

**AD-HOC WORKING GROUP ON ELECTRONIC MONITORING STANDARDS**  
**(WGEMS)**

**TITLE: AN UPDATE ON ELECTRONIC MONITORING PILOT IN KENYA**

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**Abstract**

Between 2023 and 2025, the government of Kenya tested Electronic Monitoring (EM) systems on three (3) industrial vessels operating within its EEZ. The goal of the pilot was to: (1) Demonstrate the validity and usefulness of EM as a monitoring tool; (2) Build solid working relationships among partners; (3) Generate reliable fisheries data that can be used for compliance, science, and training purposes; and (4) Enhance the institutional capacity of Kenya Fisheries Service (KeFS), Kenya Marine and Fisheries Research Institute (KMFRI) and partners to use EM to work towards a scaled-up EM program.

This update details the operational successes and technical challenges encountered during the pilot, highlighting its alignment with existing IOTC electronic monitoring standards. Preliminary results demonstrate the system's effectiveness in enhancing data transparency, which has directly informed Kenya's commitment to achieving full transparency and compliance across its entire industrial fishing fleet by 2030. The presentation will conclude with key lessons learned to support other IOTC member states in the development and integration of domestic EM frameworks.

*Key words: EM systems, Kenya, IOTC standards, fisheries compliance, transparency*

## **1. Introduction and Rationale**

The Indian Ocean hosts the world’s second most productive tuna fishery, yet persistent data gaps continue to undermine effective management. A significant challenge remains: more than 90% of illegal, unreported, and unregulated (IUU) activity in tuna fisheries is estimated to occur on licensed vessels through the non-reporting or under-reporting of catches. Traditional data collection systems including logbooks, self-reporting, and human observer programs remain vulnerable to manipulation, incomplete coverage, and logistical constraints. As highlighted in recent assessments, logbook data often excludes discarded catch, which can represent a large proportion of the total catch (Uhlmann et al., 2014; Ulleweit et al., 2010), while observer data are often incomplete, biased and vulnerable to manipulation (Cotter & Pilling, 2007), or are incomplete due to limited deployment opportunities. These weaknesses compromise the reliability of fishery-dependent data and hinder robust stock assessments.

To address these challenges, the Government of Kenya (GoK) initiated an Electronic Monitoring (EM) pilot program. EM integrates onboard video cameras, GPS, and sensors to automatically record and verify fishing activity. This approach aligns with IOTC Resolution 2023/08, which establishes minimum standards for EM systems to ensure that on-the-water data is sufficiently accurate for science-based management, compliance monitoring (IOTC, 2023), and certification pathways such as the Marine Stewardship Council (MSC). The EM pilot is therefore a strategic investment in transparency, accountability, and sustainable fisheries governance within Kenya’s Exclusive Economic Zone (EEZ).

## **2. Project Overview and Governance**

The Kenya EM Pilot (2021–2025) is a collaborative initiative involving the State Department for Aquaculture, Blue Economy and Fisheries (SDFA-BE), Kenya Fisheries Service (KeFS), and the Kenya Marine and Fisheries Research Institute (KMFRI), with technical and financial support from The Nature Conservancy (TNC) and the World Bank-funded KEMFSED Project (KeFS, 2026).

The pilot initially targeted three industrial vessels – two longliners and one trawler before expanding to include additional trawlers equipped with 4–5 cameras each. The objective was to develop a scalable EM program design capable of supporting 100% monitoring coverage across Kenya’s industrial fleet.

A multi-stakeholder workshop held in Mombasa brought together over 45 participants from industry, government, and research institutions to review EM findings, compare EM datasets with observer and logbook records, and co-design the roadmap for national scale-up. This collaborative approach has strengthened institutional ownership and informed Kenya's commitment to achieving full transparency across all industrial vessels by 2030 (Government of Kenya, 2023).

### **3. Methodology and Data Collection**

The EM life cycle in Kenya follows a rigorous six-stage process that ensures data integrity from vessel deployment to analyst review. The pilot compared 100% of selected vessel trip data across EM, human observer, and logbook datasets, enabling a comprehensive assessment of reporting accuracy.

Data collected include:

- Catch Events: FAO species codes, estimated weights and lengths, and the condition of species of special interest (SSI) upon capture and release.
- Fishing Effort: GPS-verified set and haul positions, set start/stop times, and hook counts for longline operations.
- Spatial Analysis: Hexagonal heatmaps (7 km<sup>2</sup> per cell) used to visualize fishing effort and verify activity relative to EEZ boundaries.

This structured methodology ensured that EM data is standardized, verifiable, and compatible with IOTC Regional Observer Scheme (ROS) metrics.

### **4. Key Accomplishments and Findings/ Results**

The EM pilot has delivered significant operational, scientific, and governance benefits.

#### **4.1. Enhanced Data Accuracy and Transparency**

EM consistently captured more detailed and accurate information than human observers or logbooks. Notably, EM detected a higher diversity and quantity of bycatch – particularly sharks and rays – with shark bycatch accounting for approximately 10% of each trip on average. This level of detail is critical for assessing interactions with protected species such as oceanic whitetip and silky sharks.

#### **4.2. Improved Compliance Monitoring**

EM footage validated vessel positions, catch handling practices, and adherence to regulations, including:

- Swordfish minimum size limits
- Mandatory release of protected shark species
- Fishing exclusively within Kenya's EEZ

The system also flagged non-compliance events, strengthening deterrence against IUU activity.

#### **4.3. Capacity Building and Training**

EM videos have become a valuable training tool for vessel crews, Kenyan fisheries observers and government analysts. They support species identification, reinforce safe handling and release practices, and provide real-world examples for continuous learning.

#### **4.4. Operational and Industry Benefits**

Vessel operators reported several unexpected advantages:

- Multi-angle visibility of deck operations for improved oversight
- Evidence for safety, labor, and catch compliance
- Ability to identify and mitigate internal theft
- Enhanced eligibility for certification and access to premium markets

These benefits demonstrate that EM supports both regulatory and commercial objectives.

#### **4.5. Policy Commitment**

The success of the pilot has directly informed the Government of Kenya's formal commitment to achieving 100% EM coverage across the industrial fleet by 2030, positioning Kenya as a regional leader in fisheries transparency (Government of Kenya, 2023).

## 5. Challenges and Lessons Learned

While the pilot has been successful, several operational and technical challenges were identified:

- Maintenance during vessel repairs: EM wiring was occasionally damaged during shipyard work, underscoring the need for standardized maintenance protocols and improved communication between crew and technicians.
- Data retrieval logistics: Coordinating data offload with vessel port calls requires close collaboration with vessel agents and port authorities.
- Analyst skills and capacity: As EM data volumes increase, continuous training is essential to maintain high-quality, efficient video review.
- Standards alignment: Although the pilot was developed in accordance with IOTC EM Standards, Kenya is refining its national EM standards to fully align with Resolution 2023/08.

These lessons are informing the design of Kenya's national EM framework and guiding future scale-up.

## 6. Alignment with IOTC Standards

Kenya is actively integrating IOTC Resolution 2023/08 into its national EM standards to ensure full compliance with regional requirements. By incorporating IOTC ROS metrics into EM review protocols, Kenya ensures that EM data contributes meaningfully to regional stock assessments, compliance monitoring, and coordinated MCS efforts across the Indian Ocean.

## 7. Conclusion and Recommendations

The Kenya EM Pilot has demonstrated that electronic monitoring is a viable, scalable, and cost-effective solution for enhancing transparency and sustainability in industrial tuna fisheries. EM has improved data accuracy, strengthened compliance monitoring, supported industry competitiveness, and informed national policy commitments.

As Kenya moves toward full implementation, it is recommended that:

- IOTC continues harmonizing EM standards across member states

- Regional data-sharing frameworks be strengthened
- Capacity building for EM analysts and vessel crews be expanded
- Member states collaborate on EM-supported MCS strategies

Kenya's experience offers valuable lessons for other IOTC member states seeking to develop or refine their domestic EM frameworks.

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