

July 27, 2022

A Global Overview of Fuel Quality Monitoring Systems (FQMS)

Stratas Advisors

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More than 150 countries have set fuel specifications according to Stratas Advisors' database. However, not all of them have or enforce fuel quality monitoring legislation, or put fuel quality monitoring systems (FQMS) in place. This is because the most important implementation building blocks for any fuel quality strategy are sampling, monitoring and enforcement. Fuel specifications or standards, however strict they are, do not always guarantee good quality fuel at the filling station.

The foundation for good quality and on-spec fuels at the pump is based on two key elements:

- National standards; and
- The ability to ensure and control fuel quality at the point of distribution – the retail station.

The latter can only be achieved through implementation and commitment to an effective fuel quality monitoring program. Without the effective monitoring of fuel quality at the pump, there is no basis for a national standard for better fuel specifications. For example where the quality of marketed fuel meets very stringent requirements in the EU, Japan and the U.S., the result was achieved through the variety of factors implemented at the national and/or state levels. Experience in these jurisdictions has shown this to be the potential weak link in many fuel programs and an area to be strengthened.

Regional and Country Comparisons

The Appendix of the full report shows fuel quality monitoring programs and enforcement schemes are mandatory in a total of 82 countries and territories, and voluntary in another 17 countries and territories (see map below). Most countries and regions agree that there are two distinct parts to a fuel quality monitoring program:

- Monitoring fuel quality to ensure that fuel sold at the pump is in compliance with the specifications set under national and/or regional fuel quality legislation. This includes industry reporting and sampling requirements; and
- Policing and enforcing fuel quality requirements to ensure compliance, and sanctioning those not in compliance.

However, depending on various factors such as a country's economic situation, culture and traditions, the legal obligation is

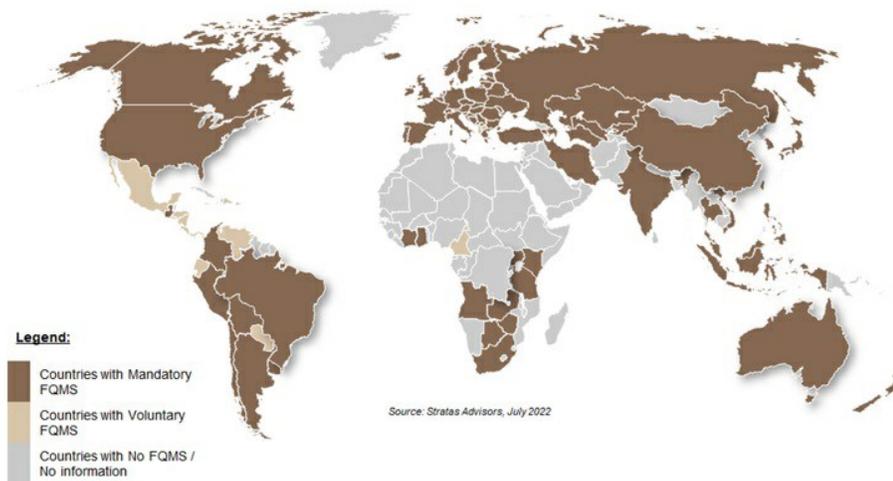
either put on the industry to report fuel quality or on the legislature as in the case of most countries.

Comparing all of the mandatory fuel quality monitoring programs, it appears that 31 countries and territories have common compliance and enforcement regimes, with the exception that the U.S. enforces FQMS also at the state level. All of them undertake quality testing across all or several areas of the fuel supply chain as well as 11 other countries in the EU, bringing the total number to 42. On the other hand, 17 countries in the EU, as well as 17 other countries and territories undertake testing only at the retail stations. Furthermore, six countries were found to undertake testing only at the refineries, depots or import terminals, but not at the retail stations. Thus in general, most countries with mandatory fuel quality monitoring legislation ensure fuel quality compliance at the pump.

Countries with Mandatory or Voluntary FQMS

Countries with Mandatory or Voluntary FQMS

FQMS lacking in Africa, Middle East and parts of Asia Pacific



Source: *Stratas Advisors, July 2022*

The full report updates Insights, [April 16, 2020](#), and provides the objective of FQMS, and summarizes and compares FQMS of various legislations and countries including the entities engaged, scale of these systems, financial resources etc. It also contains case studies describing the mandatory FQM legislations currently in place in developed regions and how they successfully achieve good quality and on-spec fuels, and also how it has been challenging for developing regions to ensure success of their FQMS. The case studies include Italy, New Zealand, Brazil and Cote d'Ivoire.

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