

EU Fisheries Control System factsheet

Remote Electronic Monitoring

What is REM and why it is important?

Remote Electronic Monitoring (REM), also known as Electronic Monitoring, is a fisheries management technology to improve scientific data collection capacity and ensure effective monitoring and control. REM is an integrated array of sensors (e.g., GPS and gear sensors) and video cameras used to remotely monitor fishing activities on a vessel at sea, providing the precise location of activities as well as information about catch composition, catch handling methods and discard activity. Versatility and cost effectiveness are the main reasons why REM is becoming widely used in many fisheries around the world and is emerging as a best practice tool for fisheries management.

REM data enable cross-verification of self-reported data and confirm vessel compliance with regulations.¹ This approach not only discourages violations because all activities are monitored, but also gives legitimacy to self-reported catch data, which previously has not been trusted by scientists or managers. Furthermore, REM data can also be used to improve traceability, vessel safety and transparency of the fishing operators.

What are the current challenges?

The Landing Obligation (LO) was introduced in 2013 as a tool to incentivise vessel operators to avoid unwanted catch and ensure all quota species are landed and documented. This is a much-needed measure given the fact that the EU Member State fishing fleets were estimated to discard 1.7 million tonnes of fish, corresponding to 23 per cent of all catches.² The landing obligation will lead to improvements in data quality since all quota species or those with a minimum landing size will have to be landed and counted against quota by January 2019.

The LO does however pose monitoring and compliance challenges. The European Fisheries Control Agency (EFCA) assessed fishing activity in both the North and the Baltic Seas³ and found that a majority of fishing activities using active gears are at a medium to very high risk of non-compliance with the LO. The potential for illegal and unreported catches poses an enormous ecosystem risk, necessitating effective monitoring and control at sea. In the Baltic, a number of reports show that compliance with the LO is extremely low^{4,5,6} and that the wasteful practice of discarding unwanted catch continues for all species, and in particular for cod.

Furthermore, it has been highlighted by the Scientific, Technical and Economic Committee for Fisheries (STECF) that the current scope of obligations needs to be expanded to improve resolution in

¹ [https://www.wwf.org.uk/sites/default/files/2017-](https://www.wwf.org.uk/sites/default/files/2017-10/Remote%20Electronic%20Monitoring%20in%20UK%20Fisheries%20Management_WWF.pdf)

[10/Remote%20Electronic%20Monitoring%20in%20UK%20Fisheries%20Management_WWF.pdf](https://www.wwf.org.uk/sites/default/files/2017-10/Remote%20Electronic%20Monitoring%20in%20UK%20Fisheries%20Management_WWF.pdf)

² [http://www.europarl.europa.eu/registre/docs_autres_institutions/commission_europeenne/sec/2011/0891/COM_SEC\(2011\)0891_EN.pdf](http://www.europarl.europa.eu/registre/docs_autres_institutions/commission_europeenne/sec/2011/0891/COM_SEC(2011)0891_EN.pdf)

³ www.nsrac.org/wp-content/uploads/2015/12/Paper-4.4-Sch-Control-and-Monitoring-Report-For-Info.pdf

www.bsac.dk/getattachment/Meetings/BSAC-meetings/BALTFISH-BSAC-EFCA-Workshop-on-implementation-of-t/FromEFCA-BSAC-EFCA-BALTFISH-presentation-9-March-2017.pdf.aspx?lang=en-GB

⁴ http://our.fish/wp-content/uploads/2017/11/Our_Fish_Baltic_fish_discards_exec_summary.pdf

⁵ <http://ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/cod.27.22-24.pdf>

⁶ EFCA, 2017, https://www.efca.europa.eu/sites/default/files/atoms/files/Annual%20Report%202017_0.pdf pp. 63-64

terms of catch reporting, inclusion of vessels not currently covered, and information at an individual operational level, such as per haul⁷

How can REM address the current challenges?

Traditional monitoring methods (e.g., patrol vessels, aerial surveillance, landing inspections, etc.) can only partially cover the activities of the fishing fleets they have to monitor. Since 2005, there have been many studies to test the efficacy of REM with a wide variety of fisheries and monitoring challenges. These studies include Canada,⁸ the United States, Australia,⁹ New Zealand,¹⁰ high seas tuna¹¹ and toothfish¹² fisheries. Since 2008, there have been pilot studies in EU Member States, principally in Denmark,¹³ the UK,¹⁴ and the Netherlands.¹⁵ While the purpose of the monitoring may vary, several studies have demonstrated the successful use of REM to enforce catch retention regulations, similar to the EU landing obligation. Studies comparing REM to observers consistently report that fleet monitoring can be achieved at a much lower cost with REM than with onboard observers.

Benefits of using REM¹⁶

- **Improved compliance and transparency**

Example from Denmark:¹⁷ in Denmark the opinion of fishery inspectors to REM was investigated. Eighty per cent of Danish fishery inspectors expressed positive views on REM, with sixty three per cent of them confirming its potential for full documentation and compliance with the LO.

- **Improved data collection to support stock assessments**

Example from the United States: The Nature Conservancy began a three-year pilot on video review with the Maine Coast Fishermen's Association, the Gulf of Maine Research Institute and Ecotrust Canada. The project showed that data generated by video reviewers was comparable to that from observers on the boats. *"Now, we have some really good data and startling reports of rebuilding. Several fish stocks have grown faster than researchers thought biologically possible... we don't hear fishermen complaining about bad assessments. It's an interesting lesson on the value of good data."*¹⁸

- **An ability to demonstrate that a vessel is operating in accordance with best practice**

Example from the UK: since 2011, a Fully Documented Fishery scheme has been running with the industry using REM. It includes three schemes: one in the North Sea focusing on cod, one in the Western English Channel focusing on dover sole, another in the Western English Channel focusing on haddock. Fred Normandale, UK fisherman and project participant, *"We are prepared to take*

⁷ Scientific, Technical and Economic Committee for Fisheries (STECF) – 46th Plenary Meeting Report (PLEN-14-02). 2014. Publications Office of the European Union, Luxembourg, EUR 26810 EN, JRC 91540, 117pp.

⁸ McElderry et al., 2003 http://www.westcoast.fisheries.noaa.gov/publications/nepa/groundfish/bycatch_eis/bycatch-eis-appd.pdf

⁹ Evan and Moloney, 2011, http://www.fish.wa.gov.au/Documents/research_reports/frr221.pdf

¹⁰ McElderry et al., 2011 <https://www.doc.govt.nz/documents/science-and-technical/dmcs9entire.pdf>

¹¹ Ruiz, J. 2018. Five years of electronic monitoring aboard tropical tuna purse seiners. pp305-307. In: <https://ifomcavigo.com/wp-content/uploads/2018/08/proceedings-9th-ifomc1.pdf>

¹² McElderry, H., Illingworth, J., McCullough, D., and Stanley, R. 2005. Report for Electronic Monitoring Trial in the Antarctic Longline Fishery. (Archipelago Marine Research Ltd. & Australian Fisheries Management Authority) 17p.

¹³ Ulrich et al., 2015

https://www.researchgate.net/publication/276880617_Discarding_of_cod_in_the_Danish_Fully_Documented_Fisheries_trials

¹⁴ Needle et al., 2015 http://www.ascobans.org/sites/default/files/document/Inf01_NeedleEtAL_ScottishScienceApplications_REM.pdf

¹⁵ <https://www.researchgate.net/publication/316620918>

[_Using_electronic_monitoring_to_record_catches_of_sole_Solea_solea_in_a_bottom_trawl_fishery](#)

¹⁶ [https://www.wwf.org.uk/sites/default/files/2017-](https://www.wwf.org.uk/sites/default/files/2017-10/Remote%20Electronic%20Monitoring%20in%20UK%20Fisheries%20Management_WWF.pdf)

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¹⁷ Plet-Hansen et al., 2016 <https://doi.org/10.1016/j.marpol.2016.11.028>

¹⁸ <https://www.nature.org/magazine/index.htm?intc=nature.hp.magazine>

camera's to prove to the people, to scientist, to the Hugh Fearnley Whittingstalls of this country that we are not criminals, we want to preserve cod as much as everyone else does.”¹⁹

- **An ability to ground truth and support management revisions**

Example from the United States: researchers, managers, marine conservationists and fishermen have teamed up to find better ways to count fish in New England waters and beyond. While industry regulators have relied on human observers on boats to verify a captain's reported catch, a growing wave of fisheries are floating the idea of using technology instead. Electronic monitoring may provide more accurate, cost-effective and timely fish counts, making it possible to hook catch limits more closely to actual populations and improving the effectiveness of conservation restrictions. *“Everyone complains that what fishermen observe on the water doesn't match the science. But you have to have good information going into the models to get good science out.”*²⁰

- **Effective monitoring at sea incentivising selectivity**

Example from the UK: after completion of REM trials: *‘There was a realization that all parties want the same thing: a healthy and profitable industry based on well-managed, sustainable stocks. This has led to greater quantities of data being collected at a fraction of the cost, an enthusiasm to solve gear selectivity issues by those who use the equipment every day and have the in-depth knowledge to solve these challenges, and a pragmatic approach by compliance agencies that has allowed greater flexibility to experiment and provided the right incentives to do so.’*²¹

- **A cost-effective alternative to traditional monitoring and control methods**

Example from New Zealand: a REM project concluded that: *“EM appears to have some financial advantages. For the total monitored vessel days achieved, the cost of this entire pilot study was about 40 per cent of the monitoring costs using on-board observers”.*²²

- **Retailers support REM**

Reports that illegal, unreported discarding are occurring, and likely to continue to occur in European fisheries, have caused concern in the European retail and seafood processing sector, as the sector has an obligation to providing customers with trusted, sustainable, legally sourced product.²³ A coalition of 17 supermarkets in the UK²⁴ called for stronger monitoring measures in the new Fisheries Bill to ensure that there is more visibility of what is happening on UK vessels. In Germany, 11 retailers and seafood processors have also called for the introduction of REM.²⁵ The interest of supermarkets and processors also indicates that vessels with REM could add market value to their catch.

Building on the positive results of pilot studies, many jurisdictions have moved towards implementation of fully operational REM-based monitoring. In 2006, Canada began using REM for 100 per cent monitoring of the Pacific fixed gear and midwater trawl fleets, approximately 300 vessels.²⁶ In 2014, the US implemented policies to guide REM and electronic reporting, paving the way for technology adoption in several fisheries, including the pelagic sector, the west coast, Alaska, New England and the Pacific Islands.²⁷ All areas combined represent over 250 vessels carrying REM systems. Around the same time, Australia adopted REM in about a third of the fleet operating in national waters (3 - 200 nautical miles). New Zealand and Chile have legislated 100 per cent REM coverage and are

¹⁹ <https://marinedevelopments.blog.gov.uk/2017/03/20/fully-documented-fishery-discards-quota-fish-cctv/>

²⁰ <https://www.nature.org/magazine/archives/counting-on-fish.xml?src=social.nature.facebook.main>

²¹ [https://www.wwf.org.uk/sites/default/files/2017-](https://www.wwf.org.uk/sites/default/files/2017-10/Remote%20Electronic%20Monitoring%20in%20UK%20Fisheries%20Management_WWF.pdf)

[10/Remote%20Electronic%20Monitoring%20in%20UK%20Fisheries%20Management_WWF.pdf](https://www.wwf.org.uk/sites/default/files/2017-10/Remote%20Electronic%20Monitoring%20in%20UK%20Fisheries%20Management_WWF.pdf)

²² <https://www.doc.govt.nz/documents/science-and-technical/dmcs9entire.pdf>

²³ Gus Pastoor, AIPCE-CEP, speaking at the EU Commission workshop on the Landing Obligation November 2017.

²⁴ <https://www.undercurrentnews.com/2018/03/20/uk-supermarkets-processors-call-for-robust-fisheries-regulation-post-brexit/>

²⁵ http://m.followfish.de/_files/DDE73244A8EFDBA261F05A234AD11A85/20180614_Erklarung_des_Handels_gegen_illegalen_Fisch_Anlandegebote.pdf?q_att=false

²⁶ Stanley, R. D., McElderry, H., Mawani, T., and Koolman, J. The advantages of an audit over a census approach to the review of video imagery in fishery monitoring. – ICES Journal of Marine Science, doi:10.1093/icesjms/fsr058.

²⁷ <http://eminformation.com/wp-content/uploads/2018/08/Current-State-of-Electronic-Monitoring-in-the-United-States.pdf>

working on program implementation. The use of REM is also being considered for high seas surface longline and purse seine fisheries for tuna, including the Spanish and French fleets.

So what's the delay in implementing REM?

- **Privacy concerns with video imagery:** Having cameras on board makes some fishers uneasy as cameras can be seen as an invasion of their privacy. However, many vessels already use cameras for safety purposes and REM cameras are generally positioned to monitor catch, not the crew or their activities. Moreover, several EU Member States already use cameras in slaughterhouses and there, the legal framework has been adapted to address privacy issues. The Control Regulation will provide such a sound legal framework for the fishing industry and protect privacy and data. There are also differing opinions from fishers on this issue:
UK Fisherman David Stevens, FV Crystal Sea: *"This (privacy argument) may well be the case in some countries, but here in the UK and in many other countries it has become standard practice to safeguard property and people using CCTV. It is used in supermarkets, banks, public transport, streets, houses, in most work spaces, road junctions, in fact almost anywhere there is a perceived need".*²² United States fisherman Cushman: *"I have nothing to hide and plenty to prove... When the science says one thing and fishermen see another, the camera keeps everyone honest."*²⁸
- **Political issue: lack of willingness to invest in technology**
Investment and political will are needed to implement REM in the whole fleet. Some places are easier than others, but it's possible everywhere in the EU, particularly because funding is available through the EMFF to cover costs.

What is the Commission proposing for the revised Control Regulation?

The European Commission has in its proposal included the introduction of risk-based REM requirements to improve the control of fishing activities at sea, in particular the control of the landing obligation (LO). It introduces the requirement of full documentation of all catches and discards (Articles 1 (11) and 1(23) of the proposal). However, the Commission's proposal needs to be further clarified and strengthened.

Recommendations

We support the Commission's proposal to introduce REM and full documentation of all catches and discards for all vessels. We however call for it to be **strengthened** to:

- Clarify that the *compulsory* requirement to use REM systems (CCTV recording systems and net sensors) will apply to EU fleet segments identified by EFCA as being of medium, high and very high risk of non-compliance with the landing obligation;
- Increase monitoring capacity and powers of inspectors at-sea to quantify the amount of discards and gather clear evidence on compliance, or the lack thereof, with the landing obligation, and,
- Close the loophole of exempting catches under 50kg not needing to be recorded. This exemption not only seriously impacts the scientific information available for stock assessments and the objective of achieving fully documented fisheries management as foreseen in Article 15 (1) of the Common Fisheries Policy, it also significantly reduces the controllability of the adherence to the LO at sea.

²⁸ <https://www.nature.org/magazine/archives/counting-on-fish.xml?src=social.nature.facebook.main>