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## Four Countries Move Up in Top 100 Ranking on Diesel Sulfur Limits

Stratas Advisors

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Stratas Advisors' annual Top 100 ranking again confirms the continued worldwide movement toward lower sulfur content in diesel and cites a number of countries that have positioned themselves through policy initiatives to make advances in this area in the near future. However, it is worthwhile to note that aspects other than sulfur reduction — among them cetane, lubricity, polyaromatics, density and cold flow — are important in determining diesel quality.

The last ranking was carried out in February 2022 (see Insights, [Feb. 24, 2022](#)). EU countries, required to implement 100% market penetration of sulfur-free (less than 10 ppm) fuels since January 2009, continue to dominate the Top 40. Sweden, which led the way with full market penetration in 1990, continues to reign at No. 1.

Four countries moved up or were newly added to the 2023 ranking, compared to the three countries in the 2022 ranking.

Led by Georgia which ranks at 62nd place, the four countries include:

- Bosnia & Herzegovina
- Brunei
- Georgia
- Iran

Many of the other countries that dropped in the ranking (e.g. Brazil, which in fact dropped out of the Top 100 in 2022) did not alter their diesel fuel specifications but were simply passed by others that implemented stricter sulfur limits or supplied lower sulfur fuels ahead of legislation. As a result, Ecuador and South Africa dropped out of the 2023 ranking and were replaced by Brunei and Iran as they enter (or re-enter) the Top 100 for the first time. This is due to reductions in sulfur limits that have been implemented over the past year, or phase out of higher sulfur diesel on the domestic market. Iran jumped the farthest and also moved up the highest with 73 places to enter the ranking at 99th place, followed by Brunei with 63 places to re-enter at 64th place and Bosnia & Herzegovina with 22 places to rank at 75th place.

Mongolia sits at the 100th place with a maximum sulfur limit of 350 ppm in effect since October 2018 along with specifications in place for 50 ppm and 10 ppm sulfur diesel, thus displacing other countries out of the Top 100 which set higher sulfur limits. For the first time in this year's ranking, the country sitting at the 100th place has a new sulfur limit of 350

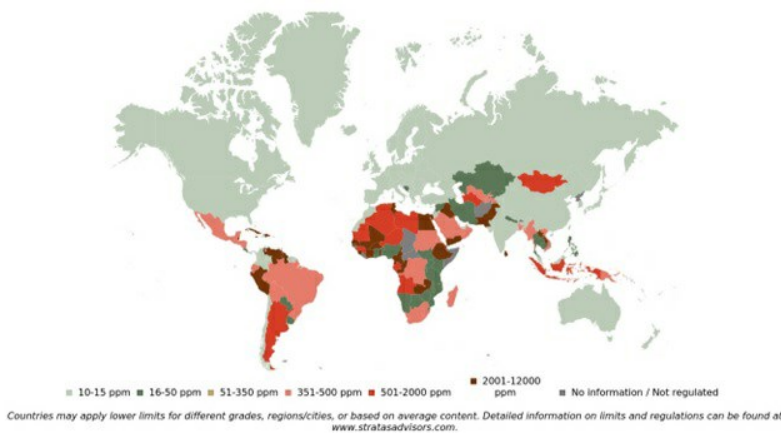
ppm, as compared to 500 ppm in previous rankings from 2015 to 2022. As there was no Top 100 diesel sulfur ranking in 2014, the 2013 ranking last saw Ukraine at the 100th place with a sulfur limit of 2,000 ppm at the time.

Even though cities and provinces are not officially ranked, it is worthwhile to note that select cities and provinces of Brazil and Peru required diesel fuel with lower sulfur of 50 ppm or below ahead of the rest of the country. For example, Brazil required 10 ppm sulfur diesel in select metropolitan regions since January 2013 while the rest of Brazil is currently required to meet a maximum sulfur limit of 500 ppm. However, Brazil and Peru are currently out of the Top 100 with national sulfur limits of max 500 ppm and above.

To establish this ranking, four primary criteria were used in the following order of importance:

- Maximum allowable limits in national standards and legislation;
- Year of implementation for sulfur limits as required by legislation and year of voluntary implementation, if any;
- Limits in local or regional standards (such as specifications for cities or states); and
- Market levels are also used wherever available to more accurately rank countries sharing the same legislated limit.

### Maximum On-Road Diesel Sulfur Limits (2023)



Source: Stratas Advisors, February 2023

### 2023 Top 100 Diesel Sulfur Ranking

Rank	Country	Change
1	Sweden	+0
2	Germany	+0
3	Japan	+0
4	Finland	+0
5	Denmark	+0
	Hungary	+0
	Luxembourg	+0

Rank	Country	Change
	Netherlands	+0
9	Portugal	+0
10	Australia	+0
	Austria	+0
	Belgium	+0
	Bulgaria	+0
	Cyprus	+0
	Czech Republic	+0
	Estonia	+0
	France	+0
	Greece	+0
	Iceland	+0
	Ireland	+0
	Israel	+0
	Italy	+0
	Latvia	+0
	Liechtenstein	+0
	Lithuania	+0
	Malta	+0
	New Zealand	+0
	Norway	+0
	Poland	+0
	Romania	+0
	Slovakia	+0
	Slovenia	+0
	South Korea	+0
	Spain	+0
	Switzerland	+0

Rank	Country	Change
	United Kingdom	+0
	Turkey	+0
	North Macedonia	+0
<b>39</b>	Hong Kong	+0
<b>40</b>	Armenia	+0
<b>41</b>	Albania	+0
	Croatia	+0
	Montenegro	+0
	Taiwan	+0
	Kosovo	+0
<b>46</b>	New Caledonia	+0
<b>#</b>	Brazil, Select Cities	
<b>47</b>	Singapore	+0
	Serbia	+0
<b>49</b>	United Arab Emirates	+0
<b>50</b>	Belarus	+0
	Suriname	+0
<b>52</b>	Russia	+0
	Morocco	+0
	Lebanon	+0
<b>55</b>	Macau	+0
<b>56</b>	China	+0
	Mayotte	+0
<b>57</b>	Fiji	+2
	Moldova	+2
<b>60</b>	India	+1
<b>61</b>	Malaysia	+1
<b>62</b>	Georgia	+16

Rank	Country	Change
63	Ukraine	-5
64	Bhutan*	-1
	Brunei	+63
66	Canada	-2
67	United States	-2
68	Guam	-2
69	Chile	-2
70	Panama*	-2
71	Colombia	+0
72	Bermuda*	-3
	Curacao*	-3
74	Thailand	-2
75	Uruguay	-2
	Bosnia & Herzegovina	+22
77	Kenya	-3
	Paraguay	-3
79	Philippines	-3
80	Kazakhstan	-3
81	Nepal	-2
82	Cambodia	-2
	Namibia	-2
84	Syria*	-2
	French Polynesia	-2
86	Costa Rica	-2
87	Mauritius	-2
#	Peru, Select Cities	
88	Rwanda	-2
	Tanzania	-2

Rank	Country	Change
	Uganda	-2
91	Malawi	-2
92	Nigeria	-2
	Ghana	-2
	Mozambique	-2
95	Zimbabwe	-2
	Gambia*	-2
97	Benin	-2
98	Botswana	-2
99	Iran	+73
100	Mongolia	-2

Notes:

# Not actually included in ranking; highlighted for significant achievement.

\* Best ranking based on available information.

Source: *Stratas Advisors, February 2023*

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