

April 28, 2020

A Global Overview and Outlook of Gasoline Quality, Vehicle Emissions and Fuel Efficiency

Stratas Advisors

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Stratas Advisors observes that sulfur reduction and increasing octane continue to be the two most dominant gasoline fuel quality issues being considered by governments and stakeholders globally. The full report examines key developments in gasoline quality and Stratas Advisors' outlook for future specification changes, and updates a previous report (see Insights, [April 29, 2019](#)). Sulfur is discussed in two case studies for Morocco and Turkmenistan, while octane is reviewed in two case studies for Mexico and Pakistan.

In analyzing the trends occurring in local, regional and global gasoline fuel quality, Stratas Advisors selected the world's top 10 gasoline markets for comparative analysis. The countries, by gasoline market size, are shown in the table below.

Top Gasoline Markets

Rank No.	Country	2017 Gasoline Demand* (thousand b/d)
1	U.S.	8,147
2	China	2,811
3	Japan	866
4	Mexico	789
5	Russia	775
6	Canada	735
7	Indonesia	610
8	Saudi Arabia	597

9	India	569
10	Brazil	555

Note: *Volumes include ethanol and other blending components such as ethers.

Source: *Stratas Advisors, December 2019*

The full report also summarizes recent developments in vehicle emissions and provides a technology outlook for vehicles running on gasoline, i.e., motorcycles, passenger cars and other light-duty vehicles (LDVs). It is now common knowledge that maximum benefits will be achieved when fuel quality requirements are implemented together with stringent vehicle emissions requirements, which would in turn help countries or regions achieve their air quality targets and enable advanced emission control technologies on vehicles. The full report shows that governments in some countries have taken this systems approach, particularly when it comes to sulfur reduction, but others either have not or have not been able to do so in a coordinated time line, hampered by such factors as refinery modernization costs.

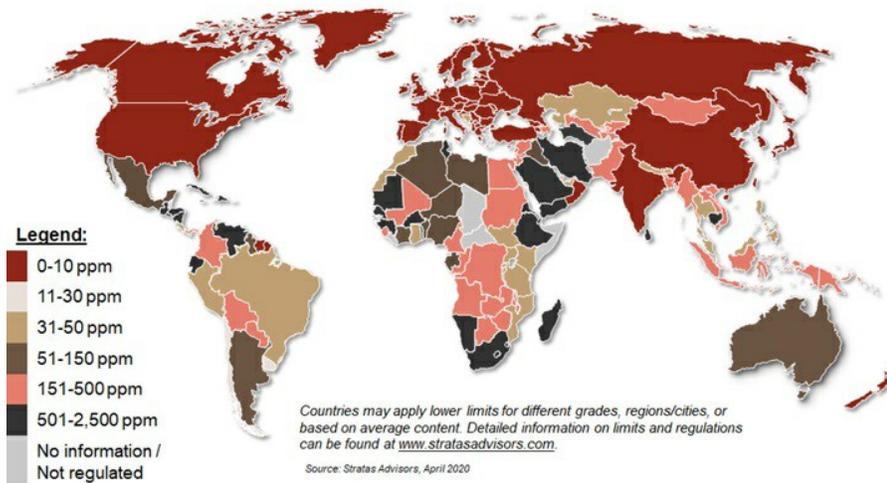
Sulfur

Current maximum gasoline sulfur limits worldwide still vary widely from 10 ppm to 2,500 ppm (see map below). Gasoline in developed regions currently have low sulfur levels (10 ppm max in Europe, Japan and the U.S.) while the developing world is struggling with implementing sulfur reductions to reach similar levels.

Maximum Gasoline Sulfur Limits, 2020

Maximum Sulfur Limits in Gasoline, 2020

India implemented 10 ppm since April



Source: *Stratas Advisors, April 2020*

Case Study: Turkmenistan

Generally in Turkmenistan, four gasoline grades are available at petrol stations including A-80 (RON 80), A-92 (RON 92), EKO-93 (RON 93 gasoline of synthetic origin) and A-95 (RON 95), although A-80 accounts for the majority of the gasoline pool. However, since the end of June 2019, independent correspondents from Turkmenistan had been regularly reporting shortages of gasoline fuel in the country.

According to available information, there had been almost no gasoline available in regional petrol stations, while diesel fuel had disappeared entirely and the roads had literally remained empty. In some of the provinces, only A-80 was available in limited quantities of around 5 liters for each car. Furthermore, in petrol stations where A-92 and A-95 were available, though mostly in the capital of Ashgabat, these were released only for state-owned vehicles and were not sold to private car owners. In some cases, A-80 has been sold under the guise of A-92. According to Radio Azatlyk, an independent correspondent, the situation with a shortage of gasoline had already been arising regularly since 2017 and the last available reports on the shortages were published in November 2019.

The industry has been planning the improvement of overall fuel quality in the country for the past years. There has been indications that the maximum sulfur limit in gasoline shall shift to 10 ppm in 2020. Given the facts gathered in this analysis, Stratas Advisors does not expect fundamental improvements in gasoline quality to take place in the country within the next 2-3 years.

More information on the case study for Turkmenistan is available in the full report.

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