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# A Global Overview and Outlook of On-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***

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The full report examines key developments in on-road diesel quality and vehicle emissions, including Stratas Advisors' outlook for changes in diesel fuel quality and emission regulations. The report primarily focuses on issues surrounding sulfur, vehicle emissions and fuel efficiency. Although sulfur reduction remains the most dominant on-road diesel quality issue being addressed by governments and stakeholders globally, other properties such as cetane, density, lubricity, polyaromatics (PAH) and total aromatics are important in determining diesel quality.

Developing countries are in the process of lowering sulfur content in on-road diesel which is one of the pre-conditions for sales of cleaner diesel vehicles. Current maximum on-road diesel sulfur limits set worldwide still vary widely from 10 ppm to 12,000 ppm. However, the outlook is clear for sulfur reduction to 50 ppm, 15 ppm or 10 ppm within the next five years. Several developing countries are still struggling with funding and modernization of their local refineries resulting in delays of implementing lower sulfur limits for diesel fuel, which questions the initial timelines set for sulfur reduction. This is further discussed in two case studies on Egypt and Mexico in this report, while another case study discusses Russia facing issues with the circulation of substandard diesel fuel, or surrogates.

In analyzing the trends in local, regional and global on-road diesel quality, Stratas Advisors compared the world's top 10 on-road diesel markets (see table below). Spain replaced Saudi Arabia from last year's report as the market with the 10th highest on-road diesel demand, while Japan overtook Spain and took the 9th place.

## Top 10 On-Road Diesel Markets and Their Biodiesel Use

Rank No.	Country	2017 Demand* (thousand b/d)	Biodiesel Blending Limit	Average Biodiesel Blend Level	HVO Use (Y/N)

1	U.S.	2,373	B5	B4	Yes
2	China	2,043	B1	B0	No
3	India	1,116	B7	B0	No
4	Brazil	679	B11	B11	No
5	Germany	672	B7	B4	Yes
6	France	650	B7	B6	Yes
7	U.K.	508	B7	B3	No
8	Italy	437	B7	B4	Yes
9	Japan	433	0.1 wt%	B0	No
10	Spain	431	B7	B6	Yes

Note: \* Volumes include biodiesel (as FAME, HVO, etc.) and GTL diesel where applicable.

Source: *Stratas Advisors, September 2019*

The full report also summarizes recent developments in emission standards and fuel efficiency for vehicles running on diesel, i.e., passenger cars (PC), light-duty vehicles (LDV) and heavy-duty vehicles (HDV). It is common knowledge that maximum benefits will be achieved when fuel quality requirements are implemented with stringent vehicle emissions regulations (which enable advanced emission-control technologies and would, in turn, help countries or regions achieve their air quality targets). This report shows governments in some countries have taken this systems approach, particularly with sulfur reduction. Others have not — or have not been able to do so in a coordinated time line — hampered by factors such as refinery-modernization costs, as noted in the companion report on gasoline, or high costs of importing diesel fuel of better quality.

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