

Cost efficiency analysis

One of the objectives of the CompMon-action has been to lower the Marpol Annex VI enforcement costs of individual member state authorities. This cost efficiency analysis compares the costs of onboard Sulphur inspections and cost of remote monitoring. The information is based on actual costs in participating countries (not only beneficiaries) in the action period 2014-2016.

Onboard inspections:

The onboard Sulphur inspection is often made in conjunction with a Port State Control (PSC) inspection or other environmental inspection (MARPOL Annex I-VI). Therefore, determining the cost of a single Sulphur inspection is not always simple. The costs of inspection can be divided to two categories: labor & travel and sampling costs.

Labor & travel costs include:

- time spent for selecting the ship for inspection (targeting)
- travel time to the ship and back
- time spent for the inspection including sampling
- administration time belonging to each sampling, analyzing and reporting
- travel costs

Sampling costs include:

- sampling bottles and related equipment
- freight cost of delivering samples to laboratory
- laboratory fees

During an onboard inspection, a bunker sample is not always taken. If there is enough supporting evidence of ship complying with the Sulphur regulations, it is not necessary to take a sample. Such evidence can be e.g. ship trading solely inside SECA-area and not having noncompliant bunker onboard at all or there are third party bunker analysis documents available indicating compliance. It is up to the inspector's professional judgement to decide on need of sampling.

For sampling there are two possibilities:

1. Onboard bunker sample is sent to laboratory for analysis
2. The sample is analyzed onboard with a quick scanning device (portable XRF-scanner).

Currently only laboratory analysis result is the only result that can be used in court as evidence. The result gained with a quick XRF-scanning device gives the inspector a very good indication of compliance and it is used to estimate the need of further actions.



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Compliance Monitoring for Marpol Annex VI

Remote monitoring:

Remote monitoring can be made from fixed or mobile platforms. Fixed platforms consist of measurement equipment stations along shipping lanes. Fixed installations can be installed e.g. in lighthouses, bridges, islands and port entrances. Same type of equipment can also be installed in mobile platforms such as airplanes, helicopters, boats and Remotely Piloted Aircraft Systems (RPAS). RPAS were not used as a platform in the CompMon-project.

Cost of a single remote measurement is gained by dividing total costs with the number of valid measurements. The costs consist of the measurement equipment, calibration and maintenance, software, data analysis and mobile platform operating costs (e.g. aircraft certification, fuel, other costs of flight hour).

Statistics:

During the CompMon-action information about the costs of sulphur inspections and remote measurements was collected from participating member states. Cost efficiency is evaluated by comparing the average cost of one sulphur inspection to an average cost of remote measurement made from a fixed installation or from mobile.

The average time for conducting one onboard sulphur inspection was 3,7h (time needed for travel and administrative work included). The average cost of labor and travel for one onboard sulphur inspection was 287€. If a bunker sample is taken and sent for laboratory analysis, the cost of sampling is 94€ including analysis, accessories and delivery costs. Total average cost of an onboard inspection including laboratory analysis is 381€. If the sample is analyzed onboard with an XRF-scanner instead of sending the sample to laboratory, the cost is 306€, when the price (24-35 000€) of the scanner is not taken into account.

The average costs of remote sensing observations in the ComMon-action were:

Fixed platforms: 40€

Mobile platforms: (airborne, boat): 215€, average for airborne only 263€.

Comparison:

In the action, there were ~37000 observations from fixed platforms and ~4100 observations from mobile platforms. With the average prices of remote measurements, the total cost would be 2,4M€. With the same amount of observations, the costs of onboard inspections including a laboratory sample would be almost 15,7M€.



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