This fact sheet is one in a series outlining key elements for regional fisheries management organizations to consider as they develop electronic monitoring programs. More information is available at pewtrusts.org/ElectronicMonitoring.

Program Structure and Review

Programs should have clearly defined roles and responsibilities

Overview

Electronic monitoring (EM) programs for regional fisheries management organizations (RFMOs) can be structured in two ways: an RFMO-wide design or a decentralized system made up of national or regional programs. Which type is implemented should be guided by the program's objectives, the RFMO's history, and geography. Along with the structure, these elements will inform how vendors are contracted, what standards for hardware and data should be developed, and what changes, if any, are necessary to national legislation.

Once an EM program is implemented, its progress should be reviewed at regular intervals and improvements should be made to its effectiveness.

Program structure

Human observers play a critical role at sea by collecting fisheries data that managers can use to improve monitoring. Most RFMOs have either a centralized observer program, or individual national or subregional programs. Their current model may strongly influence how they decide to structure future EM programs. Table 1 gives an overview of the advantages and disadvantages of three program models.

Table 1

Electronic Monitoring Program Structure

Structure	Advantages	Disadvantages
RFMO-wide program	• Uniform across regions • Scalable • Consistent data • Preferable for small countries and countries with little access-fee revenue • Easily modelled after centralized transshipment programs at RFMOs • Cost-effective (e.g., bulk equipment pricing)	• RFMOs can be slow to implement new programs • Political influences drive objectives • Need to increase capacity and finances • Concern about data ownership and use
National programs for exclusive economic zones (EEZs) and RFMO program for the high seas **Or** **National programs for EEZs and flag State coverage of high seas**	• Coastal States control their own data • Local job creation • Customizable to fit in zone fishing fleets	• Programs' effectiveness may vary • Concerns regarding inter-operability of EM software systems • Confusion over data handing procedures for multi-zone trips • Higher start-up costs since each country will need to develop its own program • May require support from regional institutions (e.g., Pacific Islands Forum Fisheries Agency)

Access and inter-operability

Once an RFMO has decided the structure of its EM program, it needs to determine how to handle video footage and which entities can access this data. Because the system may be complex, given that vessel trips span multiple exclusive economic zones (EEZs) and the high seas, RFMOs should create and distribute a detailed chart that clearly identifies these roles.[1]

To ensure that relevant reviewers and authorities can access EM data, transmitted video should be standardized so all file formats are compatible with all reviewers' software. This will reduce any necessary "cleaning" of the data once it is centralized and will make reviewing it more efficient.[2]

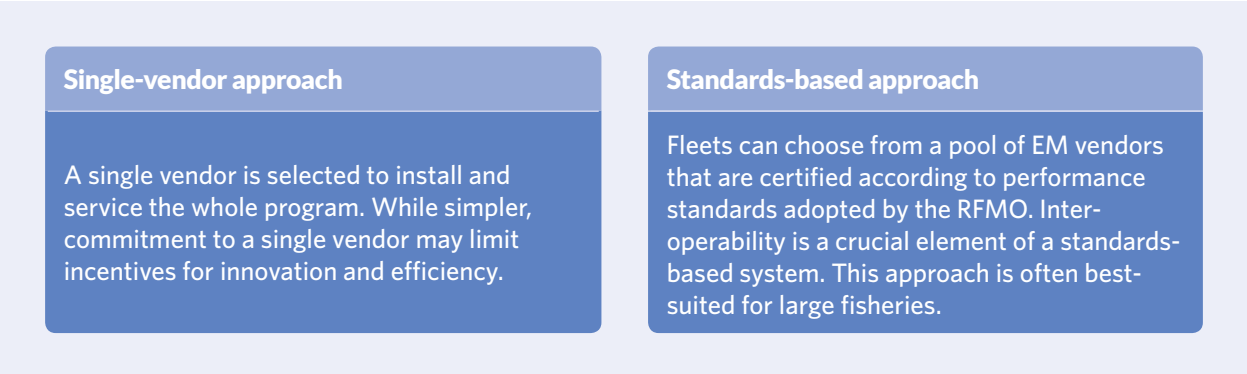
Vendor contracting and maintenance

Agreeing on a structure for the program will also help the RFMO determine whether to use a single EM vendor or multiple vendors that would operate based on agreed-to standards. (See Figure 1.)

When considering EM vendors, fisheries managers must also include an appropriate servicing plan that clearly articulates responsibilities of vendors and crew to ensure that maintenance issues are promptly addressed. Vessel operators may be required to perform basic EM maintenance, such as lens cleaning and keeping camera views unobstructed. RFMOs should also implement procedures for EM system repairs to ensure that vessels are not left unmonitored for long periods.

Figure 1

Single Vendor vs. Standards-Based Approach



Costs and cost recovery

When considering approaches to vendor contracting, stakeholders should also discuss costs and potential ways to cover them. Since fisheries are a public resource, stakeholders, including RFMOs and consumers, often expect that flag States will be responsible for expenses related to ensuring that their operations are legal and verifiable. While some RFMOs have hesitated to deploy EM systems because of concerns over their cost, many reports on EM have found that they are less expensive than employing observers.[3]

Although not all costs can be recovered over time, those relating to EM can be divided into the following categories:

- **On-vessel costs:** EM hardware, installation, and operation.
- **Program administration costs:** Personnel expenditures for a regional or national program. This is usually a major focus for distributing costs.
- **Policy and regulatory development costs:** Establishment of relevant regulatory and policy arrangements. This expense may be borne by fisheries managers.
- **Analytical costs:** Review and analysis of EM data to produce reports. Reviewing videos can be the most expensive part of an EM program, depending on the amount or percentage of review needed.

Measures to potentially reduce those costs include:

- Incentivizing competition among vendors.
- Limiting how long EM data is stored.
- Reducing the percentage of EM data that is reviewed.
- Incorporating artificial-intelligence technology that flags key events, reduces file size or image rates based on activity, and truncates video footage for review.
- Scheduling stakeholder working groups during key meetings.
- Leveraging scientific staff to help develop policy text.

Program evolution

Once an EM program is in place, RFMOs should establish mechanisms to incorporate feedback after stakeholders have acquired experience with the system. Evaluating a program at regular intervals is critical to ensure that it remains effective as fishery conditions change. A review process may also secure additional industry support because it allows managers to demonstrate the program's success. The evaluations can help RFMOs tackle unexpected challenges, improve how efficiently new technology is adopted, and refine data analysis protocols.

Domestic legislation

For programs to be successful, governments may have to modify or adopt domestic fisheries regulations to allow them to implement EM systems across their national fleets.[4] Ideally, such measures should be approved in parallel with RFMOs' work to design and put EM programs in place.

Conclusion

The decisions about how to structure an EM program will affect almost every other element of the design process. Determining who has oversight of the program, how the EM systems will be installed and maintained, and who will bear the costs are important considerations that will help determine the roles and responsibilities of various stakeholder groups. National legislation must be in place so that RFMO regulations can be implemented domestically. Finally, the program should be reviewed often to ensure that it is operating efficiently and meeting its objectives.

Endnotes

1 The Pew Charitable Trusts, "How to Review Electronic Monitoring Data While Safeguarding Privacy," (2020), pewtrusts.org/ElectronicMonitoring.

2 The Pew Charitable Trusts, "Options for Collecting, Transmitting, and Storing Electronic Data," (2020), pewtrusts.org/ElectronicMonitoring.

3 M. Michelin, N.M. Sarto, and R. Gillett, "Roadmap for Electronic Monitoring in RFMOs," CEA Consulting (2020), https://www.ceaconsulting.com/casestudies/the-pew-charitable-trusts.

4 Ibid.

For further information, please visit:
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