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## Fuel Quality and Emission Standard Developments in Africa

Anas Abdoun

Africa Clean Mobility Week 2018

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Nairobi, UN Environment

UPSTREAM | MIDSTREAM | DOWNSTREAM | FUEL & TRANSPORT

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# Agenda

Global Overview

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Africa

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Key Takeaways

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Q&A

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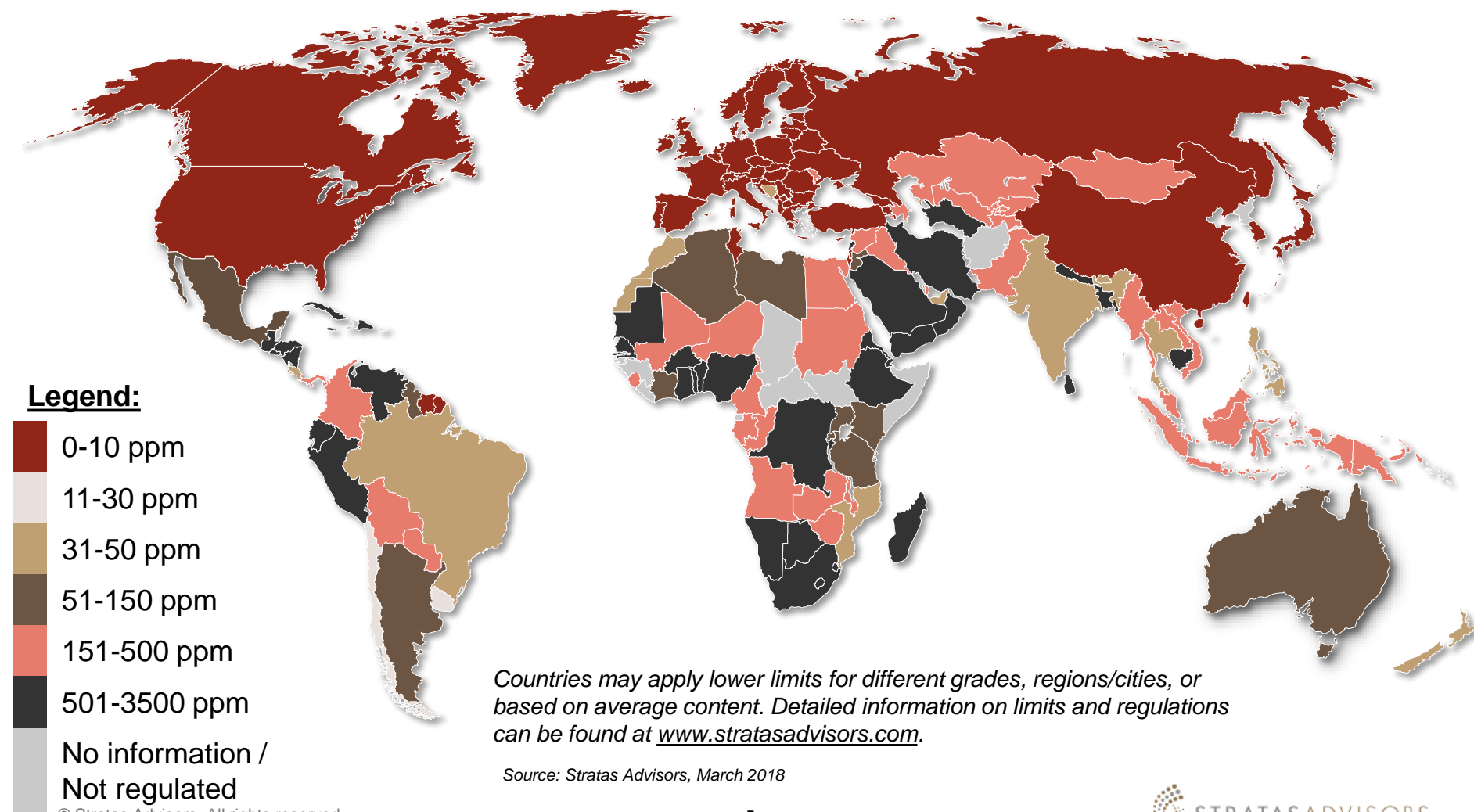


# Global Overview

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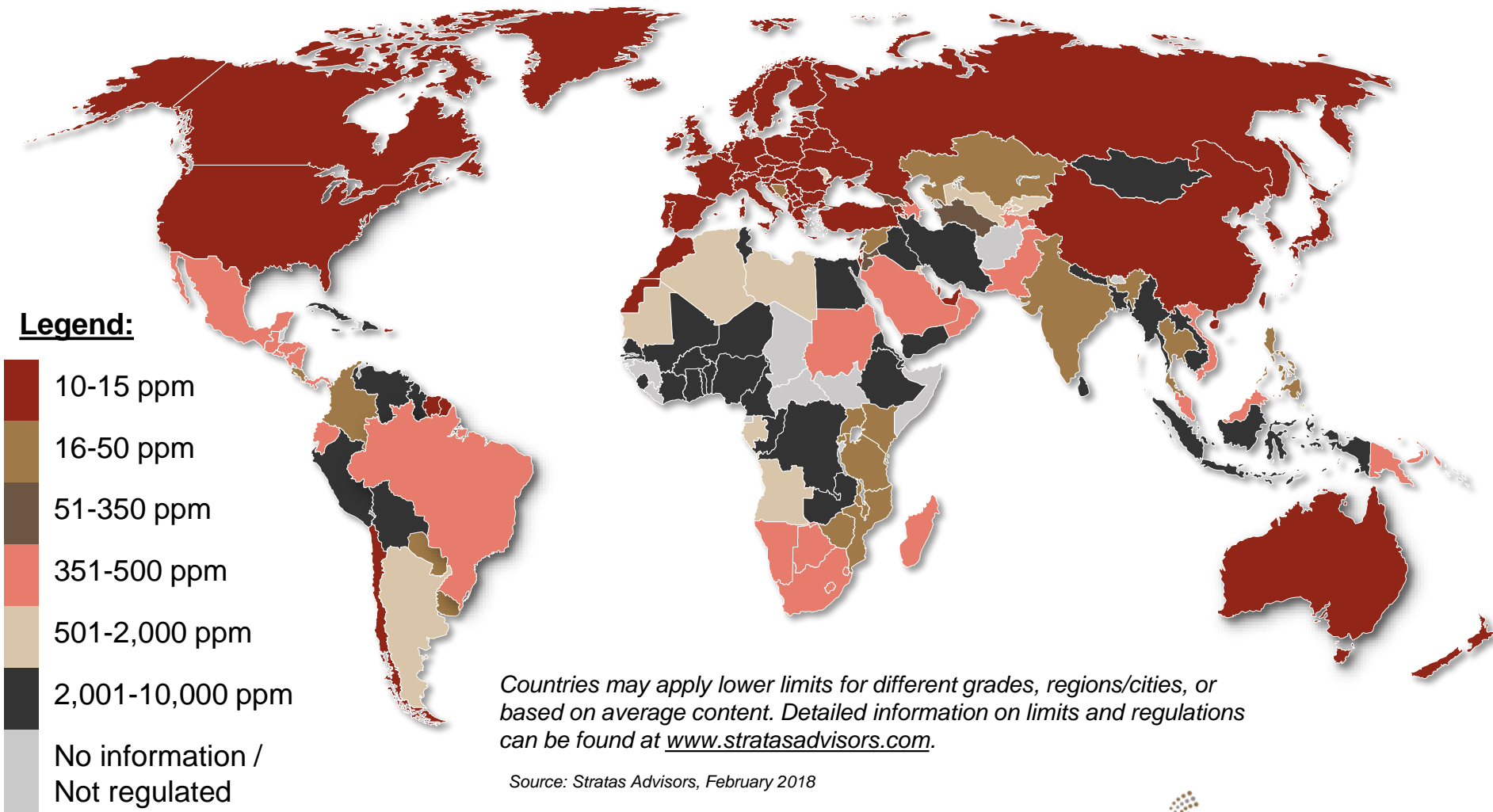
# Maximum Sulfur Limits in Gasoline, 2018

Ukraine required 10 ppm since January 2018



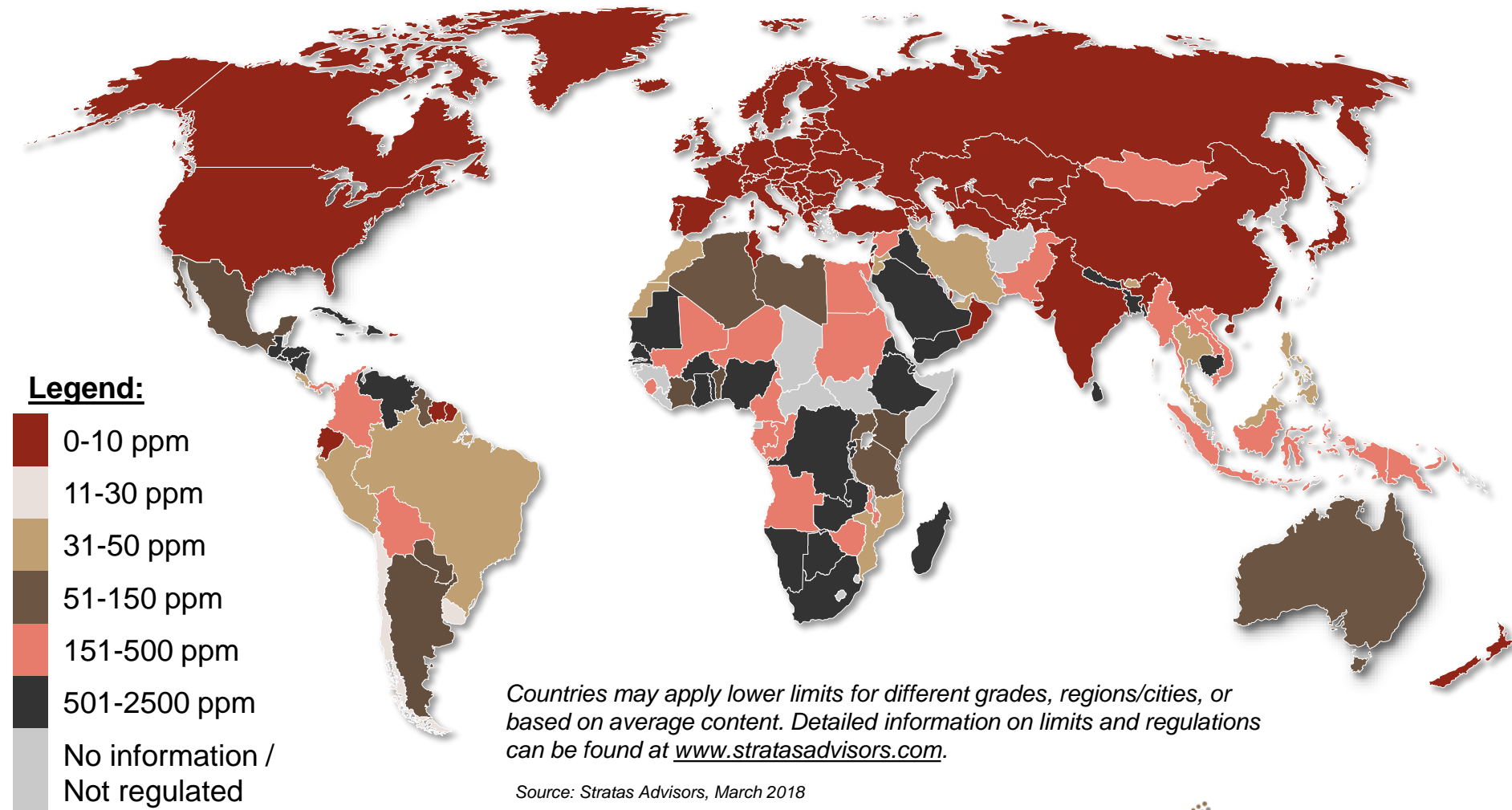
# Maximum Sulfur Limits in On-Road Diesel, 2018

Ukraine required 10 ppm since January 2018



# Maximum Sulfur Limits in Gasoline, 2020

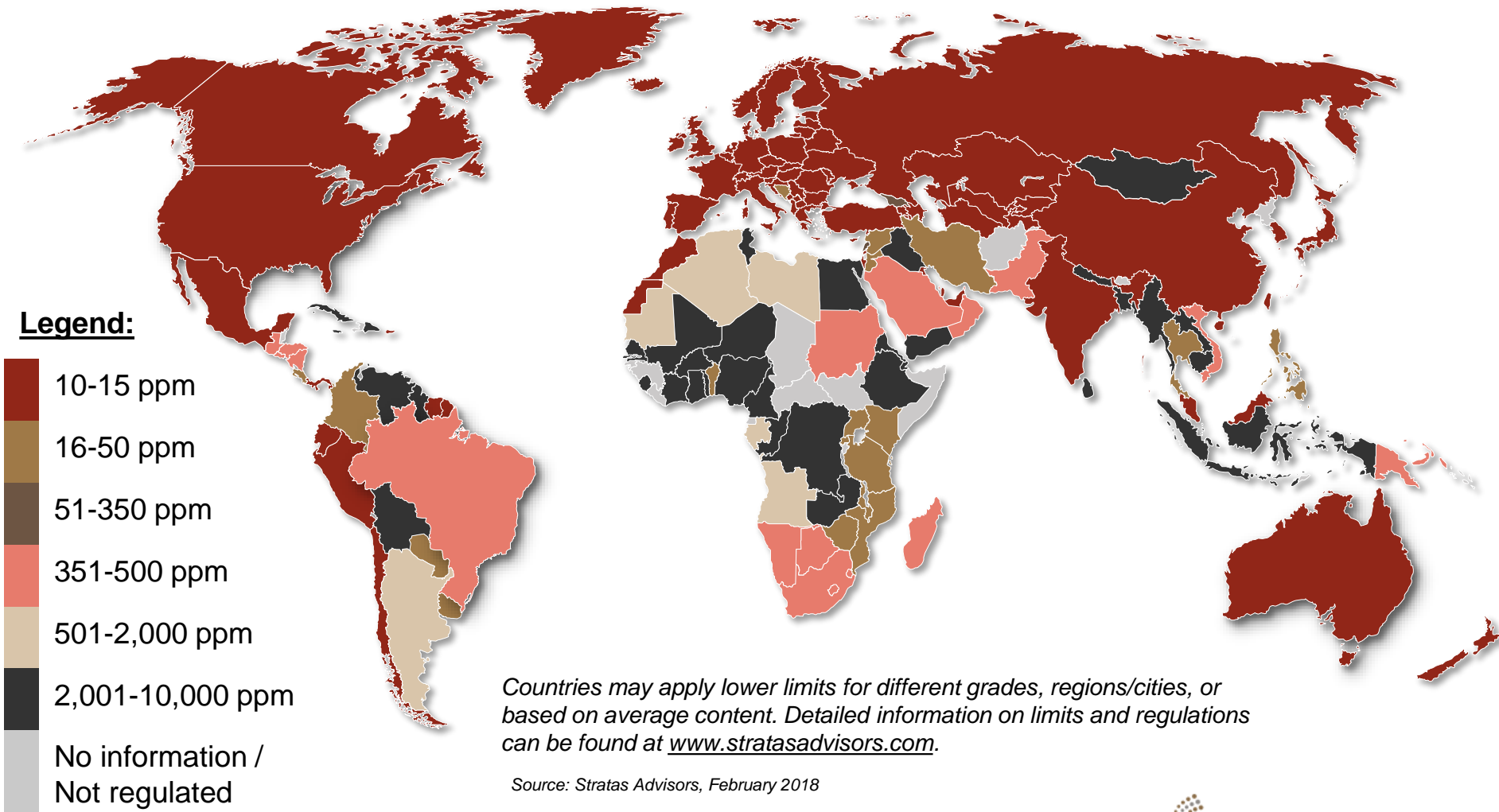
India and New Zealand to require 10 ppm by this time





# Maximum Sulfur Limits in On-Road Diesel, 2020

India and Malaysia to require 10 ppm by this time

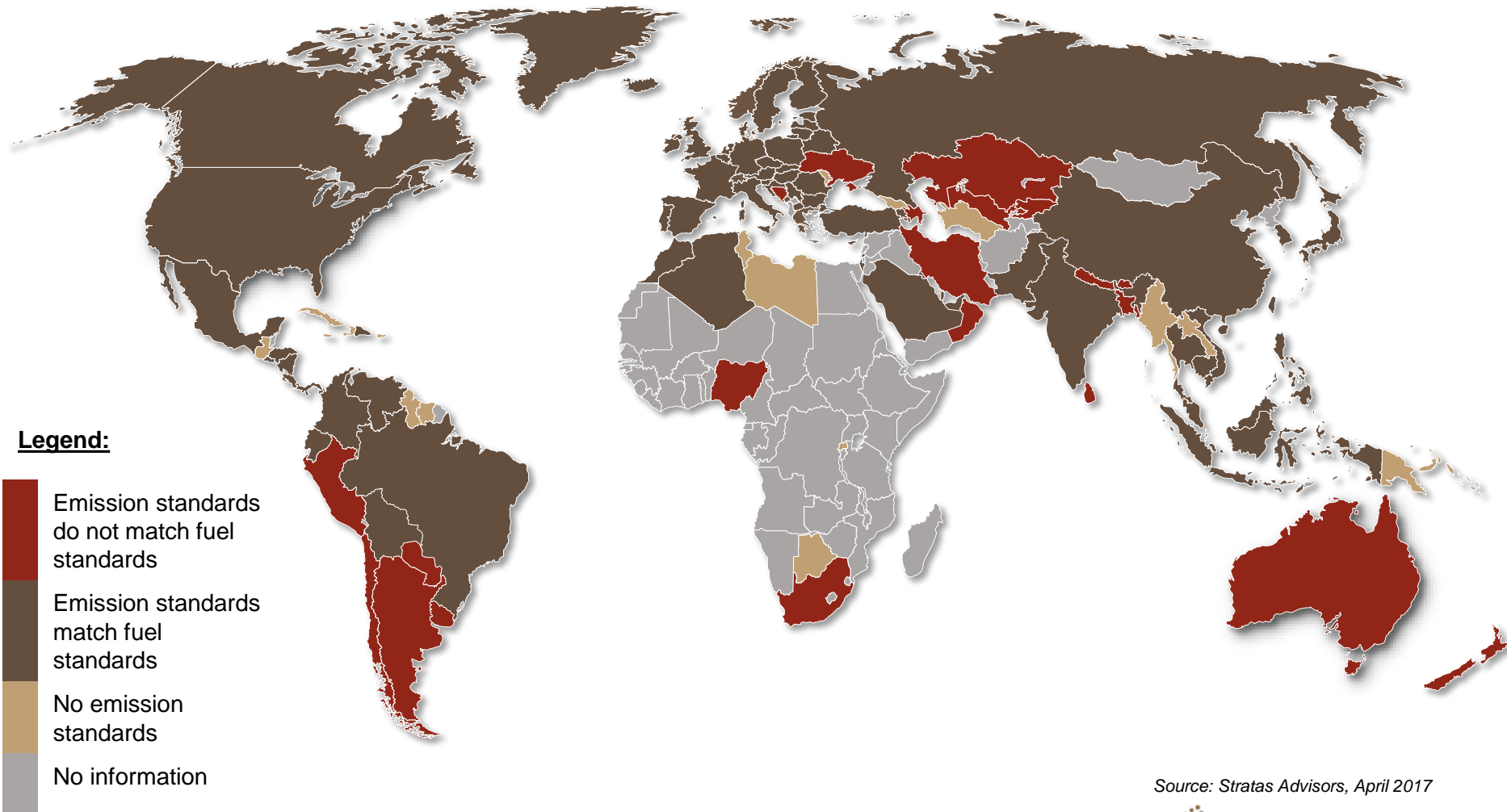


Source: Stratas Advisors, February 2018



# Gap between Current Vehicle Emission Standards and Gasoline Quality

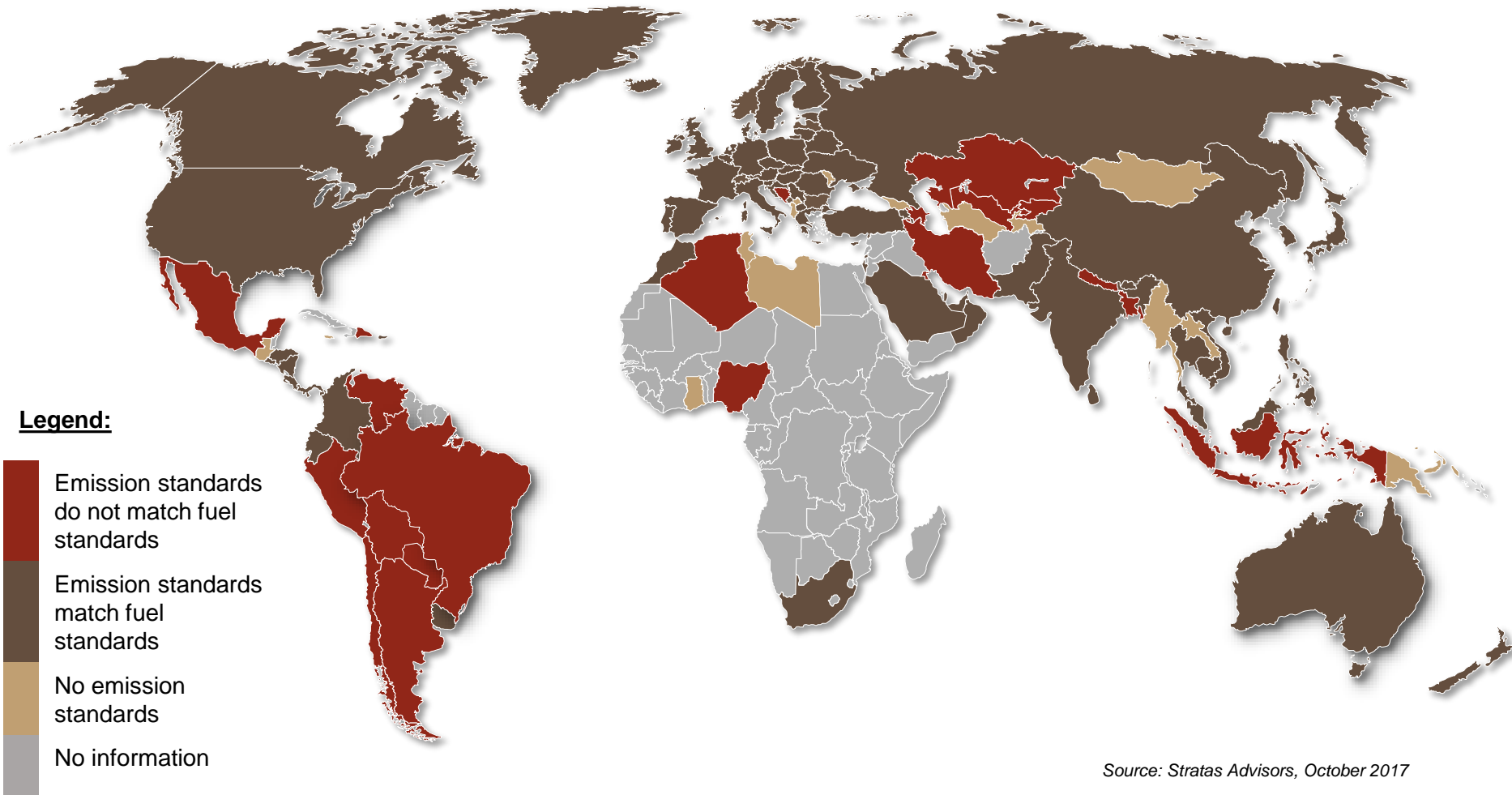
Gaps in Australia, South Africa and parts of the CIS, Middle East and Latin America



Source: Stratas Advisors, April 2017

# Gap between Current Vehicle Emission Standards and On-Road Diesel Quality

Gaps in Latin America and parts of Asia, CIS and Middle East



Source: Stratas Advisors, October 2017

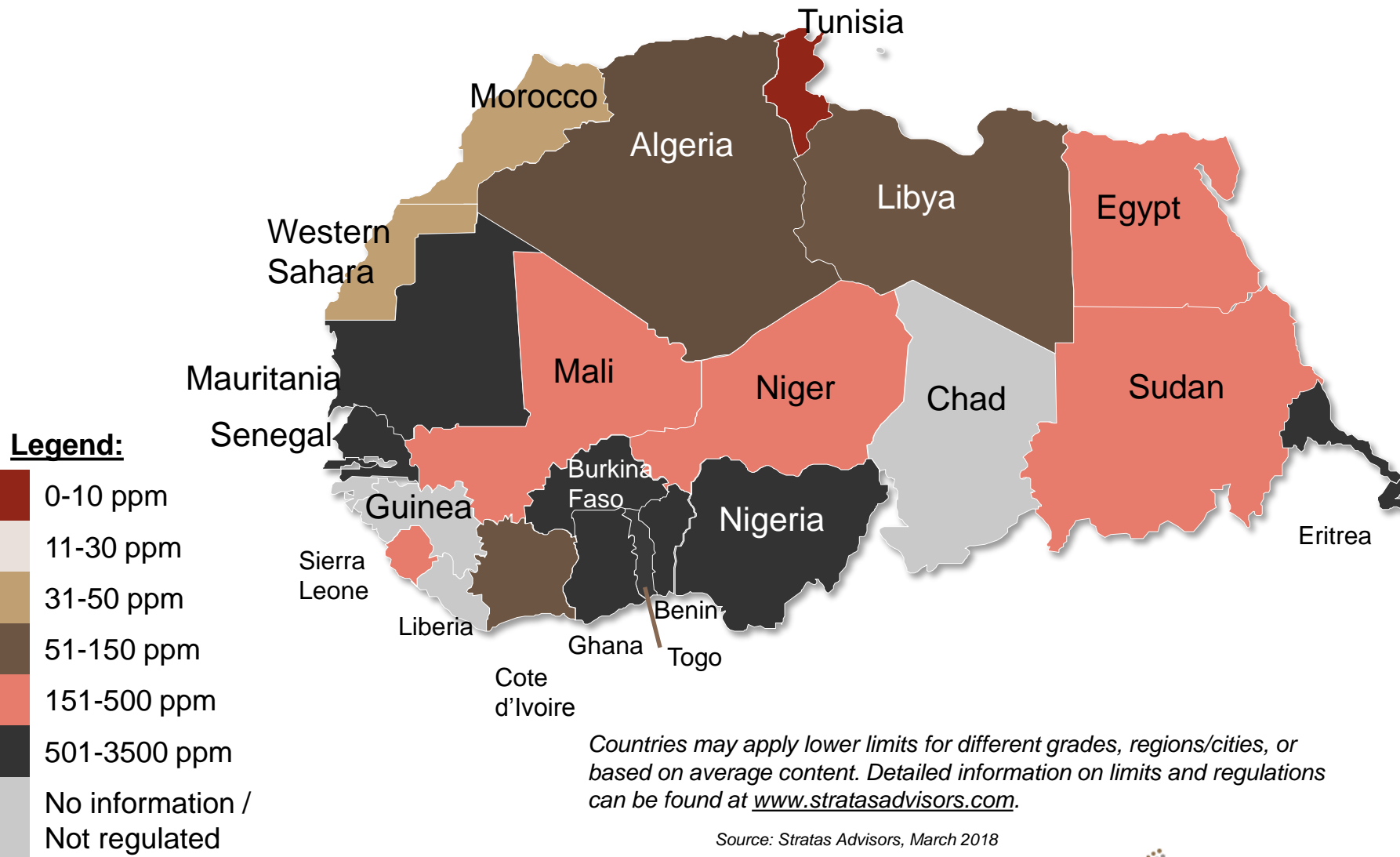


Africa

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# Max Sulfur Limits in Gasoline in Northern and Western Africa in 2018

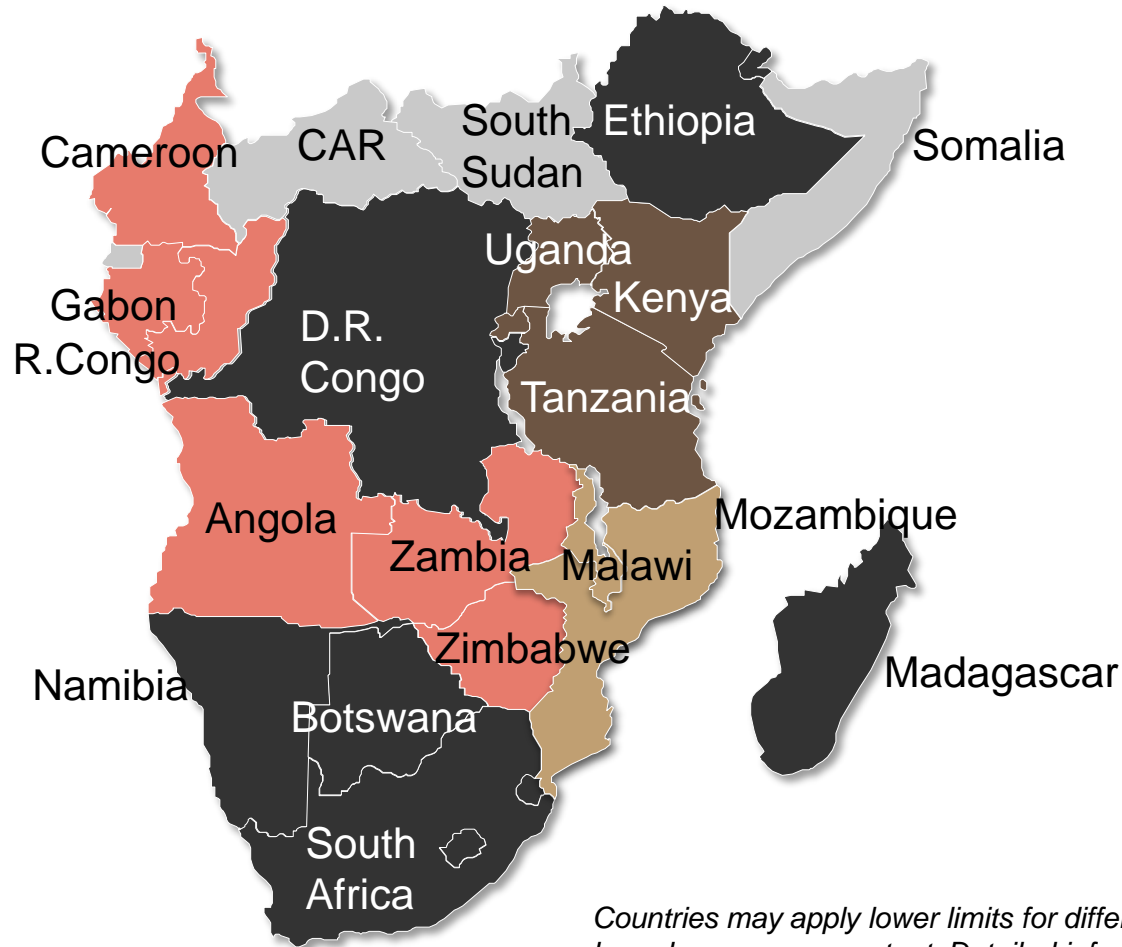
Tunisia and Morocco have the lowest limits followed by Algeria, Cote d'Ivoire and Libya



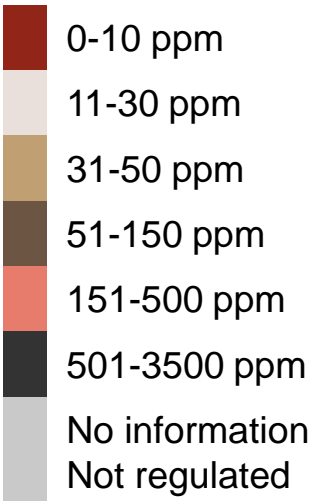
Source: Stratas Advisors, March 2018

# Max Sulfur Limits in Gasoline in Eastern, Central and Southern Africa in 2018

Eastern African Community has the lowest limits compared to the other countries



## Legend:



Countries may apply lower limits for different grades, regions/cities, or based on average content. Detailed information on limits and regulations can be found at [www.stratasadvisors.com](http://www.stratasadvisors.com).

Source: Stratas Advisors, March 2018

# Octane Grades in Top African Gasoline Markets

Regular grade dominates gasoline pool (RON 80-93)

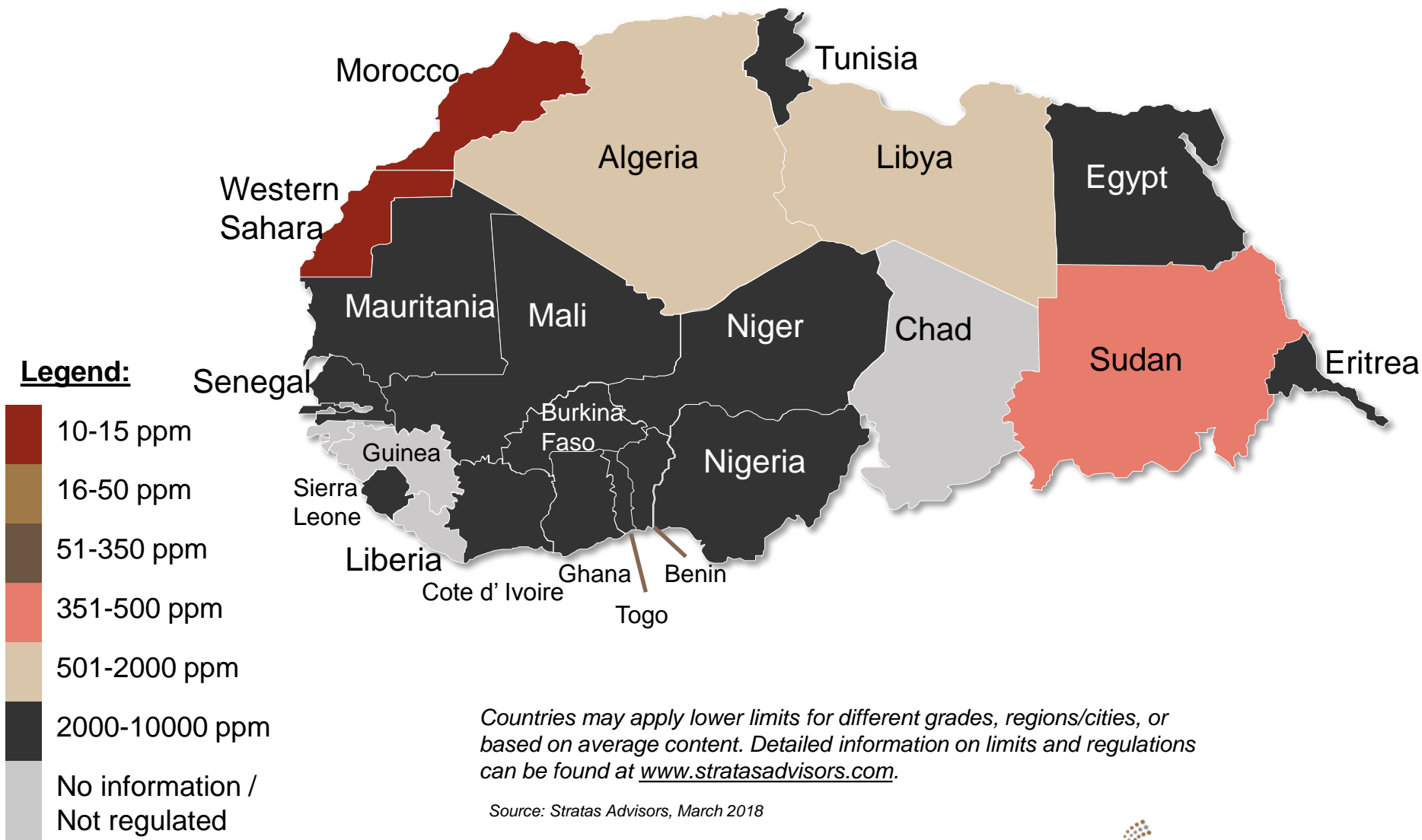
Country	RON according to Gasoline Specs	Comments on Market Grades
<b>Algeria</b>	89 / 95 / 96 (leaded)	As of 2013, regular leaded gasoline (RON 90) accounted for 28% of the gasoline market, super leaded gasoline (RON 95) 33%, and leaded gasoline (RON 96) 40%. Even though Algeria's refineries are currently producing RON 90 and 95 unleaded gasoline grades, they are not available at every pump.
<b>Egypt</b>	80 / 90 / 92 / 95	By 2013, the gasoline market was approximately split by the following octane share i.e. 52% RON 80, 40% RON 90 and 8% RON 92 (negligible RON 95). This situation was a result of significant differences in pump prices between RON 80 and other gasoline grades, as RON 80 and RON 92 grades continue to be subsidized at the pump. According to UNEP/CEDARE, RON 90 was later phased out of the market in February 2014, and consumers mostly shifted to RON 92, thus taking the second highest market share after RON 80.
<b>Ghana</b>	91	Since 2007, two gasoline grades are available for sale in Ghana i.e. RON 91 and RON 95. The majority of the gasoline pool is RON 91 with a market share of 99.7%, which is locally produced at Tema Oil Refinery (TOR). The remaining 0.4% of the gasoline pool consists of RON 95 that is imported and marketed by the major distributors on the market such as Shell (V-Power) or Total (Super Plus).
<b>Kenya</b>	93	Along with the EAC countries, Kenya moved to RON 93 gasoline (premium grade) in January 2015, although there are other grades available on the market including RON 95 at some retail stations, and RON 87 (regular grade) for use by fishing boats. However, their market share is unknown.
<b>South Africa</b>	93 / 95	RON 93 LRP=7%; RON 93 ULP=35%; RON 95 LRP=7%; RON 95 ULP=50%. Some RON 98 available on the market.

Notes: LRP – lead replacement petrol. ULP – unleaded petrol.

Source: Stratas Advisors, 2018

# Max Sulfur Limits in Diesel in Northern and Western Africa in 2018

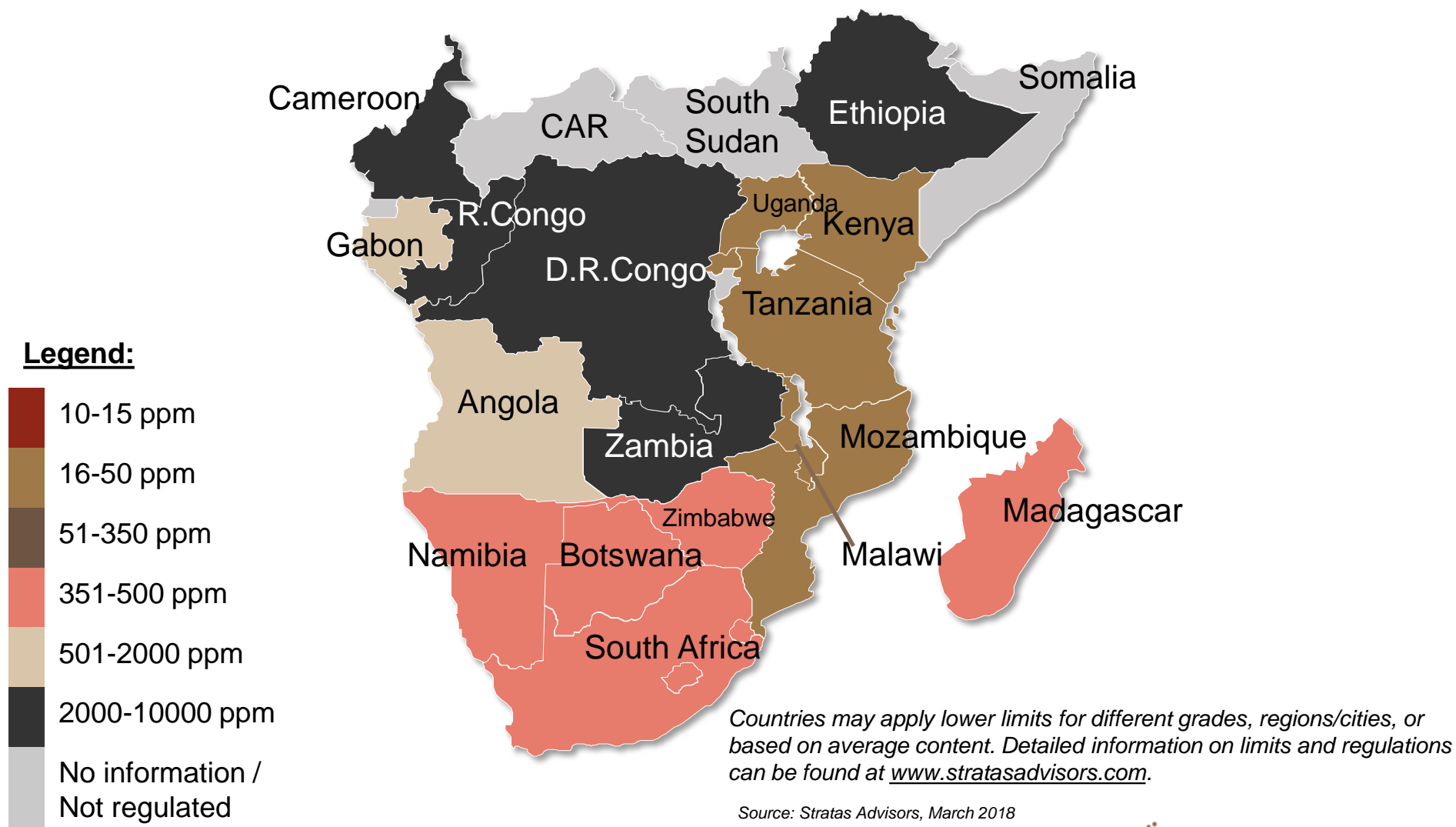
Morocco has the lowest sulfur limit while other countries struggle to tighten diesel quality





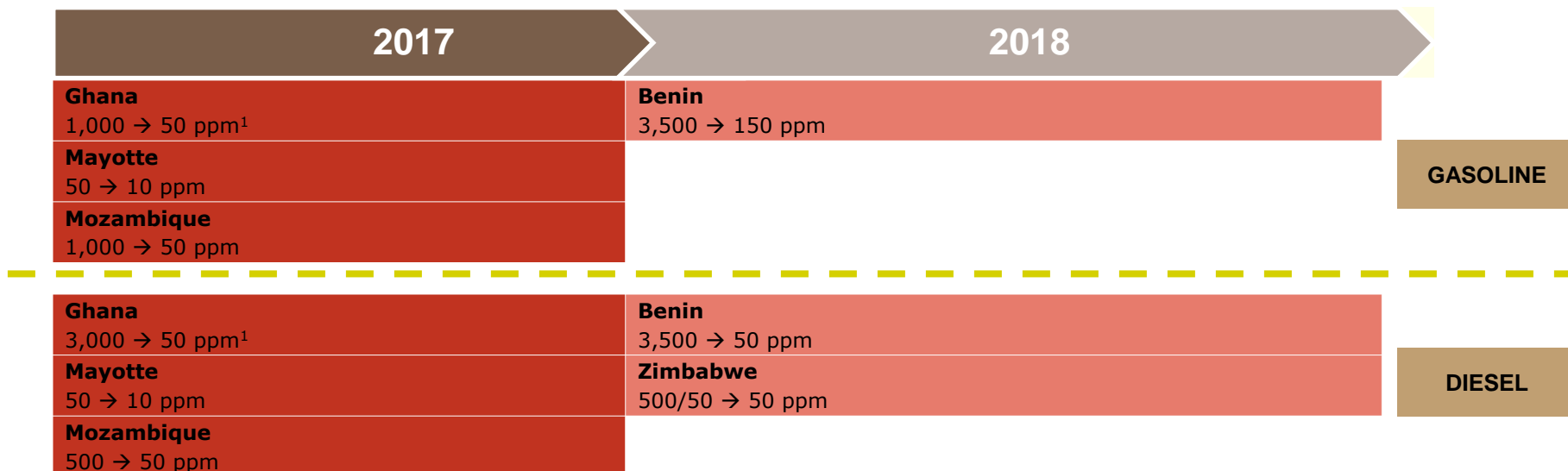
# Max Sulfur Limits in Diesel in Central, Eastern and Southern Africa in 2018

Eastern African Community has the lowest limit for diesel; Southern Africa countries to follow



# 2017 Wrap-up, Outlook for 2018 and Beyond

Expected delay for Western African countries in moving to lower sulfur fuels



## Notes:

(1) Imports only.

- Implemented
- Confirmed
- Proposed

Source: Stratas Advisors, March 2018

# Vehicle Emission Standards in Africa

Difficult to introduce emission standards considering undeveloped institutional and monitoring systems

Sulfur Limit for Gasoline/ Diesel	10 ppm	50 ppm	100-150/350 ppm	500 ppm	>1,000 ppm
	Morocco (diesel)	Kenya and Tanzania (diesel) Morocco (gasoline)	Algeria (gasoline) Kenya and Tanzania (gasoline)	Egypt (gasoline) South Africa (diesel)	Algeria (diesel) Egypt (diesel) Nigeria (gasoline and diesel) South Africa (gasoline)
Equivalent Emission Standards	Euro 5/V	Euro 4/IV	Euro 3/III	Euro 2/II	Euro 1/I
	-	-	Algeria Egypt <sup>(1)</sup> Nigeria <sup>(2)</sup>	Egypt Kenya Morocco South Africa	Tanzania <sup>(1)</sup> -

Notes:

(1) Only for public buses.

(2) Yet to be implemented.

Source: Stratas Advisors, November 2017

# Measures Regarding Imports of Used Vehicles

For many countries, measures on imports of vehicles are the only regulation against air pollution

Type of Measure	Countries
<b>Ban on Used Vehicles</b>	Egypt, Morocco, South Africa, Sudan
<b>Banning Imports of Vehicles older than 5 years</b>	Algeria, Angola, Chad, Egypt*, Gabon, Libya, Mauritius, Morocco*, Mozambique, Niger, Seychelles, Tunisia
<b>Banning Imports of Vehicles older than 10 years</b>	Benin, Cameroon, Congo, DRC, Eritrea, Guinea, Kenya, Mauritius, Lesotho, Namibia, Nigeria, Reunion, Senegal
<b>No age restrictions</b>	Botswana, Burkina Faso, Burundi, Cape Verde, Central African Republic (CAR), Cote d'Ivoire, Djibouti, Equatorial Guinea, Ethiopia, Gambia, Ghana, Guinea Bissau, Lesotho, Madagascar, Malawi, Mali, Rwanda, Somalia, south Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe
<b>Roadworthiness Test</b>	Benin, Burkina Faso, Cameroon, Chad, Cote d'Ivoire, DRC, Ethiopia, Gabon, Gambia, Ghana, Guinea Bissau, Guinea, Kenya, Liberia, Mali, Mauritania, Mauritius, Mozambique, Niger, Senegal, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe
<b>Higher Tariff based on age</b>	Cape Verde, Cote d'Ivoire, Gambia, Ghana, Guinea Bissau, Kenya, Liberia, Malawi, Mali, Rwanda, Sao Tome & Principe, Sierra Leone, South Africa*, Tanzania, Tunisia, Uganda, Zimbabwe
<b>Higher Tariff based on engine capacity</b>	Angola, Benin, Cameroon, Cote d'Ivoire, Egypt, Ethiopia, Ghana, Guinea Bissau, Kenya, Malawi, Mauritius, Mozambique, Rwanda, Tanzania, Togo, Tunisia, Zambia, Zimbabwe
<b>Levy-Tax reductions/ policies for importing cleaner vehicles</b>	Gambia, Mauritius, South Africa, Zimbabwe

Note: \* For Allowed Vehicles.

Source: *Stratas Advisors, November 2017*



# Key Takeaways

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# Key Takeaways

Primary focus on sulfur reduction in Africa

- **Southern Africa region :**

- Mozambique implemented 50 ppm limit for gasoline and diesel on October 1, 2017
- Zimbabwe implemented 50 ppm sulfur limit for diesel from Jan. 1, 2018 and will progressively phase out 500 ppm until May 1, 2018

- **Western Africa region :**

- Ghana implemented 50 ppm for imported fuel
- Benin drafted new specifications for 50 ppm sulfur diesel and 150 ppm sulfur for gasoline, which are awaiting government approval
- Cote d'Ivoire, Nigeria and Togo have yet to propose new specifications to meet the Abuja conference agreement



# Q & A

## Contact Information

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