

Building a Business Case for Electronic Monitoring Systems (EMS) in the Ghanaian Tuna Purse Seine Fleet

Background

In recent years, Electronic Monitoring Systems have become increasingly utilized to expand the capability of flag states to monitor the activities of vessels under their jurisdiction. EMS provide a way to obtain independently verifiable information on compliance of fishing vessels, as well as an additional source of information on catch by species and size. In verifying compliance, EMS offer the advantage of verifying compliance without the need of an observer on board the vessel.

The Government of Ghana, the Food and Agriculture Organization of the United Nations (FAO), World Wide Fund for Nature (WWF), and the International Seafood Sustainability Foundation (ISSF) have formed a partnership under the Common Oceans Areas Beyond National Jurisdiction (ABNJ) Tuna Project funded by the Global Environment Facility (GEF) and implemented by FAO to pilot EMS technologies in Ghana. The objective for the project was to support building a business case for EMS in the Ghanaian fleet, including options for financing a permanent implementation of the system (see Figure 2 for stakeholder schematic). The business case is intended to inform the Ghanaian Government of the capital and recurrent costs of equipment and operations as well as required legislative changes and institutional arrangements necessary to utilize the EMS as an enforcement tool. There are currently 17 Ghanaian International Commission for the Conservation of Atlantic Tunas (ICCAT) registered tuna purse seiners, of which 14 are currently active (13 of these are currently on the ISSF ProActive Vessel Register). The 14 vessels have previously participated in the pilot project for EMS under the Common Oceans ABNJ Tuna Project. They operate mainly in the Gulf of Guinea. The EMS deployed in Ghana for the study was a modified Satlink SeaTube EMS (Figure 1).



Analyses and Results

The questions below frame the methodology and analyses used to build this business case:

- What is the basic infrastructure necessary to support electronic monitoring EM technologies as an MCS (monitoring control and surveillance) and data collection tool for the Ghanaian purse seine fleet?

- What are the human resource requirements necessary to support EM technologies in Ghana?
- What are the costs and benefits of implementing EM in the Ghanaian purse seine fleet (one time and recurrent) or continuing to rely on existing technologies and data collection systems?
- What legislative, regulatory or policy changes, if any, are required to allow the full implementation of EM technologies in the Ghanaian purse seine fleet and use of EM as an MCS tool?
- What cost recovery methodologies could be employed to ensure the long-term sustainability of the purchase, maintenance, and operation of the EM technologies?
- What are the current priorities of the Ministry of Fisheries and Aquaculture Development (MOFAD) in relation to MCS, the data collection and reporting obligations to ICCAT, and the status of the at-sea and land-based observer programs?

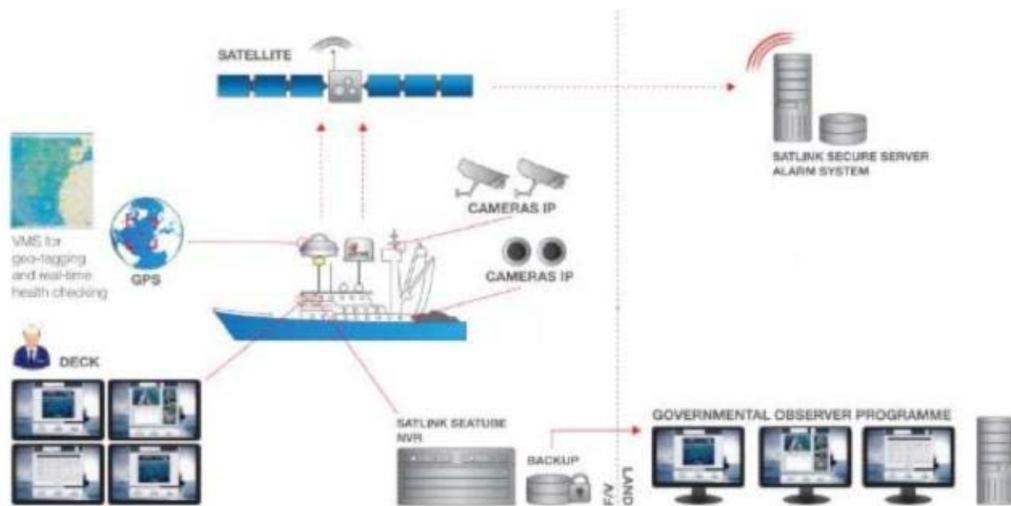


Figure 1. Operating Diagram of the Satlink SeaTube EMS (modified from Satlink)

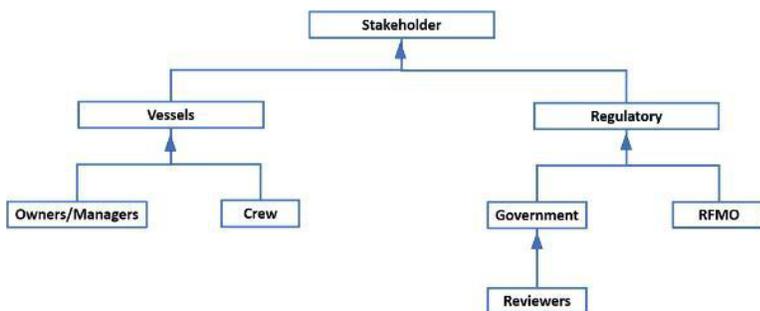


Figure 2. Class diagram of stakeholder relationships

The key stakeholders in Ghana, Government, and Industry have formalized this relationship through the introduction of an MOU.

In order for the EMS to be fully functional and potentially used for enforcement purposes it must fulfill a number of requirements; it was found that the EMS in use satisfies all necessary infrastructure requirements, such as on board hardware and shore based facilities. The land observer team, currently based in Tema, is found to have sufficient facilities and staffing levels to implement the EMS effectively; there is also sufficient team flexibility to accommodate changes in demand throughout the year. In addition there is a high rate of staff retention, which is important for strengthening capacity with the team. Further measures that could be taken to strengthen capacity and prevent future issues (discussed in recommendations).



The cost-benefit analysis (CBA) was treated as an economic analysis to the overall pilot project, enabling the results to inform the future viability of the program without donor support. The CBA indicated that installing and operating the EMS equipment is a viable and sustainable investment for improving compliance, creating a better standing of the fleet with respect to the markets, and the lifting of the EU yellow card and thus access to European markets in Ghana. The presence of the EMS would generally promote the sustainability of Ghanaian tuna fisheries to markets. Other more general benefits include a source of verifiable and objective data for

compliance and MCS, potential to reduce IUU (illegal, unreported, and unregulated fishing) by domestic and foreign vessels, potential to demonstrate good practices, potential use for future product certification, and a collection of scientific data.

To achieve total cost-recovery, all costs attributable to delivery of services by the government agency should be calculated and recovered under an equitable 'user pays' arrangement with the industry. This includes not only the direct costs – such as installation costs, travel, video footage analysis – but also indirect costs such as funding land observers and coordinators, debriefing, data entry, office accommodations, communications, and administrative equipment. Therefore, it is important to isolate the additional costs specific to this service from the general costs of the agency's mandated standard operations.

Two payment models are proposed: an upfront cost borne by industry, and initial costs borne by government. Under the first it could be designed that a condition of entry to the fishery is to have EMS installed compatible with the Ghanaian system. In this case, all onboard installation costs would be incurred by the industry and national authorities would only need to recover the incremental service delivery costs. Under the second, the system is paid for upfront by government agencies, but later that cost is recovered. This may be viewed as more equitable by the industry and allows for relatively constant payments associated with license fees. When a vessel chooses to enter the fishery, the relevant national authority would provide the vessel with the necessary systems and services. While not all of the initial cost will be recovered

immediately, the subsequent years of access to the fishery will offset it. Some risk will be borne by the government if there is high turnover of vessels in the fleet.

Fisheries offenses in Ghana are prosecuted under criminal law for which there are stringent rules on presentation of evidence. In considering the legal aspects of implementing the EMS as an enforcement tool, it was found that considerable adaptation would be required around legislation and institutional arrangements.

Recommendations

Level of Efficiency- the current level of efficiency of some aspects of the implementation of the EMS could be improved, such as installing a computerized log of active review time.

Level of Integration between Monitoring Programs- there is currently no integration between the at-sea and land observer programs in reviewing the footage. There is scope for comparisons, given that both have 100% coverage of the fleet. Should the EMS implementation be continued in the future, then some functions of the at-sea observer program could be covered by the EMS and could solely concentrate on scientific functions.

Remote Data Review by DOS (Digital Observer Services)- a schedule for remote data review was due to be conducted during the pilot program; however, this was not fully implemented. It is recommended that this process be completed in the near future in order to provide independent quality control on the outputs of the EMS.

Strengthening Competence- the level of competence and efficiency of the land observer team reviewing the footage could be improved by embedding a trainer from DOS. The storage and chain of custody of EMS footage needs to be more secure. Continuity within the land-based team is needed to maximize the benefits of training and experience gained over time.

Legal Aspects- to allow the full implementation of EM technologies in the Ghanaian purse seine fleet as an MCS tool it will be necessary to amend the existing Fisheries Regulations. However, because fisheries offenses in Ghana are prosecuted under criminal law, it is suggested that a suitable amendment should be made to the Fisheries Act to allow EMS data to constitute sufficient evidence of an offense. The use of EM technologies also raises important data protection issues. New legislation for EMS would need to be carefully aligned with the data protection legislation.

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