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A Global Overview and Outlook of Off-Road Diesel Quality, Vehicle Emissions and Fuel Efficiency

Stratas Advisors

This excerpt is from a report that is available to subscribers of [Stratas Advisors' Global Fuel Specifications service](#).

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Diesel remains an important fuel for the off-road sector including construction, agricultural, mining, heating, power generation, maritime, locomotives etc., especially in the developing regions. Similarly with on-road fuels, harmonization of off-road diesel specifications and vehicle emission standards has yet to be achieved. This is because countries are at different stages of economic and socio-political development especially in Asia Pacific which is currently the highest user of off-road diesel. There are a number of countries that already use a single diesel grade for both their on-road and off-road sectors, while others such as China aim to eventually harmonize specifications of off-road diesel with on-road diesel to avoid possible adulteration and distribution issues.

However, before harmonization can be achieved, countries are currently using various methods to avoid supply of illegal and off-spec products:

- Use of dyes, markers and tax incentives to differentiate multiple diesel grades by color;
- Encourage supply of better off-road diesel quality; or
- Simply put into place a fuel quality monitoring legislation and system.

The full report examines key developments in off-road diesel quality and vehicle emissions and primarily focuses on issues regarding sulfur and FAME because of the legislative and regulatory developments occurring globally for these two parameters. Of the two, sulfur reduction is the more dominant issue being considered by governments and stakeholders globally.

Changes Since Last Report

Since the last report, Stratas Advisors found new specifications or information for off-road diesel grades in Africa and Asia Pacific. In Africa, specifications were found for distillate diesel oil (DDO) in Cote d'Ivoire and Mali, which set a maximum sulfur limit of 15,000 ppm for both countries. In Asia Pacific, specifications were found for light diesel oil (LDO) in

Bangladesh also with a maximum sulfur limit of 15,000 ppm.

Looking at the sulfur outlook for off-road diesel, China and Kazakhstan reduced the sulfur limit of off-road diesel to 10 ppm and 50/10 ppm respectively in January 2018 since the last report. Stratas Advisors also learned that in 2019, China expects to phase out the off-road diesel specs as specified in GB 252-2015. Instead, on-road diesel specs specified in GB 19147-2016 are expected to be used by the off-road sector.

As for biodiesel, countries with specifications for biodiesel usage in the off-road sector were added for India with B6-B20 for non-automotive applications, the Philippines with biodiesel blending limits of 1.7-2.2 vol% in industrial diesel oil (IDO) and Austria with a minimum blending limit of 3 vol% for domestic extra light fuel oil EL with biogenic components.

No new emission standards were implemented for off-road diesel vehicles and non road mobile machinery (NRMM) since the last report. However, Stratas Advisors learned that India will move to Bharat Stage IV for nonroad diesel engines used in construction and agricultural equipment in 2020.

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