Gulf of Guinea (FCWC) countries lose \$300 million a year. High levels of illegal, unreported and unregulated (IUU) fishing combined with a lack of fisheries data, undermines the good governance and sustainable management of fisheries resources.

There is growing evidence both within the FCWC sub-region and internationally that vessels that fish illegally also fail to comply with safety regulations and requirements. Crew are often subjected to poor living and working conditions, and in some cases to forced labour and physical abuse.

While these failures have common drivers – to avoid oversight, reduce costs, and to avoid sanctions and enforcement – they all take place within the fisheries sector, often on the same vessels and involve the same bad actors. However, the regulatory, legal frameworks, and national competent authorities differ depending on the violations.

The membership of the Food and Agriculture Organization (FAO), the International Maritime Organization (IMO) and the International Labor Organization (ILO) have developed a framework of international instruments to use ports to block illegally caught fish from being landed; to reduce the number of accidents and fatalities; and, to improve safety, working and living conditions in the fisheries sector.

The three treaties are the:

- FAO Agreement on Port State Measures (PSMA)
- IMO Cape Town Agreement (CTA)
- ILO Work in Fishing Convention No. 188 (C188)

The number of States ratifying and implementing these internationally binding instruments is increasing: the PSMA and ILO C188 are in force, while the CTA is expected to enter into force shortly. To become truly effective tools, it is important that the minimum standards and requirements from these international instruments are adopted as widely as possible.



## Increasing oversight: the role of the FCWC

The FCWC was established in 2007 to address the challenges of good management, sustainability, illegality and crime in the fisheries sector.

Increased oversight of fish stocks, fishing and vessel activity, help with coordinated approaches to risk assessment, and targeting of inspection capacity and joint action, will lead to:

- Improved compliance by identifying illegalities and increasing deterrence.
- High-risk vessels being banned from operation.
- Insight into repeat offenders and their operational patterns, methods and techniques.
- Better intelligence to target inspection and enforcement.
- Greater deterrence for non-compliance.
- Better tools and technology developed to combat IUU fishing.

The FCWC leads the regional response in fighting IUU fishing, and in 2015 established the West Africa Task Force (WATF) to focus, coordinate and progress monitoring, control and surveillance (MCS) efforts. It provides a robust regional framework, clear communication channels and a cooperative culture. Utilising innovative approaches and technologies has been an essential approach of the FCWC. As a regional organisation it can use its position to train, test, innovate, modernise approaches, share and establish best practices.

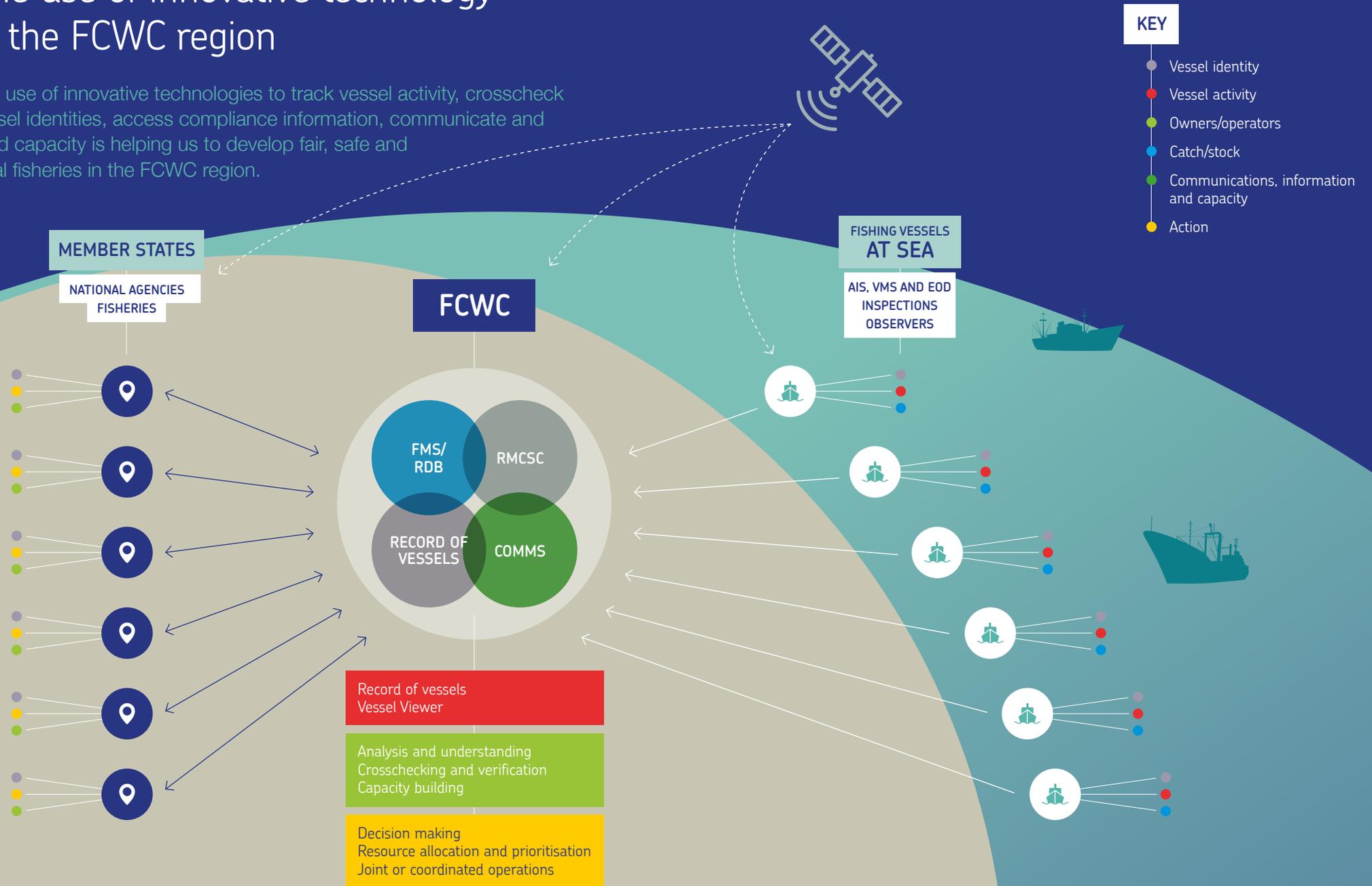
In 2020, the FCWC established a Regional Monitoring, Control and Surveillance Centre (RMCS). This provides the operational hub for FCWC MCS including a Fisheries Monitoring System (FMS), and will help to build national, regional and international capacity to stop illegal fishing and the trade in illegally caught fish.

The RMCS is at the heart of efforts to increase oversight. It supports efforts to:

- Identify fishing vessels that are unsafe, operate illegally, or fail to provide decent conditions for crew.
- Catch and sanction illegal operators.
- Create transparency and accountability.
- Create a region free from IUU fishing.

# The use of innovative technology in the FCWC region

The use of innovative technologies to track vessel activity, crosscheck vessel identities, access compliance information, communicate and build capacity is helping us to develop fair, safe and legal fisheries in the FCWC region.





# What technology do we use and how does it help?

## Gathering and pooling information



### VESSEL IDENTITY AND AUTHORISATION

Shared databases allow for the rapid sharing of information. By pooling information and establishing systematic collection of data throughout the FCWC region up to date, easily accessible, easily interrogated information that has practical and operational value, is more readily available to inform resource allocation, decision making, and inspections.

These processes also feed into and benefit from access to the data and the sharing of information with regional and global databases such as the FAO Global Record Information System, and MCS tools such as Vessel Viewer.

### TECHNOLOGY

**FCWC Record of Regional Record of Authorized Fishing Vessels (RRAFV)**

### WHAT IT INVOLVES

Compiled by the FCWC to provide an easy to access list of authorised fishing vessels.

Details of IUU listed vessels to serve as a rapid check for known bad actors.

Supports national and regional due diligence processes and enforcement activity, building on existing information sharing developed under the WATF.

Contains standardised fields of information for ease of cross checking.

It may contain information about the physical characteristics of the vessels, the owners, operators and masters and provide a history of any changes in that information over time.



## MONITORING VESSEL ACTIVITY

Satellite technology has driven the availability of vessel tracking data in recent years. The FCWC RMCSG gathers data from the FCWC regional vessel monitoring system (VMS) and combines this with automatic identification system (AIS) information, and visual data from a range of sources. The RMCSG provides access to and receives information from national fisheries monitoring centres. The WATF technical team provides further support through broader satellite AIS and imagery sources.

This increases capacity to monitor fishing related activity in national exclusive economic zones and improves ability to track the highly mobile fleet active in the FCWC region. Vessel monitoring and analysis data is used to support coordinated efforts of fisheries authorisations, inspections at port and patrols at sea.

### TECHNOLOGY

#### Vessel monitoring system (VMS)

### WHAT IT INVOLVES

Developed for remote monitoring of fishing vessels. Sealed transponder units are installed on board fishing vessels and position reports are sent through conventional satellite communication systems, ensuring that each message is predictably relayed. The reliability of VMS data provides authorities with a strong basis to act if reports from a vessel are not received, or if positional information reveals non-compliant activity.

Includes monitoring of all fishing vessels registered or licensed by FCWC Member States.

The RMCSG monitors the position, speed, direction and activity of registered and licensed fishing vessels and support vessels. Dedicated operators and a secure system have been established to ensure protection of data and information.

Each Member State has web-based access to the RMCSG system and receives notifications of vessel movements. A centralised VMS ensures that reliable and real-time VMS data is available at any time, and that no loss of historical VMS data occurs.

#### Automatic identification system (AIS)

Designed as a collision-avoidance system, vessels automatically transmit their position via radio frequencies so that other vessels and maritime traffic stations can locate them.

AIS is less reliable than VMS, as it is dependent on the transmitting unit being within coverage of AIS satellites at the time of reporting.

AIS is a crucial tool in the monitoring of vessels providing support to fishing vessels (reefers, tankers, supply vessels, etc. – who do not carry a VMS), allowing for the identification of encounters between VMS-vessels and AIS-vessels.

#### Earth observational data (EOD)

Satellite Aperture Radar (SAR) an optical imagery supplying visual information that can provide vessel identity or activity verification.

Used to supplement AIS and VMS data.



## FISH STOCKS

Fish stock information, compiled by the FCWC through a fisheries management system to provide an overview of stock and catch data throughout the region.

### TECHNOLOGY

#### FCWC regional database (RDB)

### WHAT IT INVOLVES

Development of a general data dissemination policy for the FCWC artisanal and industrial fisheries database.

Establishment of mechanisms for the exchange of statistical information between FCWC and its Member States.

FCWC collate, manage and compile data to provide an overview of fisheries stock trends and catch data throughout the region.

An automated workflow between the FCWC RDB and the FAO Fisheries and Resources Monitoring System (FIRMS) database.

Quality control of the integrated data from the region to support fisheries management decision making.

#### FCWC Fisheries Management System (FMS)

Develop detailed information on the region's major fisheries for knowledge development, capacity building and decision making.

Strengthened the knowledge and expertise within FCWC member states in terms of fisheries data collection systems required for successful data reporting at national, regional and global level.



# Supporting decision making and information sharing



## RISK ASSESSMENT AND CHECKING

New technology enables data to be pooled from multiple sources and to be extracted and synthesised in easy to operate mobile tools, easily used by frontline officials.

### TECHNOLOGY

#### Vessel Viewer

### WHAT IT INVOLVES

A fishing vessel history tool developed by Global Fishing Watch (GFW) and Trygg Mat Tracking (TMT) that provides information on a vessel's identity, fishing activity, authorisations, port visits and transshipments.

Allows users to identify and crosscheck relevant, absent or false information about a given vessel and its fishing operations to inform risk-based decision-making and operational planning.

Provides historic information on a fishing or carrier vessel's tracking data and known compliance history.

Leverages GFW machine learning to identify potential transshipments, encounters with other vessels of gaps in AIS transmission that may indicate suspicious activity.

Leverages TMT's global analytical system FACT, which contains data on vessel identity, operations, compliance history, and images.

Can integrate national or regional specific data, such as authorisations.



### COMMUNICATION

Rapid communication between neighbouring States and between national agencies allows for timely processing of requests for vessel licences, authorisation to fish or tranship or advance requests for entry into port (AREPs). The FCWC WATF communications portal has proven crucial in building successful regional information sharing and MCS cooperation.

#### TECHNOLOGY

**Online Communications Portal**

#### WHAT IT INVOLVES

- Connects relevant operational personnel.
- Provides a real-time communication channel.
- Translation of all messages to overcome language barriers in the delivery of training and to facilitate discussion between Member States.
- Improves the sharing of information throughout the region.
- Increases transparency and oversight of MCS activities.
- Can involve non-fisheries agencies, as useful.
- Provide alerts and notifications on high-risk vessels.

**Instant messaging groups**

- Quickly connects teams for operational or due diligence.
- Avoids delays and difficulties identifying the correct point of contact.
- Real-time communication.
- Provide alerts and notifications on high-risk vessels.



### CAPACITY BUILDING

The use of remote and video technologies enables a broader reach for training activity and to facilitate regular meetings.

#### TECHNOLOGY

**Online Communications Portal**

#### WHAT IT INVOLVES

The RMCSC will provide support nationally and opportunities regionally to strengthen capacity for MCS. Training to develop the expertise, knowledge and awareness of fisheries inspectors, other MCS personnel and allied agencies is critical to ensure that illegal operators are identified, and successful enforcement action is taken.

Developing region-wide standard operating procedures and best practice guidelines will level up capacity and work towards a simpler regulatory environment.

**Online training**

Training courses delivered through online platforms to maximise reach and overcome covid travel restrictions.

Use of simultaneous interpretation to overcome language barriers in the delivery of training and to facilitate discussion between member States.

**Remote support for**

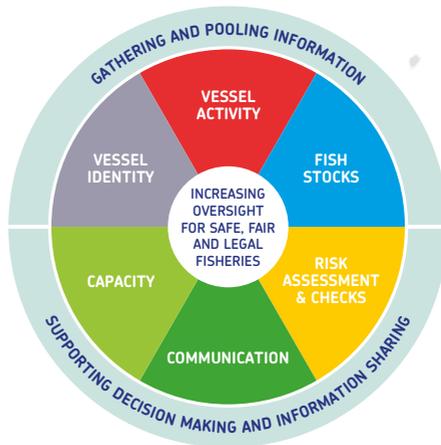
Using video and voice technology to provide expert support or ongoing training and mentoring to fisheries officers during inspections.





The Fisheries Committee of the West Central Gulf of Guinea was established in 2007 to promote cooperation in fisheries.

The FCWC mission is to ensure, through appropriate management, the conservation and optimal utilisation of the living marine resources in the waters under the jurisdiction of its member States – Benin, Côte d'Ivoire, Ghana, Liberia, Nigeria and Togo.



Find out more about the FCWC at:  
[www.fcwc-fish.org](http://www.fcwc-fish.org)



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