

# SABOA CONFERENCE : Availability and Price Trends of Fuel Over the Next 20 Years

2015 March

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- **Background**
  - Crude
  - Refining
  - Price
  - Supply
- **RSA Volume**
  - Current
  - Long Term Forecast
- **RSA Pricing**
  - Forecast

# Background - Crude

- **Crude oil generic description – there are many very different types of crude oil and only some are interchangeable with each other.**
- **Crude oil pricing is generally benchmarked off a few well known crudes available in the market and may be priced at a premium or a discount to that benchmark.**
- **The USA is still a net crude oil importer, however it now buys the majority of its shortfall from Canada and not the Middle East.**
- **Conventional Crude - large deposits (land and shallow sea)**
- **Unconventional Crude - tar sands, fracking, deep sea.**
- **In longer term “lighter” crude oil becomes more abundant than “heavy”**

# Background - Refining

- **Crude refiners make fuels and other products from crude oil**
- **Any given refinery is typically designed for a fairly narrow range of crude types (a specific crude diet)**
  - Any given refinery will have limited ability to change the relative proportion of products it makes (a fairly constant product slate)
  - Any given refinery has limited ability to change crude throughput rate
  - New world-scale refineries are much more cost-efficient than older smaller refineries hence many have been shuttered.
- **World is currently long on refining capacity so refining margins are low – little incentive for new investment**
- **The designed diesel capacity of a refinery ranges from about 25% to 65% of crude rate.**

# Diesel Price Factors

- **Price of crude oil – set by supply/demand**
- **Refining margin – set by scale complexity & supply /demand**
- **Quality/ specification of the product and additives.**
- **Cost of shipping / transport – local refining has advantages**
- **Taxes levies and duties to be paid – set by government**
- **Cost of inventory and storage – NERSA regulates maximum access costs**
- **Margin of the seller (regulated or unregulated)**
- **Supply and demand influences**
- **Competing products/ alternatives (LNG/CNG – priced to penetrate market)**
- **Bunker fuel specification changes driven by MARPOL (2025?) – will increase demand for low sulphur distillate fuel**

# World Crude Oil Production (Supply)

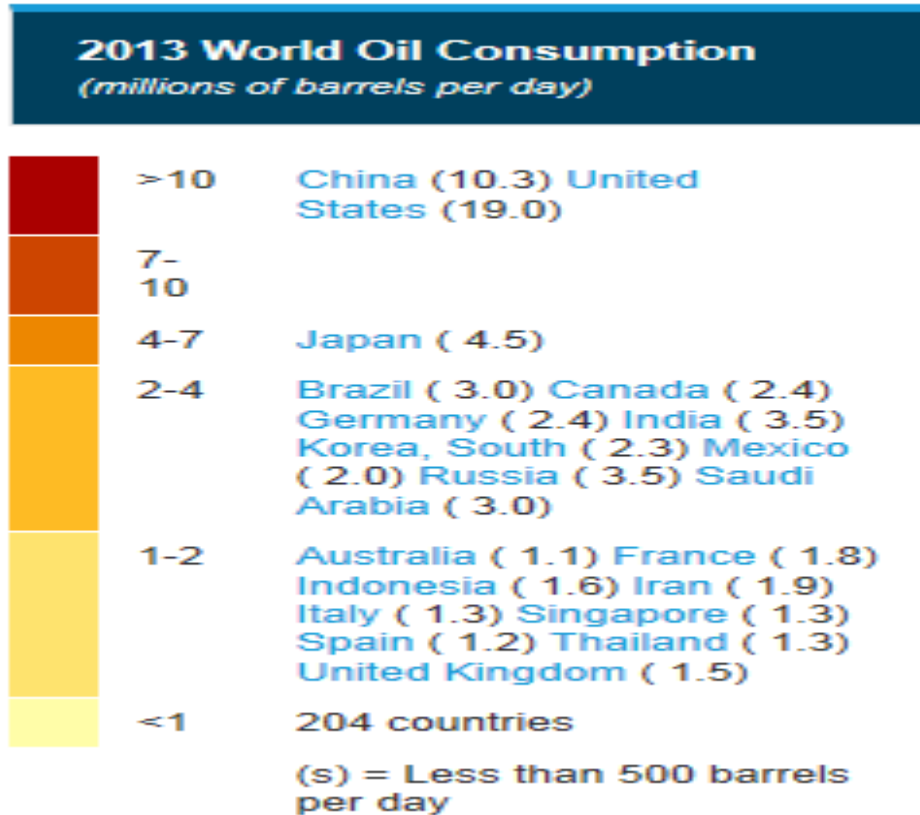
## 2013 World Oil Production (millions of barrels per day)



<http://www.eia.gov/countries/index.cfm?view=production>

Note : 1 Barrel = 159 litres

# World Crude Oil Consumption (Demand)



<http://www.eia.gov/countries/index.cfm?view=consumption>

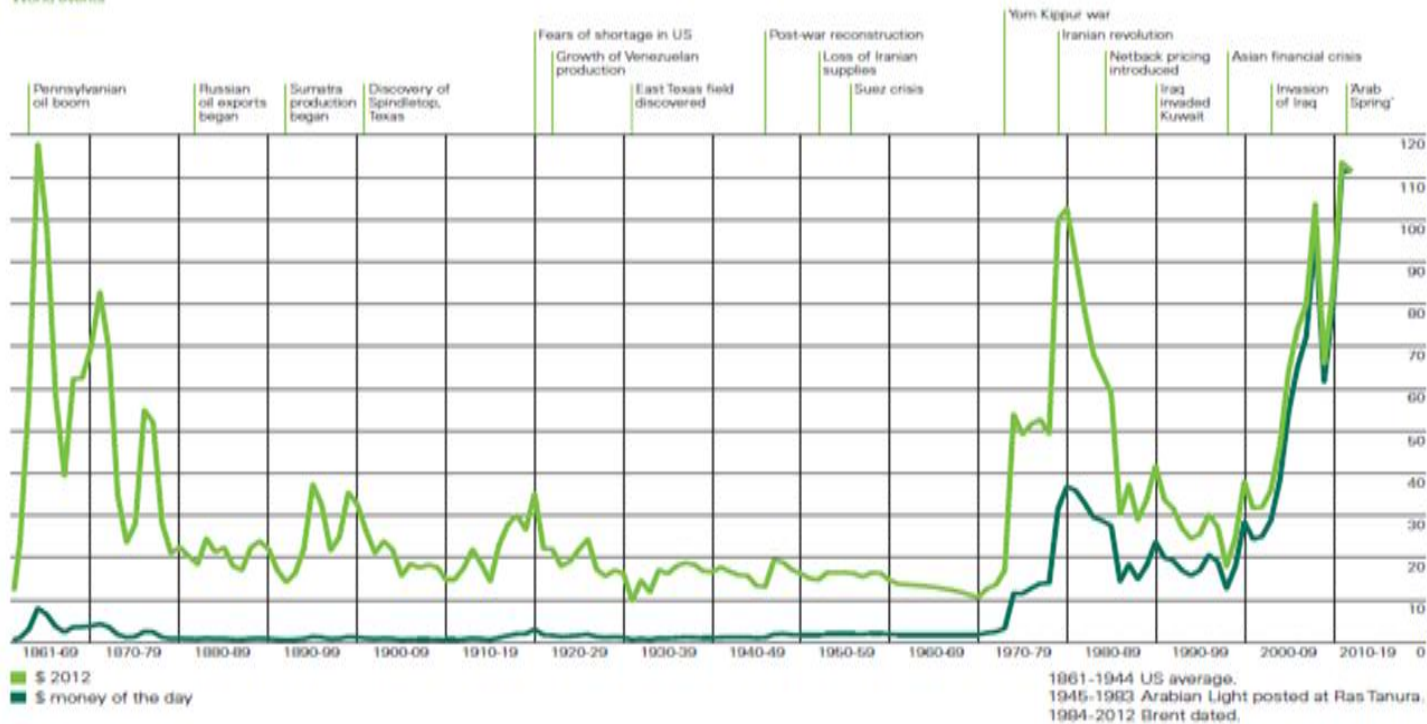
Note : 1 Barrel = 159 litres



# History World Crude Prices

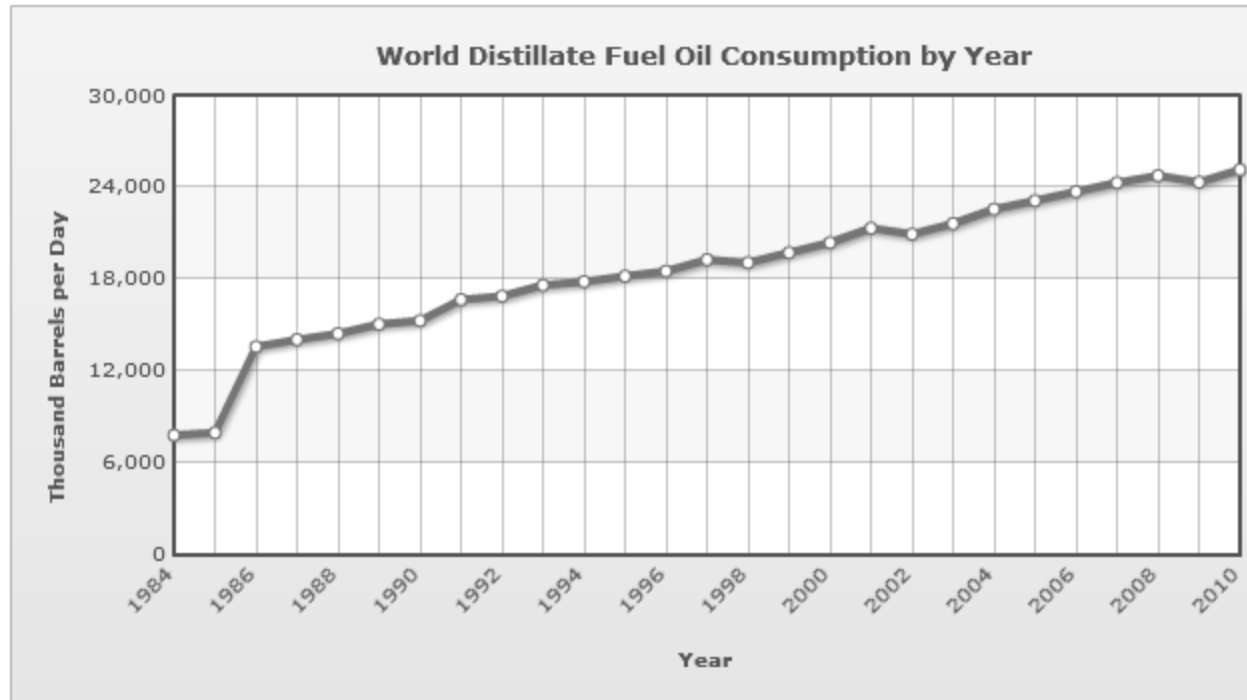
## Crude oil prices 1861-2012

US dollars per barrel  
World events



BP – Statistical review of world energy 2013

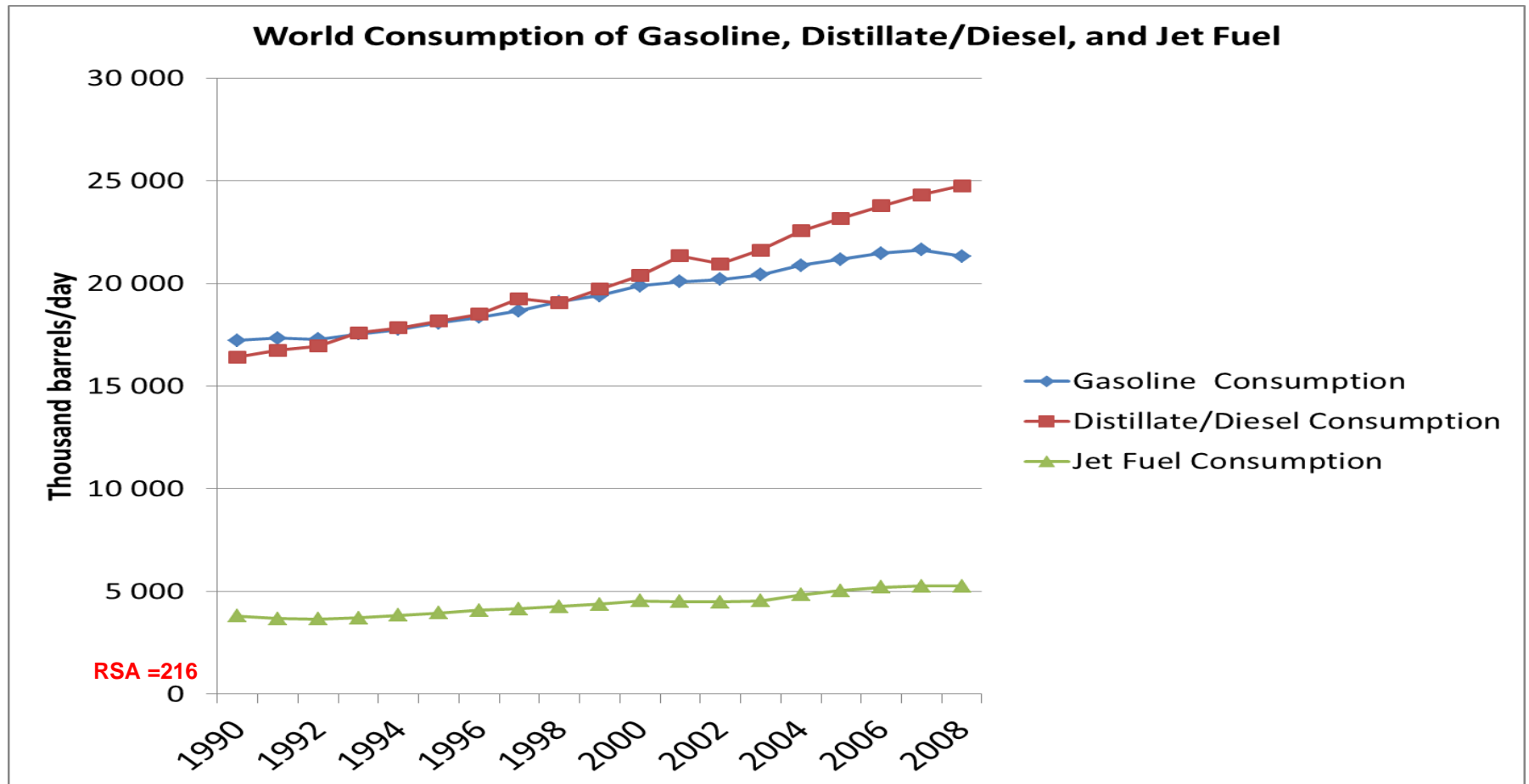
# World Distillate Consumption



Source: [United States Energy Information Administration](#)

**Distillate Fuel Oil Definition:** A general classification for one of the petroleum fractions produced in conventional distillation operations. It includes diesel fuels and fuel oils. Products known as No. 1, No. 2, and No. 4 diesel fuel are used in on-highway diesel engines, such as those in trucks and automobiles, as well as off-highway engines, such as those in railroad locomotives and agricultural machinery. Products known as No. 1, No. 2, and No. 4 fuel oils are used primarily for space heating and electric power generation.

# World Diesel Consumption



[oilindependents.org/.../EIA-World-Consumption-of-Selected-Petroleum](http://oilindependents.org/.../EIA-World-Consumption-of-Selected-Petroleum)

# World Refining Margins

## Regional refining margins

US dollars per barrel



**Note:** The refining margins presented are benchmark margins for three major global refining centres: US Gulf Coast (USGC), North West Europe (NWE – Rotterdam) and Singapore. In each case they are based on a single crude oil appropriate for that region and have optimized product yields based on a generic refinery configuration (cracking, hydrocracking or coking), again appropriate for that region. The margins are on a semi-variable basis, i.e. the margin after all variable costs and fixed energy costs.

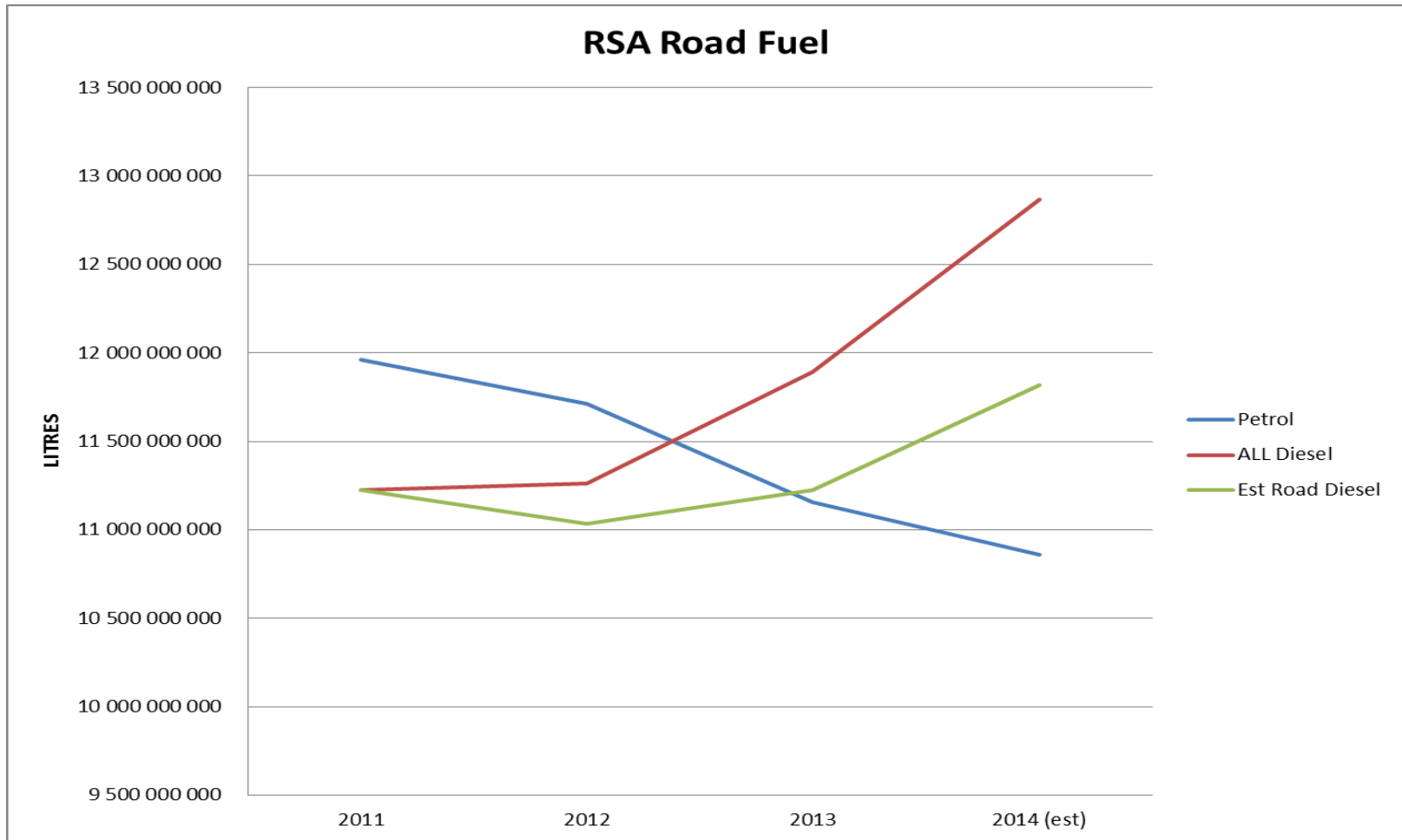
# Conclusions about world supply

- **The USA remains a net importer of crude oil (about 8 million bpy)**
- **Crude production / supply is roughly balanced at about 75 million BPY**
- **Distillate/diesel consumption is increasing**
- **MARPOL (International Marine Industry Policy on Pollution)**
  - The marine industry will in the coming years face tougher legislation on emissions around the world. The rules range from the International Maritime Organization's MARPOL Annex VI regulation 4 as detailed in resolution MEPC 184(59) to the European Union Directives 2005/33/EC and 1999/32/EC. Some areas may also be faced with national or local rules.
  - Business as usual cannot continue. To comply with incoming rules, ship owners must switch to costly low sulphur fuel, or choose abatement technology. The 2015 deadline for meeting 0.1% sulphur levels in Emission Control Areas (ECA) is fast approaching, and the marine industry needs to choose a path on how to achieve compliance.
  - There are existing proven technologies that can be retrofitted to ships to reduce emissions.

# Recent RSA Volumes



[http://www.energy.gov.za/files/energyStats\\_frame.html](http://www.energy.gov.za/files/energyStats_frame.html)

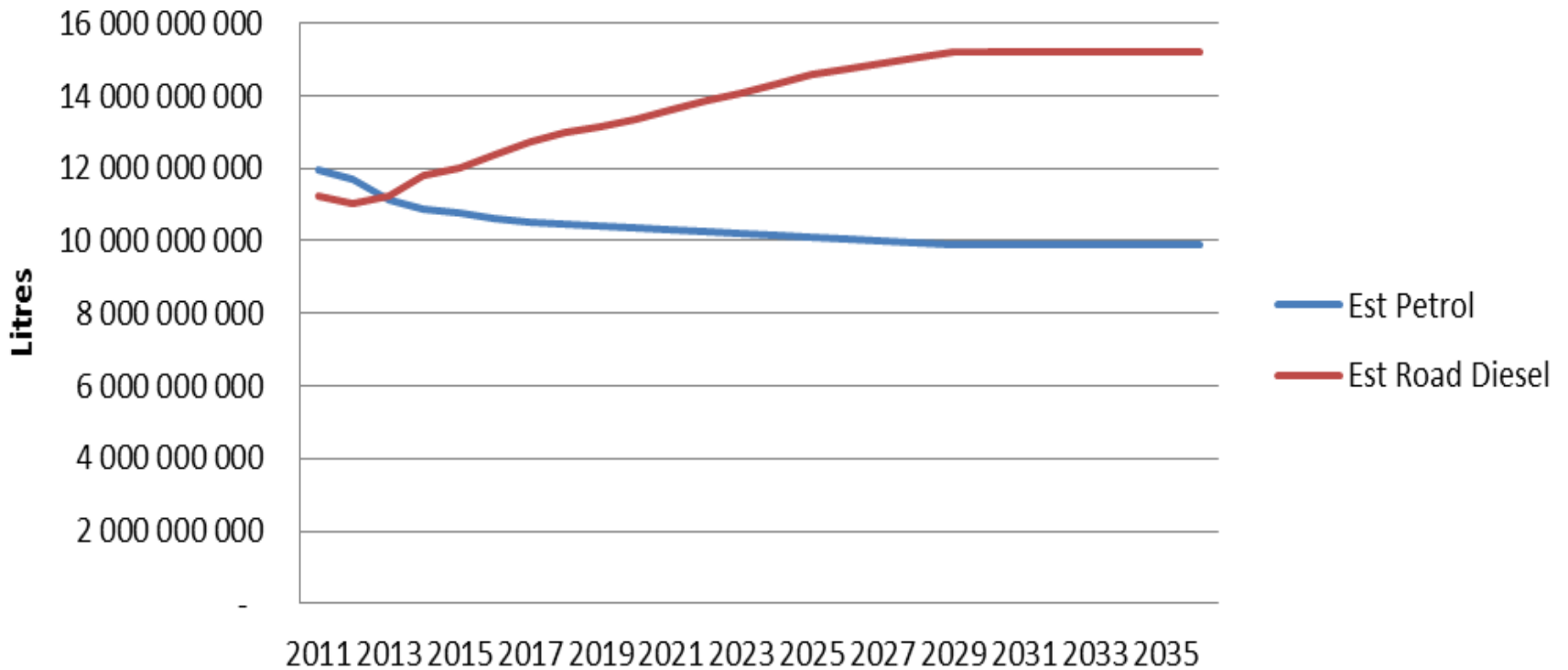


Note: 12.5 billion litres pa is approximately 216000 barrels per day

# FUTURE RSA VOLUMES ?



## Forecast RSA volume



# Implications of volume forecast for RSA

- **RSA has general infrastructure to handling the volumes needed**
- **Infrastructure will need upgrading to manufacture and distribute fuels to new specifications ( CF2)**
- **Common distribution infrastructure has implications for other products, number of grades and overall efficiencies.**
- **RSA diesel volumes are small in terms of world consumption so RSA demand will not affect world pricing/ availability (216 of 25000 = 1%)**



# Implications of pricing issues for RSA

- **Import parity pricing approach means that RSA refiners will have difficulty competing. Many refineries of scale and complexity similar to those in RSA (or better) have been “shuttered” or converted to terminals.**
- **If RSA refineries cease operating then port facilities will have to be upgraded to handle increased volumes of imports.**
- **World is currently long of refining capacity and this depresses refining margins. There is a cyclical change from long to short. So expect refining margins to improve and prices to rise.**
- **Fuel taxes are attractive source of easily collected funding for government so expect increases.**
- **Marpol will put pressure on supply / demand balance of distillates so expect price increases.**
- **There will be some fuel switching to natural gas and this will moderate price increase of diesel.**

- **The price of diesel in RSA is likely to rise with major factors being**
  - Crude price
  - Introduction of Marpol – changing world supply/ demand
  - Increasing RSA taxes
  - Weakening exchange rate
- **RSA diesel supply infrastructure is adequate with exception of**
  - Port import facilities if any local refineries close
  - Lack of strategic stock (cost factor).
  - Ability to handle many grades
- **Estimate that RSA Busses use less than 10% of RSA diesel**
  - Compared with RSA mini busses use over 20% of RSA Petrol

# Thank you

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