Liquid fuels cargo volumes monitoring report

Sample dates 2011 and 2012

Abstract

Whilst a dataset that only covers two years does not provide sufficient information to determine any structural changes in cargo flows, it does provide some perspective as to the current structure of liquid bulk commodity flows through the ports of South Africa. Although liquid bulk is fairly fixed in the structure and flows of cargo due to the geographic locations of refineries and larger storage capacities, the same methodology might be applied to other cargo types to ensure a continued monitoring of data reliability.

The similarities found between the NPA dataset and the compiled dataset from Customs indicate that there is a certain level of comfort in the reliability of the data with discrepancies easily explained or as a result of the methodology used. The report therefore concludes that the administrative integrity of the data collection in this sector is sufficient.

Highlights of conclusions

1. The SARS customs data reflects within acceptable margins the overall cargo movements recorded by the NPA for the 2011 and 2012 years.
2. The structure of the volume flow through the port sector largely reflects the geographic structure of South Africa's refining capacity

3. Discrepancies on a port level may be ascribed to reporting process differences as the overall volumes indicates that the NPA and the South African revenue Service largely recorded similar cargo movements through the sector.

Purpose of the study

4. The purpose of this report is to investigate administrative integrity in the data collection by authorities in fulfillment of the monitoring role of the Regulator. In this instance the focus was the liquid fuels sector, and the data of the National Ports Authority (NPA) and the South African Revenue Service (SARS) were used.

5. Cargo dues contribute the bulk of the revenue the National Ports Authority raise through tariffs, with total cargo dues expected to contribute 60 per cent in 2013/14 with liquid bulk contributing 5 per cent thereof or a total of 9 per cent of all cargo dues. Periodic audits of the cargo traffic moving through the ports system is paramount to the Regulators effective implementation of its mandate and has in addition to making sure that the books balance also serve a number of other purposes:

6. Studies of this nature, especially when repeated, highlights structural changes in the cargo basket composition with possible implications for the setting of tariffs.

7. It serves to link the relevant data collection agencies, namely NPA and the South African revenue Service (SARS) in this regard and should highlight any discrepancies that may occur-mostly without the relevant parties being aware-i.e. under- or over collection on customs or cargo dues or the incorrect allocation of cargo traffic to different ports or customs regional offices.

8. It provides an overview of the cargo traffic flows through the Port system and the structure of cargo flows through specific ports.

Background

9. The South African liquid fuels market is highly interlinked with the international oil market. Through SASOL South Africa has a well developed synthetic fuel industry, but it only accounts for approximately 30% of South Africa's demand for petroleum products (Research Channel, 2009:3). South Africa has to import the bulk of its crude oil requirements, making it the country's single-largest import item, and thus the object of this study.

10. South Africa has the second largest crude oil refining capacity in Africa second only to Egypt with plans to increase domestic refining capacity. Saudi Arabia and Iran have been the major crude oil suppliers to South Africa, in recent times making up approximately 68% of imports. However Nigeria and Angola have increasingly become important sources of crude oil.

11. In addition, South Africa's unique geographical position makes it an important transport corridor for oil tanker shipments on global routes. In 2011, flows around the Cape of Good Hope accounted for approximately 11% of all seaborne traded oil, or 6% of oil traded worldwide. According to APEX Tanker Data, approximately 5 million bbl/d of seaborne traded oil moved across the Cape of Good Hope in both directions in 2012.

12. The importance of the trade in liquid fuels to the South African economy cannot be overestimated and a study conducted by the Department of Minerals and Energy (DME) (2007:17) showed that if no liquid fuels were available, the economy would lose approximately R925 million per day in GDP (2005 prices) and provides direct and indirect employment to more than 100 000 people.

13. Regulated by the department of Energy, the import of refined products is restricted to special cases based on recommendations by the Department of Energy to the International Trade Commission in respect of the importation and exportation of crude

oil, petroleum products and blending components where local producers cannot meet demand and as such it is subject to state control to promote local refinery utilisation. When overproduction occurs, export permits are required and generally granted, provided that both South Africa's and other Southern African Customs Union members' requirements are met as South Africa is also the main supplier of liquid fuels to Botswana, Namibia, Lesotho and Swaziland. Interestingly, more diesel than petrol is exported, owing to the balance of supply and demand of petrol and diesel relative to refinery configurations.

14. In order to assess the flow of cargo in the liquid fuels sector through the South African ports the liquid fuels data from the NPA was compared to the Customs data on imports and exports. These sources should reflect similar quantities and where discrepancies occur, the foregone cargo dues (in the instance where SARS numbers exceed NPA's) or foregone import duties or Vat (when NPA numbers exceed those provided by customs) provides an indication to the cost to the economy of the administrative misalignments.

Methodology

15. The major petroleum products that are sold in South Africa are petrol; diesel; jet fuel; illuminating, paraffin; fuel oil; bitumen, and liquid petroleum gas (LPG). These products are all imported to some extent and form the bulk of the liquid bulk cargo traffic flow through the South African port system.
16. The South African revenue service records customs data by using the internationally used Harmonised System (HS) an international system for classifying goods in international trade and for specifying the tariffs on those goods. Liquid fuel products are recorded mainly in chapter 27 of the Harmonised System (**MINERAL FUELS, MINERAL OILS AND PRODUCTS OF THEIR DISTILLATION; BITUMINOUS SUBSTANCES; MINERAL WAXES)**, as published in schedule 1 of the Customs and Excise Act of 1964. In order to find an approximate match between the data sets of the NPA and SARS, the SARS data was limited to the following tariff lines:

17. *2709 Petroleum oils and oils obtained from bituminous minerals, crude*
18. *27.10 Petroleum oils and oils obtained from bituminous minerals (excluding crude); preparations not elsewhere specified or included, containing by mass 70 per cent or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations; waste oils: Light oils and preparations (including aviation fuel and petrol)*
19. *2711.1 Liquefied: Petroleum gases and other gaseous hydrocarbons*

20. The NPA classify liquid bulk as: **liquid bulk Commodity Imports Exports**
    - Ammonium & products thereof
    - Anhydrous ammonia
    - Animal / vegetable oils / fats & products thereof
    - Caustic soda

- Crude & petroleum products
- Molasses & products thereof
- Phosphoric acid
- Pitch pencil
- Sunflower seed oil

21. It is thus obvious that the classification used in the HS code and applicable to the SARS data set does not entirely match that of the NPA as the NPA includes a number of products that are not included in the chosen HS codes as part of this study. While petroleum fuels and other liquid fuels make up the bulk of the import basket in the liquid bulk category, some liquids will be omitted. This is however necessary as a significant amount of liquids that may be recorded as liquid bulk, if delivered as such may also enter or leave the port system through the container or break bulk terminals and as such will not be included in the liquid bulk number. It is therefore safe to assume that the SARS total, for the purposes of this study, will always be underestimated and should in reality be greater than indicated. This is an important assumption in this context.

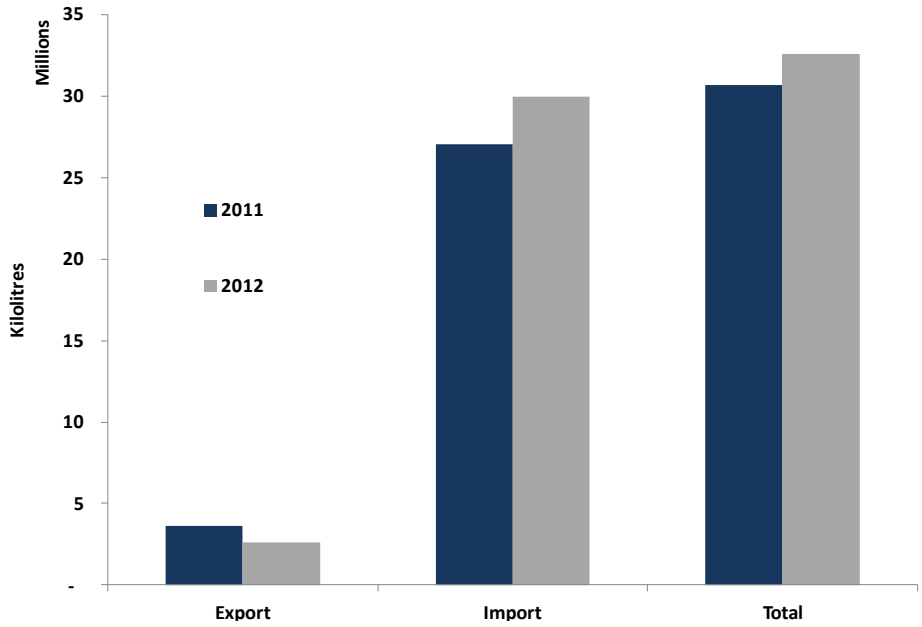
22. In analysing the data a comparison between the two datasets were required. While volumes are recorded the NPA, customs record weight, a conversion from tons to kiloliters was required. The general conversion used to convert kilograms to liters is 0.85 kg per liter. This was implemented across the whole sample and will explain small discrepancies in the differentials between the two data sets.

Overview of the results

Liquid Fuels			NPA DATA			SARS DATA		
Port	Year	Unit	Export	Import	Total	Export	Import	Total
Total	2011	Revenue (Rands)	1 238 430	298 671 242	299 909 672	1 418 522	297 822 894	299 241 415
		kilolitres	3 639 248	27 045 333	30 684 581	4 168 465	26 968 513	31 136 978
	2012	Revenue (Rands)	22 171 049	346 260 169	368 431 218	29 629 469	326 495 134	356 124 603
		kilolitres	2 631 984	29 942 438	32 574 422	3 517 393	28 233 280	31 750 673
Durban	2011	Revenue (Rands)	18 144 218	255 473 888	273 618 106	404 178	207 478 167	207 882 345
		kilolitres	778 780	23 657 891	24 436 671	1 187 717	18 787 601	19 975 318
	2012	Revenue (Rands)	33 589 642	256 169 047	289 758 689	13 326 810	254 498 877	267 825 688
		kilolitres	1 355 111	24 977 634	26 332 745	1 582 061	22 007 489	23 589 550
Cape Town	2011	Revenue (Rands)	772 822	24 926 358	25 699 180	977 917	42 135 572	43 113 488
		Kilolitres	227 310	910 323	1 137 633	2 873 704	3 815 468	6 689 172
	2012	Revenue (Rands)	4 818 398	38 279 403	43 097 801	16 213 714	61 112 002	77 325 716
		Kilolitres	327 266	1 358 723	1 685 989	1 924 773	5 284 588	7 209 361
Richards Bay	2011	Revenue (Rands)	44 845 497	10 411 904	55 257 401	16 541	18 997 090	19 013 631
		kilolitres	1 219 971	291 993	1 511 964	48 606	1 720 228	1 768 834
	2012	Revenue (Rands)	38 875 334	11 361 534	50 236 868	3 563	3 284	6 847
		kilolitres	1 023 227	336 666	1 359 893	423	284	707
Port Elizabeth	2011	Revenue (Rands)	-	3 367 015	3 367 015	3	1 418 906	1 418 909
		kilolitres	-	132 035	132 035	9	128 485	128 494
	2012	Revenue (Rands)	-	2 754 433	2 754 433	1 499	992 034	993 534
		kilolitres	-	104 920	104 920	178	85 785	85 963
Saldanha	2011	Revenue (Rands)	76 131 990	102 148 559	178 280 549	16 803	-	16 803
		kilolitres	3 022 745	4 055 707	7 078 452	49 377	-	49 377
	2012	Revenue (Rands)	27 322 485	104 587 199	131 909 684	101	-	101
		kilolitres	1 119 215	4 284 221	5 403 436	12	-	12
Mosselbay	2011	Revenue (Rands)	3 881 831	18 177 516	22 059 347	3 080	6 148 576	6 151 656
		kilolitres	142 612	713 994	856 606	9 051	556 767	565 818
	2012	Revenue (Rands)	2 102 463	25 377 443	27 479 906	83 782	9 813 421	9 897 204
		kilolitres	143 942	972 868	1 116 810	9 946	848 604	858 550
East London	2011	Revenue (Rands)	-	415 124	415 124	0	179 830	179 830
		kilolitres	-	16 109	16 109	1	16 284	16 285
	2012	Revenue (Rands)	-	477 694	477 694	-	75 503	75 503
		kilolitres	-	18 040	18 040	-	6 529	6 529

23. Liquid bulk cargo is mostly imported through the South African port system with imports of liquid bulk making up 88 per cent of total cargo through put in 2011 and 92 per cent in 2012. The corresponding customs data reflects a similar picture with imports in 2011 recording 87% of the total edging up to 89 per cent in 2012.

Figure 1 : NPA liquid bulk volumes



24. The NPA recorded imports of 27.04 million kilolitres (kl) in 2011 and 29.9 million kilolitres in 2012. Exports totaling 3.6 million and 2.6 million kilolitres respectively resulted in total liquid bulk throughput of 30.6 and 32.5 million kl for 2011 and 2012 respectively.

25. SARS recorded slightly different but still similar volumes for the period with differentials totaling 452 397 kl and 803 749 differential between the data recorded by the NPA and that of SARS collected by customs in 2011 and 2012 respectively. These differentials may be due to a number of reasons including the basic assumptions underlying the SARS data aggregation as well as the conversion rates used. Overall the discrepancies are not significant and easily explained.

26. Other discrepancies on a port level may also be explained through different reporting processes within customs as opposed to the port specific reporting by the NPA. There is a large under recording by the SARS in Saldanha is offset by a higher recording in the Port of Cape Town for 2012, and 80% of the 2011 discrepancy. According to customs data 23% of all liquid fuels were reported in Cape Town, whilst the NPA recorded 5% of

all imports and exports in Cape Town and 16% in Saldanha. A similar pattern emerged in 2011.

Figure 2: Comparison of NPA and Customs data (2012 - % of total)

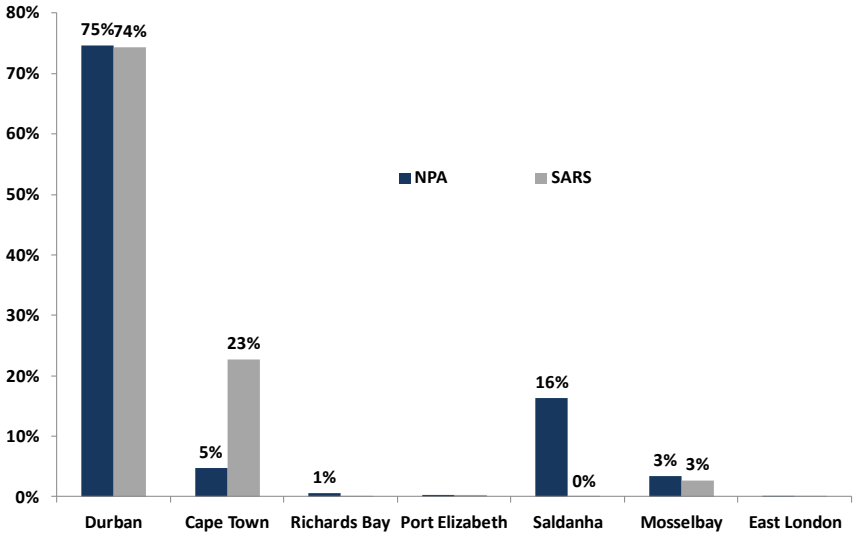
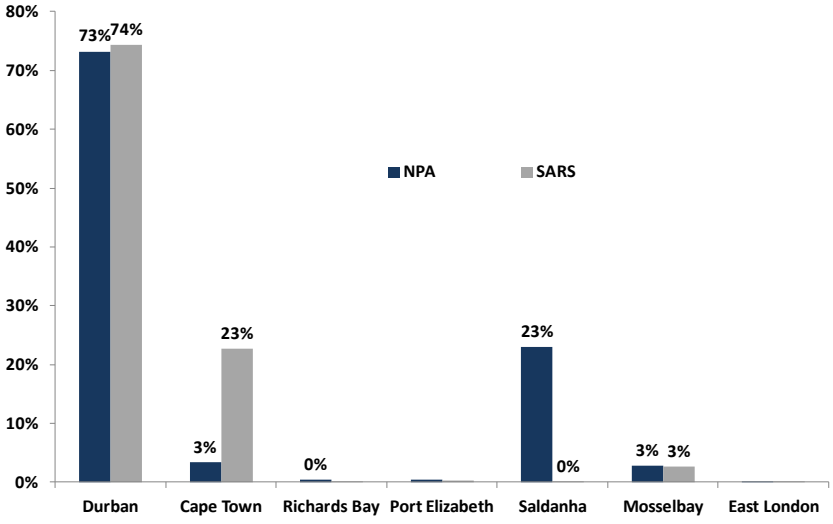


Figure 3: Comparison of NPA and Customs data (2011-% of total)



27. The structure of the volume throughput of the in figure 2 and 3 above reflects the geographical location of the countries refinery capacity with all refineries either located at Durban (SAPREF, ENREF), Cape Town (CALREF) or Mosselbay in the case of the Petro-SA GTL refinery or linked to these ports by pipeline.

Conclusion

Whilst a dataset that only covers two years does not provide sufficient information to determine any structural changes in cargo flows, it does provide some perspective as to the current structure of liquid bulk commodity flows through the ports of South Africa. Although liquid bulk is fairly fixed in the structure and flows of cargo due to the geographic locations of refineries and larger storage capacities, the same methodology might be applied to other cargo types to ensure a continued monitoring of data reliability.

The similarities between the NPA dataset and the compiled dataset from Customs indicate that there is a certain level of comfort in the reliability of the data with discrepancies easily explained or as a result of the methodology used.

In short the main conclusions of the study are:

1. The SARS customs data reflects within acceptable margins the overall cargo movements recorded by the NPA for the 2011 and 2012 years.
2. The structure of the volume flow through the port sector largely reflects the geographic structure of South Africa's refining capacity
3. Discrepancies on a port level may be ascribed to reporting process differences as the overall volumes indicates that the NPA and the South African revenue Service largely recorded similar cargo movements through the sector thus establishing administrative integrity in this context.

Sources:

Research Channel. 2009. South Africa's Liquid Fuels Industry. March 2009.

DME. 2007. Energy Security Master Plan – Liquid Fuels.

SARS Customs data

South African Customs Act 1964, *schedule 1*

NPA Port Level data received by the Ports Regulator as part of the 2013/14 tariff application process