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# OECD High Seas Task Force: Existing and Emerging Sensing Techniques for Fisheries Monitoring, Control and Surveillance

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## Executive Summary

This report has been produced at the request of the 'The High Seas Task Force', a ministerially led task force on illegal, unreported and unregulated (IUU) fishing. The task force is attached to the OECD, and information on its members and objectives can be found on their website at [www.high-seas.org](http://www.high-seas.org).

The aim of this study is to provide an overview of sensor technologies and deployment options that may aid in the detection and location of illegal fishing on the high seas. Used in conjunction with existing policing techniques, sensor technology may increase IUU capture rates, and hence help to deter such activities.

The report has been written with the view to provide the reader with a brief overview of relevant sensor technologies that could be adopted to aid in fishing vessel detection at sea. It has provided an assessment of commercial sensor technologies and deployment options that can be used to detect and locate fishing activities on the high seas. This has included sensing techniques such as; visible Near/Infrared imaging systems, thermal imaging systems, radar and Sonar/Sonar buoy networks.

Such sensors need to be mounted on appropriate platforms, which has a significant effect on the range of detection. The platforms discussed included: Land based (at coast), satellite based, unmanned air vehicle (UAV), manned aircraft, balloon, patrol vessel (hand held), sea bed sensors and metrology buoys.

From this wide selection of sensors/platforms it is considered that four sensor / platform options provide the most capability in intelligence gathering of possible IUU fishing activities. These include; airborne surveillance (manned or unmanned aircraft), satellite (synthetic aperture radar and visual/thermal) and over the horizon radar (OTHR).

For each of these four technology / platform options a trade-off summary table has been provided. The table provides information on Rough order of magnitude (ROM) cost, performance, logistics support, weather susceptibility, ease of use and the type of data display.

Given that cost is one of the key drivers for adoption of any new technology, if a dedicated aircraft or OTHR is not already installed and access available in a region of interest on a 'pay as you use' basis for fisheries protection, it is likely, in the first instance, that for cost-efficiency the acquisition of appropriate satellite imagery offers substantial benefit to high seas IUU policing.

Co-ordination of the information gathered by such techniques is critical to its successful usage. Therefore, an official body must be prepared to take ownership of the information that has been obtained, and either is able to conduct enforcement or pass the information to a party that can. In this way the maximum benefit will be achieved in using additional surveillance techniques to address IUU fishing activities on the high seas.

Ultimately the aim for high sea regions should be to use surveillance technology and other intelligence sources to generate a full maritime picture, which would include positions of legal vessels located via vessel monitoring system (VMS), and other detections of fishing vessels provided either by surveillance technology or other intelligence routes. Such an aim is very achievable given current computing, display and global communications capabilities and could be available to a wide variety of interested parties through a web-enabled approach.