

**AN ANALYSIS OF THE NECESSITY AND RELEVANCE OF
ESTABLISHING A PIPELINE REGULATOR IN
SOUTH AFRICA'S PETROLEUM INDUSTRY**

BY GAMA MUTEMERI

**A THESIS SUBMITTED TO THE UNIVERSITY OF CAPE TOWN IN FULFILMENT
OF THE DEGREE OF MASTER OF PHILOSOPHY IN ENERGY POLICY.**

**ENERGY DEVELOPMENT RESEARCH CENTRE
UNIVERSITY OF CAPE TOWN
MARCH 2003**

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ABSTRACT

This thesis focuses on issues surrounding energy regulation, and specifically regulation of pipelines that carry petroleum products in South Africa. The introduction of a regulator for petroleum pipelines is part of an ongoing process taking center stage in the South African government's petroleum industry policy arena. Independent regulation of energy industries is a recent phenomenon in South Africa. There is much activity in deciding which regulatory models should be adopted in the energy sector.

The thesis analyses a government policy decision to introduce a regulator of petroleum pipelines. Among some of the key issues that receive attention are the following:

- Is the petroleum pipeline industry in South Africa large enough to justify an independent regulator?
- Do pipelines in South Africa enjoy monopoly rents? If they do, is the establishment of an independent regulator the most cost-effective way of dealing with monopoly rents?
- How effective would such a regulator be in the current structure of the country's petroleum industry? Road and rail transport systems carry vast quantities of petroleum products. Would it be more appropriate for the regulator to include all transporters of petroleum products?

The thesis concludes that for an industry of such small size as pipeline transportation in South Africa, the necessity of a pipeline regulator might need to be reviewed. For a variety of reasons, there are strong reasons to conclude that a pipeline regulator will have minimum impact over key issues of the transportation of petroleum products.

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TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF FIGURES	vii
LIST OF ACRONYMS.....	vii
1. INTRODUCTION.....	1
2. RESEARCH QUESTIONS	1
3. METHODOLOGY	3
4. SOUTH AFRICAN PIPELINE INFRASTRUCTURE.....	4
4.1 Pipelines.....	4
4.2 Single Bouy Moorings (SBMs).....	6
4.3 Product Storage Facilities	7
4.4 Possible Future Developments	8
4.5 Historical Background.....	8
4.6 Industry Characteristics and Key Stakeholders.....	10
4.6.1 <i>Synthetic Fuels (Synfuels)</i>	10
4.6.2 <i>Refining</i>	11
4.6.3 Marketing	11
4.7 Government involvement and price regulation.....	12
4.8 Pipeline Transportation and Associated Infrastructure.....	13
4.8.1 <i>Characteristics of transport of liquid fuels in South Africa</i>	14
5. A THEORETICAL FRAMEWORK.....	15
5.1 Intervention And Market Power.....	16

5.2	Regulation	17
5.3	Pipeline Regulation	18
5.3.1	<i>Natural Monopolies</i>	19
5.3.2	<i>Competition</i>	19
6.	AN INTERNATIONAL REVIEW OF PIPELINE REGULATIONS	20
6.1	Scope of Review	20
6.2	The Application of Pipeline Regulation	20
6.3	Regulation of standards and structure	21
6.4	Regulation of services: General approaches	22
6.5	United Kingdom Legislation	23
6.6	United States Legislation	24
6.7	Brazilian Legislation	25
6.8	Other Countries	26
7.	INDUSTRY VIEWS ON PIPELINE REGULATION	27
7.1	Groupings	27
7.1.1	<i>Coastal Refiners:</i>	28
7.1.2	<i>Inland Refiners:</i>	28
7.1.4	<i>The existing regulator:</i>	28
7.1.6	<i>The aviation industry:</i>	29
7.2	Key Stakeholder Positions	30
7.2.1	<i>The Department of Minerals and Energy</i>	30
7.2.2	<i>Petronet</i>	31
7.2.3	<i>Inland Refiners</i>	32
7.2.4	<i>Coastal Refiners</i>	33
7.2.5	<i>Empowerment Companies</i>	33

7.2.6	<i>The Airline Industry</i>	34
7.2.7	<i>The Department of Transport</i>	34
7.2.8	<i>Transnet</i>	35
7.2.9	<i>The Department of Public Enterprises (DPE)</i>	35
7.3	Summary of Key Issues	36
8.	LEGAL AND REGULATORY ASPECTS	37
8.1	Existing agreements that regulate the sector	37
8.1.1	<i>Succession of South Africa Transport Services Act</i>	39
8.1.2	<i>Petroleum Products Act</i>	39
8.1.3	<i>Central Energy Fund Act</i>	39
8.1.4	<i>Minerals Act</i>	40
8.1.5	<i>Occupational Health and Safety Act</i>	40
8.1.6	<i>Municipal Systems Bill</i>	40
8.1.7	<i>Income Tax Act</i>	41
8.1.8	<i>Competition Act</i>	41
8.2	Present Regulatory Arrangements.....	41
8.2.1	<i>Price control</i>	42
8.2.2	<i>IBLC</i>	42
8.2.3	<i>Wholesale Price</i>	42
8.2.4	<i>Taxes and levies</i>	43
8.2.5	<i>Control of wholesale margins on petroleum products</i>	43
8.3	Industry Agreements	44
8.3.1	<i>'Natref Neutrality'</i>	45
8.3.2	<i>Sasol Supply Agreement</i>	46
8.3.3	<i>Other relevant industry agreements</i>	47

8.3.4	<i>Blue Pump Agreement</i>	48
8.3.6	<i>Conveyance Agreement between Sasol and Petronet</i>	48
9.	CONCLUSION	49
	REFERENCES	52

LIST OF FIGURES

Fig 1: Interface with other legislation.....	35
Fig 2: Industry agreements impacting petroleum pipeline transport.....	40
Fig 3: Industry agreements impacting pipeline tariffs.....	42

LIST OF ACRONYMS

1. African Minerals and Energy Forum (Amef)
2. Department of Public Enterprises (DPE)
3. Federal Energy Regulatory Commission (FERC)
4. Free on Board Price (FOB)
5. Government's Economic Growth Policy (GEAR)
6. In Bond Landed Cost (IBLC)
7. Johannesburg International Airport (JIA)
8. Marketing of Petroleum Activities Return (MPAR)
9. National Electricity Regulator (NER)
10. National Petroleum Agency (NPA)
11. Retail Rationalisation Plan (RATPLAN).
12. Single Buoy Moorings (SBMs)
13. South African Railways and Harbours (SAR&H)
14. Strategic Fuel Fund (SFF)

15. Synthetic Fuels (Synfuels)

16. Very Large Crude Carriers (VLCCs)

1. INTRODUCTION

This document fulfills half of the thesis requirement for the Master of Philosophy degree in Energy Policy and Planning. Full-time study and supervision of the thesis was accomplished at the Energy and Development Research Centre, in the faculty of Engineering and Built Environment at the University of Cape Town. This thesis focuses on issues surrounding energy regulation, and specifically regulation of pipelines that carry petroleum products in South Africa. The introduction of a regulator for petroleum pipelines is part of an ongoing process taking center stage in the South African government's petroleum industry policy arena. Independent regulation of energy industries is a recent phenomenon in South Africa. There is much activity in deciding which regulatory models should be adopted in the energy sector. In the electricity sector, the National Electricity Regulator (NER), set up in 1995, is already an established institution. In the downstream gas sector, the government is establishing a gas pipeline regulator (DME, 2001). Upstream, for the first time since the 1970s, companies other than state-owned Soeker have become active in oil and gas exploration and the proposed Mineral Development Bill seeks to clarify regulation of the upstream oil and gas sector.

In the Energy White Paper of 1998, South African government policy regarding petroleum pipelines states the following:

Government will promote competition in the transportation of liquid fuels.

The petroleum regulatory regime will inhibit monopolistic abuse of pipelines and storage facilities.

Pipelines will be required to provide non-discriminatory open access to uncommitted capacity, transparency of tariffs, and disclosure of cost and pricing information to a suitable authority.

As a follow up to this policy blueprint, in early 2000, the cabinet of the government of South Africa decided that a regulator of petroleum pipelines should be established (Crompton, 2000).

2. RESEARCH QUESTIONS

This thesis examines issues surrounding the cabinet's decision. It addresses the following questions:

- Is the petroleum pipeline industry in South Africa large enough to justify an independent regulator?
- Do pipelines in South Africa enjoy monopoly rents? If they do, is the establishment of an independent regulator the most cost-effective way of dealing with monopoly rents?
- How effective would such a regulator be in the current structure of the country's petroleum industry? Road and rail transport systems carry vast quantities of petroleum products. Would it be more appropriate for the regulator to include all transporters of petroleum products?
- Would the public, or consumers of petroleum products, enjoy more protection from the proposed regulator than they currently enjoy from other regulatory instruments already in the economic system? The Competition Act, currently under amendment, will have significant authority over several regulators. Would a pipeline regulator offer any protection to a consumer that would be unavailable should the cabinet effectively apply the new Competition Act?

The study follows this structure:

- 1 A theoretical framework on government intervention in the energy sector
- 2 A theoretical framework on regulation
- 3 An international review on pipeline regulations in some selected countries
- 4 An overview of the rationale and objectives for pipeline regulation in South Africa
- 5 Background to petroleum pipeline regulation
- 6 Government objectives
- 7 A description of the transportation of petroleum liquid fuels in South Africa
- 8 An analysis of the economics of petroleum pipelines
- 9 Industry views on pipeline regulation
- 10 Legal and regulatory aspects
- 11 Regulatory options

The essay will address the following additional research questions:

- What options for state involvement in the transport of liquid fuels can one consider for South Africa?

- How would each of these options achieve the objectives for state intervention or involvement in the operation and development of South Africa's petroleum pipeline system?

3. METHODOLOGY

As part of this research, I collected significant amounts of data and information on pipeline regulation over a four-month period.

The first inquiry for data was through a questionnaire sent to all stakeholders in the pipeline industry. I faxed the questionnaire to some stakeholders, and emailed it to others. I followed up the questionnaire with interviews. Personal, documented interviews were conducted with the following key stakeholders in the industry:

- The Department of Minerals and Energy, the key government department tasked with formulation and implementation of energy policy.
- Petronet, the national pipeline operator and also the organization which will be most affected by the pipeline regulator
- Inland crude oil refiners, Sasol and Total. Sasol also manufactures about 30% of South Africa's liquid fuel requirements at its inland oil-from-coal synthetic fuels plants
- Coastal crude oil refiners, BP, Shell, Engel and Caltex
- Empowerment companies, as represented by their pressure group the African Minerals and Energy Forum (AmeF)
- The airline industry—the main users of aviation fuel
- The Department of Transport. The department has regulatory authority on all other forms of transportation, but is silent on its policy position on oil and liquid fuels pipelines.
- Transnet, the parent company of pipeline company Petronet, rail transporter Spoornet, and road transporter Autonet
- The Department of Public Enterprises that, on behalf of government, is the shareholder of Transnet. Regulatory authority over the various Transnet divisions falls on multiple government departments

The second method of data gathering employed was interaction with stakeholders at three workshops. The workshops were held by the Department of Minerals and Energy in Pretoria. I chaired all three workshops on the following dates:

- August 14, 2000
- August 28, 2000
- September 25, 2000

The third method applied was a literature review. Literature on regulation and government involvement in energy and pipeline regulation was analysed. Experiences relating to regulation of the electricity and gas sectors were particularly relevant in conducting a comparative analysis.

Several theories surrounding the field of regulation were analyzed as part of this literature review. These were tested against the economic circumstances and policy framework currently existing in South Africa. These were tested against the economic circumstances and the policy framework currently existing in South Africa. Most of the conclusions of this study are based upon this method.

I also conducted an international review of regulation of pipelines in other countries. Comparative studies were conducted of how petroleum pipelines are regulated in the U.K, the USA and Brazil. This method was used to examine other possible regulatory options.

4. SOUTH AFRICAN PIPELINE INFRASTRUCTURE

4.1 Pipelines

This thesis, when discussing the petroleum pipeline industry in South Africa, refers to the pipeline infrastructure itself and associated infrastructure. The latter comprises storage facilities at the start, end & intermediate points, as well as Single Buoy Moorings (SBMs).

The pipeline infrastructure comprised multi-product pipelines and crude oil pipelines:

- The multi-product pipeline network is owned and operated by Petronet. A recent investigation conducted into Petronet's pipeline tariffs indicated that it possesses a degree of ability to charge monopoly prices (Letsema/Nera, 2000). Third party access, however, did not appear to be an issue.
- Crude oil pipelines which are currently single-user pipelines. There are currently two of them. One is owned and operated by Petronet and supplies crude oil to the Natref crude oil refinery at Sasolburg and the other is owned and operated by Caltex and connects the Saldanha strategic oil storage facility to the Calref refinery in Milnerton, Cape Town.

Petronet also owns and operates pipelines used for the transportation of methane rich gas from Sasol's Secunda plant to the KwaZulu-Natal area. This pipeline, now used for gas, was originally a liquid fuels pipeline serving Sasol 2 and 3, but was converted to transport gas a few years ago. This asset could be considered a liquid fuel pipeline asset "on loan" to the gas industry.

Petronet is South Africa's major petroleum liquid fuels pipeline owner and operator. It is currently self-regulated. It was directly government owned and run until 1990, at which time Transnet was formed and Petronet became one of many Transnet divisions. Transnet is state-owned but government has stated that some of its divisions, including Petronet, may be partially or fully privatized. The pipeline tariff structure, established at the beginning of Petronet's operation, was based on railway rates. Tariffs are distance based, and the cost per unit of distance decreases as distance itself increases. Petronet had no input in the creation of the initial tariffs (Petronet, 2000).

When Petronet became part of Transnet, the pipeline tariff policy and methodology were revised. A point-to-point tariff was implemented, and the pipeline tariff was reduced with respect to the rail tariff - that is to say, the pipeline tariff levels were maintained while the railways increased their base rate. There were no pipeline tariff increases between 1993 and 1997. Tariffs increased five percent in June of 1997 and another five percent in April of 1998 (Petronet, 2000).

Petronet's pipeline network utilization is as follows. Petronet's jet fuel line from Natref in Sasolburg to Johannesburg International Airport (JIA) runs at full capacity. Petronet's crude oil

pipeline from Durban to Sasolburg is also running close to capacity. Petronet's white (refined) products pipeline network runs at varied capacity, from less than 50 percent utilization to 100 percent, depending mainly on the performance of Sasol plants.

4.2 Single Bouy Moorings (SBMs)

There are two SBMs in South Africa—one a crude oil SBM, the other a finished product SBM. The purpose of the Durban crude oil SBM, originally commissioned in 1970, is to enable crude oil for the three refineries it serves (Sapref, Enref and Natref) to be offloaded from VLCCs (very large crude carriers), thereby minimizing freight costs. Some 80% of the crude oil refined in South Africa is brought in through this facility.

The present members of the consortium that own and operate the Durban SBM are BP, Shell, Engen and Sasol. Total, Sasol's partner in Natref, elected not to participate in the consortium for reasons relating to future refinery plans at the time, although these plans did not materialize. Nevertheless, Total has always imported its crude oil for Natref via the SBM as a third party user. The three refineries presently operate at maximum throughput rates—utilization of the available SBM capacity is only about 80%. This implies that there is quite substantial scope for expansion of refinery capacity before the SBM becomes a limiting factor and it becomes necessary to install a second facility. Thus, at this stage, there are no firm plans for a second SBM (Nokusa, 2000).

Third party access to the SBM has been available at a "reasonable fee" calculated to yield a fair return on the value of the asset based on total throughput of all users. For a vessel of typical size, the fee currently amounts to about 0.08 \$/bbl. The fee can be compared to the "wharfage" charge of some 0.50 \$/bbl paid to Portnet as a levy on SBM users. Smaller petroleum industry players have argued that this "fee" system enables large industry corporations to retain a dominant role.

Crude received via the SBM is discharged either into the South Tank Farm on Sapref's land, which contains 5 tanks owned by Enref and 9 owned by Sapref, or into the NATCOS tank farm adjacent to the airport. Sasol and Total jointly own NATCOS tank farm on a 70%: 30% ratio respectively.

Caltex imports crude oil into the SFF storage facilities in Saldanha Bay where Caltex leases one of the SFF tanks. Caltex owns and operates the Saldanha Bay–Milnerton pipeline that is used to transport the crude to its refinery at Milnerton.

4.3 Product Storage Facilities

Depending on location, product storage is used primarily in conjunction with some or all of the following transport modes: coastal tanker, road, rail or via the Petronet pipeline network. While some storage is used for product imports and exports, it is mainly geared towards the primary function of distributing refinery production, which accounts for the largest part of the total throughput. Large-scale importation of products does not presently occur because local refining can largely satisfy the national requirements. Adequate tankage exists, however, to handle occasional imports.

Coastal terminals and inland distribution depots operate in some 100 different locations around the country. Over the years the network has been rationed to a considerable extent, which has increased its efficiency and brought about cost savings both for the oil companies and their customers. There are still, however, reports of significant redundant capacity and inefficiency, which speaks to the need for an environment that provides better incentives for efficiency (Total S.A., 2000).

Hospitality arrangements, in terms of which installations operated by one company provide storage and handling services to others, are the norm rather than the exception—but there are indications that the pricing structure has encouraged over-investment (Total S.A., 2000). Such arrangements are typically location specific, and are negotiated on commercial terms between the companies concerned, taking into account factors relevant to the specific location.

Caltex owns and operates product and crude lines from the Calref refinery to the port of Cape Town. These lines enable product to be moved from the refinery to ships and back. All parties wishing to use these lines are granted access at commercial rates with the only limitation being that usage not interfere with normal refinery operations.

4.4 Possible Future Developments

Capacity studies (Petronet, 1999) on the refined products' pipelines indicate that under normal operating conditions new pipeline capacity will be needed between coastal refineries and inland locations in ±2006, depending on assumptions made with respect to growth rate of markets, cross-border exports, upgrading of inland refineries, etc.

Petronet also proposes the building of a new gas line and that the parts of the present pipeline system that are being used for gas be reconfigured to provide additional capacity for crude or product. In July 2001, inland retail outlets experienced shortages when the Sasol/Total Natref refinery was damaged by fire (*Business Day*, 23 July 2001). This brought to the fore the debate on the need for additional pipeline liquid fuels product delivery capacity from coastal refineries to the Gauteng industrial areas—which have the highest demand for refined product. The issue revolves around strategic plans involving a combination of storage facilities and a transportation infrastructure. Detailed designs have been undertaken on a pipeline from Pretoria to Beitbridge (on the South Africa—Zimbabwe border) and will be considered when volumes warrant its construction (Petronet, 2000).

The optimization and rationalization of existing storage facilities is leaning toward fewer terminals at strategic locations (Total S.A. 2000). A new terminal has, however, been mooted in the greater Johannesburg area. One of South Africa's smallest companies, Afric Oil, has undertaken a study into the possibility of a SSM at Durban for the importing of refined products. The results of their feasibility study have not been publicized.

4.5 Historical Background

During the early 1960s—due to logistical problems being created with the transportation of refined petroleum products from Durban to the inland market areas—the then South African Railways and Harbours (SAR&H) undertook the construction of the first 12-inch pipeline from Durban to Johannesburg with an additional intake at Sasolburg. The pipeline was designed and constructed in order to be able to supply product from the Durban crude-oil refineries to towns en route to the Witwatersrand and other places.

At the time, two major refineries SAPREF (a joint venture between Shell and BP) and MOREF (Mobil refinery) were located in the Durban area. The coal-based refinery belonging to SASOL was located in Sasolburg.

During the later part of the 80s, a decision was taken to commercialize the South African Transport Services (SATS), formally, the SAR& H, with a view to possible privatization. Petronet was therefore established as a strategic business unit within Transnet (formally SATS).

Since 1965, Petronet has extended this pipeline network. Today, it owns, maintains and operates a network of some 3000km of high-pressure petroleum product, crude oil and gas pipelines. During the 1998/99 financial year, Petronet transported through its network approximately 16 billion litres of fuel consisting of diesel, leaded and unleaded petrol, aviation turbine fuel and crude oil. Gas throughput for that financial year was 200 million cubic meters. The gas pipeline, which today transports methane rich gas from Secunda to Durban, is a converted petroleum pipeline.

The refineries themselves own crude oil pipelines that feed coastal refineries. The single mooring buoy (SBM) for refined product at the port of Durban is jointly owned by Sasol, BP, Shell and Engen. The only other SBM, located at Mossel Bay, is owned by Mossgas, which uses the SBM for shipping refined product manufactured from gas.

The other crude pipeline runs for 113km, from Saldanha Bay to Calref, the Caltex refinery in Cape Town. Petronet transferred ownership to Caltex in 1996. The Petronet liquid fuels transport and storage network, with 32 pump stations/depots traverses five provinces, namely Kwazulu-Natal, Free State, Gauteng, North West and Mpumalanga. Their intake stations are the two refineries in Durban, the crude refinery at Coalbrook (Natref) and the synfuel plants at Secunda (Sasol II and III).

The network has a large tank farm with a storage and distribution facility at Tarlton in Pretoria and a capacity of 30 million litres of fuel. This facility is mainly used for over-border deliveries into Botswana. The pipelines range from 6 inch (150mm) to 20 inch (508 mm).

The crude pipeline to Natref has capacity for 650 cubic metres per hour and currently runs at above 80% capacity. The product pipeline from Durban to Gauteng has capacity for 400 cubic

metres per hour and currently runs at between 30% and 100% capacity. The aviation turbine fuel from Natref to Johannesburg International Airport has recently been upgraded to a capacity of 140 cubic metres per hour. It currently runs at 70% capacity.

4.6 Industry Characteristics and Key Stakeholders

4.6.1 Synthetic Fuels (Synfuels)

South Africa possesses very limited commercially exploitable crude oil reserves. In 1950, in an attempt to reduce South Africa's dependence on imported oil, the government initiated a synthetic fuels program, generating liquid fuels from coal. The synthetic fuel industry consists of two major entities, Sasol and Mossgas. The Sasol 1 refinery was opened in Sasolburg in 1954, but has later been taken out of service. Sasol 2 and 3 were opened in 1982 and 1983 in Secunda. They have a capacity of 150,000 bbl/d of crude oil equivalent. Mossgas, which produces petroleum products from natural gas, was opened in Mossel Bay in 1987, and it has a capacity of 45,000 bbl/d (crude oil equivalent). In total the present synfuels capacity is 195,000 bbl/d (crude oil equivalent) (SANEA, 1998).

Sasol is the world's largest manufacturer of oil from coal (SANEA, 1998). The coal is gasified and then turned into a liquid fuels or petrochemical feedstock. Mossgas is state owned through the Central Energy Fund (CEF) group of companies, which is responsible for the government's interests in the petroleum sector (Petronet is also petroleum sector). The Mossgas synthetic fuels plant receives natural gas and condensate from offshore gas production facilities in the Bredasdorp Basin through a 90-kilometre pipeline and converts the natural gas into liquid fuels. Imported condensate is also delivered to the synthetic fuels plant by tanker.

The synfuels industry has been protected by regulation to ensure its survival when crude oil prices are too low to cover production costs. However, Sasol's protection is currently under review by government. Marketers, such as BP, Caltex, Sasol, Shell, Afric Oil, Total, Engen, and Zenex, are obliged to take up Sasol synfuel production in proportion to their market shares (ABN-AMRO, 1998). The implications of this are important for understanding possible developments in transport of liquid fuels.

4.6.2 Refining

South Africa imports crude oil from the Middle East and other sources, with Iran presently its greatest single source of oil. Until 1954, all of the country's oil was imported in refined form and distributed by BP, Caltex, Mobil and Shell. As demand increased, however, a domestic refining industry developed. The first refinery, Genref, opened in Durban in 1954. Sapref, also in Durban, in 1964; Calref, in Cape Town, in 1966; and Natref, in Sasolburg, followed suit in 1971. In 1999, Genref's production capacity was 105,000 bbl/d; Sapref's capacity was 165,000 bbl/d; Calref's 110,000 bbl/d; Natref's 86,000 bbl/d. The total refinery capacity in 1999 (excluding synfuels) was 466,000 bbl/d. As a result, South Africa is one of the largest refining nations in Africa.

When Natref was established in 1971 in a joint venture by Sasol (then a state enterprise) Total, and the National Iranian Oil Company (whose participation was later bought out by Sasol and Total), Natref entered into an agreement with South African oil companies. The group agreed not to establish a retail chain and the oil companies agreed to receive, subject to contract limits, production of the group's white products—each company doing so in proportion to its national market share.

4.6.3 Marketing

Existing price regulation and uptake agreements in the so called "wholesale marketing" link of the chain is at the crux of the regulation of logistics.

The wholesale market is structured as follows. Most oil companies market branded products to customers throughout the entire country. However, in order to minimize transport costs, product exchange arrangements, known as "swaps", have been put in place. Thus, the refinery in each area produces all of the fuel products sold in that area. Wholesale marketers purchase fuel from refineries at IBLC (in bond landed cost) prices. Wholesalers then transport the fuel to roughly 200 depots across the country. When the fuel leaves the bulk storage depots, the oil companies blend additives to the fuels in order to distinguish between brands. From the depots, the products are transported to about 5,000 service stations and about 10,000 direct consumers.

In terms of liquid fuels marketing, South Africa is divided into zones,

based on the prevailing mode of transport. The zones are:

- Zone A: rail
- Zone B: road
- Zone C: pipeline
- Zone J: "Jowles" Transport

The 'zone differential' (i.e. transport cost) for each zone is based on the tariff for transporting the product from the coast to the zone by the dominant method. Zone differentials are published in April each year.

The 5,000 service stations market 92% of the country's petrol, but only 13% of the country's diesel oil; most diesel oil gets sold to direct consumers. Illumination paraffin is sold through a number of venues, including service stations, cafes, and hardware stores.

Since the opening of Natref, the Supply Agreement restricts Sasol from owning or operating any quota retail outlets and limits its share of the South African retail market to a small amount of diesel (22.5 megalitres) and 9.23% of the petrol market through the "Blue Pumps." Fuel marketed in this way is a combination of the refined crude oil from Natref and the synthetic fuel from Secunda. The Blue Pump fuel is marketed throughout the Northern Limpopo, Mpumalanga, Gauteng, North West Province and Free State. This supply agreement is scheduled to end in 2003.

4.7 Government involvement and price regulation

The fuel industry has been subject to much government intervention and regulation. During the OPEC shocks and the oil embargo in the 1970s, the government became more involved in the fuel sector than ever before. The liquid industry is regulated by legislation and by commercial arrangements between major entities in the industry.

The oil embargo forced the government to develop the Strategic Fuel Fund (SFF), a subsidiary of CEF, by which the government became responsible for the international procurement of crude oil, often through third parties. The SFF bought crude oil for the South African refineries and built up strategic reserves of crude oil at Saldanha Bay and Witbank in Mpumalanga Province. A

new policy on strategic stocks has recently been developed to be in line with international trends. The notional price at which the refined product is sold to the wholesale marketers is based on the IBLC value plus a transport charge, depending on the final destination of the product. The DME, through the Marketing of Petroleum Activities Return (MPAR) agreement, determines the wholesale margins. MPAR induces competition among marketing companies for industry profits. Margins are set to give the industry a target rate of return on assets before taxes and interest. The government is required to alter the margin when the actual return falls below 10% or rises above 20%.

The retail market is regulated in terms of price, the establishment location and operation and control of the service stations. Retail margins are set based on an industry wide cost study done by the DME and the Motor Industries Federation. In addition, the DME, with the Motor Industries Federation, also administers the Retail Rationalization Plan (RATPLAN). This plan is a form of self-regulation, a voluntary agreement between government and wholesale and retail industry players. Participants agree to supply petrol to retailers who have been established in accordance with the RATPLAN and who follow the regulations contained in the Petroleum Products Act, relating to the operation of service stations.

In order to promote small business in the retail industry, oil companies are generally not permitted to operate service stations, but they can own them. The number of service stations is limited in order to increase throughput per station and thereby, through economies of scale, constrain costs in South Africa's price controlled environment. Self-service at retail outlets is also prohibited to protect the jobs of station attendants.

Other government regulation, legislation and agreements do not allow the sale of petrol at any other than government-approved prices, regulated in accordance with Section 2 of the Petroleum Products Act of 1977 (amended in 1985). Regulation affects the price of petrol. The price that petrol sells for depends on the world price of refined products, as reflected in the IBLC, plus the government controlled margins, taxes, and transportation costs.

4.8 Pipeline Transportation and Associated Infrastructure

4.8.1 *Characteristics of transport of liquid fuels in South Africa*

Road is the main mode of transport for liquid fuels in South Africa. There is some movement of product by sea, but this is mainly restricted to coastal product movement between coastal refineries. Rail is used quite extensively in the rail zone (zone A) and in the pipeline zone for 'on-railing' of product.

In zone C, 78% of liquid fuels are moved by pipeline, 11% by road and the remainder by rail. However, it is interesting that more than 20% of products moved from Durban to the inland market are moved by road despite the existence of a pipeline infrastructure with spare capacity (Nera/Letsema, 2000). Only 25% of the piped products consumed in the C-zone originate from Durban.

Transportation of freight by road, as a competitor to rail and pipeline, is a central issue in South Africa. In the sub-region, only South Africa and Namibia allow gross vehicle mass of 56t (Lemmer, H, 2001). Such a high GVM, which is considered overloading, creates damage on the roads which is estimated at R600m per year (Lemmer, H, 2001). The exclusion of this issue in the cabinet's decision to establish a regulator of pipelines alone is one of the central issues behind the arguments of this thesis.

In countries like the US, the price ranking of fuel transport mode for long distances from the cheapest to the most expensive option is ship, pipeline, barge, rail and truck respectively. However, in the US, the maximum permissible GVM for road freighters is only 38t. In South Africa, road freighters are not held responsible for the damage they cause on the roads, including oil spills, i.e. road use charges and taxes are not levied on these users in accordance with the costs attributable to them. This is a cost which road freight ignores, whereas rail and pipeline transporters pay for infrastructure investments and maintenance (Evert H, 2001).

For distances up to 425 km in South Africa, the price ranking is truck, pipeline and rail respectively. There are major, real concerns that road transport is not paying its share of the cost of road infrastructure investment and maintenance (Evert, H, 2001). The fact that this concern was not included in the decision to establish a regulator of pipelines raises questions about the adequacy of consultation that was undertaken before the decision was made. It also calls into

question the integrity and adequacy of the information and analysis used in formulating this approach to pipeline regulation. For example, Spoornet has planned to invest one billion Rand a year on capital investment over the next few years (Engineering News, 2001). The bulk of this amount is on rail infrastructure. For distances of more than 425 km, pipeline transportation should be the cheapest option, but it is not, in itself a major anomaly.

The price distortions between road, rail and pipeline calls into question the logic of establishing a pipeline regulator alone, when in fact three transport modes are in competition. There are several significant issues regarding pricing of freight that must be addressed. These issues will have a major impact on the transportation of petroleum products.

At face value, the price of rail transport of liquid fuels in South Africa is high compared to road transport (Engineering News, October 2001). Petronet has to discount rail tariffs for 'on-railing' that it contracts from Spoornet in order to compete against road transport in some areas. This is because Spoornet's costs must include the costs of depreciation of their infrastructure, and the need for future investments. Road users, on the other hand, bear no responsibility for road infrastructure investment. Because road does not pay the full cost of infrastructure owing to regulatory shortcomings, transport by truck is ending up as a cheaper alternative (without assuming discounts on the return trip and without adding tolls) in 38 out of 219 road routes—using numbers provided by the Road Freight Association of South Africa. This creates a major distortion on pricing and costing of the industry.

5. A THEORETICAL FRAMEWORK

According to neo-classical economists, social well-being (welfare) is maximized when consumers can freely determine their consumption and if productive resources are allocated to satisfy these consumption demands in the most economically efficient manner possible (Jaccard, 1995). Economists specify several conditions, including competitive markets that will lead to welfare maximization. However, consumer welfare is not always maximized when private sector firms are left to pursue individual profit-maximizing strategies. Where consumer welfare is not maximized, markets are considered to have failed.

There are several reasons why markets can fail to operate in a way that maximizes consumer welfare. Such market failures in some cases can be so severe as to merit regulation despite attendant costs. Broadly speaking, there are three classes of market failure, and these may be termed problems of asymmetric information, problems of externalities and problems of monopoly power (Armstrong, 1995). This study focuses on the problems of monopoly power because this is the most relevant issue for pipeline regulation in South Africa.

5.1 Intervention And Market Power

Monopoly power exists when a market suffers from ineffective competition (actual or potential) (Armstrong, 1995). At the extreme the market is supplied by a single firm, protected by barriers to entry, which in the absence of regulation would face no check on the prices it could charge except for its consumers' willingness to pay for its products or services. In the utility industries, demand elasticities are often low and an unregulated monopoly could charge prices that would result in a dramatically inefficient allocation of resources.

The issue of prices is not the only problem that comes with market power. Monopolies often do not have sufficient incentive to cut their costs where possible nor are they as quick to introduce new products, or improve their products and services as firms acting in competitive markets.

Traditionally, government authorities have conferred special rights and obligations on classes of industry deemed to be affected by the public interest (McGowan et al, 1992). The electricity, gas, telecommunications, water and other service providers have been awarded "public utility" status. A common feature of most of these industries is a declining cost structure that allows significant economies of scale (IEA, 1994). In such cases, economists argue the least cost producing method may be by a single firm.

There remains considerable debate around the best method of delivering a public service. Some countries feel strongly that a public service should be kept under public ownership. Others believe that the private sector can deliver these services as well as, if not better than governments, provided governments provide proper control

However, regardless of on which side of the debate one falls, when optimum production is achieved by a single firm, the situation is described as a natural monopoly. For example,

duplicating pipelines for petroleum or gas transportation, or electricity transmission lines does not constitute the most efficient use of scarce resources. Thus, especially in relatively small markets such as South Africa, it is not economically efficient to achieve competition in pipeline transportation of liquid fuels by establishing competing pipeline networks.

The absence of competition in monopoly markets has prompted governments to intervene in order to ensure that monopolies do not abuse their power at the expense of the customers they serve (IEA, 1994). The roles of government in such cases go beyond the protection of customers from monopoly practices. In addition to regulation designed to impose safety, environmental, and other standards, the government's role can include the promotion of specific policy objectives, fuels, technologies, etc.

The two main approaches used to control the behavior of a utility are direct intervention and regulation. In South Africa, the government controls pipeline operator Petronet through a web of regulations administered by the Department of Minerals and Energy. The government could also intervene in the affairs of Petronet using its role as shareholder of Petronet through the latter's parent company, Transnet, which in turn is owned through The Department of Public Enterprises, a government department.

The recent trend¹ of the South African government policy has been to move away from direct intervention through state-ownership to control through regulation by independent regulators.

5.2 Regulation

Economic regulation has been defined as a process of substituting for competition by imposing on a public utility a code of conduct that simulates the behavior of a company as though it were in a competitive market. In a broad sense, the power of a regulator to set rates and ensure that all applications receive non-discriminatory service simulates competitive conditions, which generally tend to minimize the private and social costs of providing services to consumers who are willing and able to pay for them (IEA, 1994).

¹ In many economic sectors including telecommunications, electricity and gas. (See Independent Communications Authority of South Africa – est. 1999; National Electricity Regulator – est. 1995; Gas Pipelines Regulatory.)

Three types of government regulation are most relevant to transportation by pipelines:

- Regulation of standards that may be used to shape the behavior of firms in such areas as health, safety and pollution control.
- Structural regulations, which take place when a regulatory authority determines which firms can or must engage in particular activities and the relationships between these firms. An example is the evaluation in certain countries of the need for new pipelines and administration of licenses for them.
- Conduct regulation that involves government measures to control the conduct of a given enterprise.

Western governments have tended to direct regulation of pipelines through state ownership, while in the United States the federal and state governments have attempted to direct the behavior of state monopolies by regulating aspects of their conduct (IEA, 1995). In South Africa, independent pipeline owner Petronet is owned and controlled by the state. The refineries own all the other pipelines whose product they supply.

5.3 Pipeline Regulation

- The four major reasons for regulating pipeline transportation are:
- Pipelines exhibit extensive technical economies of scale.
- Pipelines are not subject to significant intermodal competition. In South Africa, the situation is different because pipelines currently face competition from the road.
- Product transportation by pipeline, whether it be gas or petroleum involves sizable capital investments, implying appreciable barriers to entry.
- For environmental reasons, governments often wish to limit the number of pipelines.

5.3.1 Natural Monopolies

Pipelines generally exhibit economies of scale. As a consequence, pipelines have decreasing average and marginal costs of production (IEA, 1994). Given sufficient product volumes, the larger the pipeline that is built, the lower the tariff required to produce a certain net return on the investment. The reason is that, as a pipeline's size is increased, its costs increase less than linearly while throughput increases exponentially.

According to traditional analysis, the result of decreasing costs of production implies that each pipeline could, if unregulated, be a natural monopoly in the area it serves, since an expansion of capacity results in a reduction in average costs per unit transported. The potentially strong market power of pipelines, especially gas pipelines, also stems to a large degree from lack of effective intermodal competition. This is not necessarily true of petroleum product pipelines in South Africa, where tankers, barges and road and rail trucks compete with pipelines (Nokusa, 2000).

5.3.2 Competition

Regulation may be used to introduce competition. An example is the abrogation of monopoly rights to build pipelines. In most cases, introducing competition implies some kind of mandatory access to pipeline services, i.e. requiring the pipeline to transport product/s on behalf of third parties under certain conditions.

Although mandatory open access is a central element in most attempts to create competition in pipelines, particularly gas markets, it should be kept in mind that it is a means rather than an end (IEA, 1995). Competition may be achieved in other ways, and open access alone is not sufficient to produce effective competition. For instance, freedom to build a pipeline may be an instrument to introduce competition in areas with more than one potential supplier of product. Investment in pipelines however, requires considerable financial strength, which can limit the number of potential competitors.

6. AN INTERNATIONAL REVIEW OF PIPELINE REGULATIONS

6.1 Scope of Review

The purpose of this section is to provide a brief outline of how the issue of petroleum pipeline regulation is handled in other countries. The section focuses on what is covered by primary legislation and how it is regulated. It is not intended to be an exhaustive summary, but to provide a guide to some of the options already in place in various countries. The bulk of the literature used in this chapter was sourced through Econ (Centre for Economic Analysis) of Norway.

In some countries, the primary source of government intervention is through the auspices of a state-owned company. However, since the South African government is specifically interested in legislative options, and is looking towards reducing the ownership role of the state in the operation of the energy sector, this document only looks at the available legislative options.

6.2 The Application of Pipeline Regulation

There are three broad types of government regulation of pipelines exercised in the world, namely: regulation of standards, structure and service (Econ, 2000). The first two cover the issues of the need for a pipeline and its safe operation, while the latter governs the conduct of the operators. The regulation of standards and structure is broadly similar in countries with legislation governing pipeline operations. In this research, I highlight the core regulatory elements in these areas and mention others that are not universally employed.

The main difference between types of regulations is in the conduct of the operator in their service role. There are two broad approaches that are examined by comparing the UK and US systems that relate to transport tariff setting. Because of the difference in approach to service regulation, I have explored this area in more detail.

Whilst the discussion below focuses on the form of regulation and its coverage, it is important to consider the rules governing appeals both by pipeline owners and third parties. This applies both to challenging construction licenses and decisions made by the government/regulator. This could be important in reducing the risk of subsequent expensive and time-consuming litigation.

6.3 Regulation of standards and structure

The regulation of standards and structure is relatively straightforward and there is a general consensus concerning the key issues that need to be covered (Econ, 2000). These are:

- Safety—regulations governing the design, construction, operation, maintenance and safety management of pipelines.
- Pollution control—regulations governing the measures required and system to be put in place to limit pollution from pipes, and the level of unacceptable pollution.
- Need for a pipe and adequate size—regulations governing the application to build a new pipeline that require the constructor to provide evidence that the pipe is required and adequately sized to avoid future duplication.

In addition, there are a number of other issues that are included in some legislation and not in others, but which in certain circumstances can be more or less important. These include:

- Environmental impact assessments (EIA)—lay down the general manner in which an EIA for oil pipelines should be prepared.
- Notification of decommissioning/restarts—this information is generally required in accessing other applications to build pipelines serving a similar supply area. In some instances it is required that the pipeline owner notify the designated authority, while sometimes it is only required when a new application is made.
- Rules to ensure pipeline owners have adequate funds to discharge their liabilities. A precautionary measure to ensure that constructors have the funds to cover land acquisition and other costs before they begin work.

In some countries (the UK for example) the regulation of standards and structure is incorporated in primary legislation, while in others (the US) it is left to a regulatory authority to issues the terms and conditions in this respect.

6.4 Regulation of services: General approaches

There are two broad approaches to petroleum pipeline legislation with respect to service provision (Econ, 2000). One is to assume that the service element is part of the normal commercial activities of firms and to let them conduct their business on a normal commercial basis. Here, there is an important caveat in that appeals can be made to the government or a designated regulatory authority if one or more party feels they are being discriminated against. The other approach is to be proactive, rather than sit back and wait for firms to appeal. In the latter approach the government or competent regulatory authority regulates the service activities of the pipeline owners by means of legislation and/or regulations that specify in advance how these services may and may not be delivered.

The first approach means that any regulatory investigation will be undertaken on an ad hoc basis, while the second approach requires a permanent body to be established to provide continuous regulation. These two approaches can be seen in comparing the UK with the US systems, while the Brazilian system has aspects from both.

The UK and US approaches reflect their constitutional positions (Econ 2000). The UK government has more powers to impose direct legislation than the US federal government, which is restricted by the constitutional position of individual States. This means that the UK has traditionally used primary legislation as the model for regulation, while the US has used a "tiered" system. Primary legislation at the federal level establishes general policy goals and individual States and regulatory agencies are left to devise means by which those goals are obtained. The Brazilian system, with its federal structure, is closer to the US system of tiered legislation. However, whether the regulatory power rests with central government or a regulatory agency is less important than how those regulations are applied. The UK and US systems are different in this respect, as are the US and Brazilian. The UK and Brazilian systems may have different structures, but they have a similar regulatory approach of only intervening in disputes, while the US system involves continuous intervention and monitoring by the regulatory authority.

6.5 United Kingdom Legislation

In the UK there is a system of licensing that covers the construction of oil pipelines (Econ 2000). The principal piece of legislation is the 1962 Pipelines Act, which covers the authorization procedures for the construction of a cross-country pipeline that exceeds 10 miles (16.1 km). There is also supplementary legislation governing the maintenance and safety of the pipeline, as well the need to undertake environmental impact assessments prior to any new construction.

Under the 1962 act there is provision for third party access to pipelines, which was introduced to 'avoid the unnecessary proliferation of pipe-lines'. The Secretary of State has powers to require that a pipeline be built to a certain minimum capacity and where spare capacity exists to make it available to third parties. Under section 10 of the 1962 Act, the Secretary of State is allowed, "at the request of a third party to impose conditions granting and regulating third party access to an already existing pipe-line again where the Secretary of State is satisfied that this is appropriate and will avoid unnecessary proliferation". According to the UK Department of Trade and Industry, the Secretary of State has never had to invoke this section, but its presence in the legislation may have had a deterrent effect.

In the UK the transport tariffs and access to pipes have been governed by the commercial considerations of the various parties. Pipelines do carry third party supplies, but tariffs and access conditions are not directly regulated. The 1962 Act could be invoked to regulate access, but only if there is a dispute and the Secretary of State is requested by the third party to intervene. To date this has not occurred and no guidelines exist to determine how the Secretary of State would determine the conditions to impose for third party access.

The UK system has worked effectively without requiring the expense of a permanent regulatory authority. The threat of government action (and indeed the uncertainties attached to that action in terms of exactly how the government will interpret the 1962 Law) has provided sufficient incentive to ensure companies reach a compromise solution independently of government. Intermodal competition has also tended to ensure that pipeline transport tariffs are competitive, further reducing the need for government intervention.

6.6 United States Legislation

In the US, the federal structure means that primary legislation focuses on establishing policy objectives that the federal and state regulatory bodies then seek to implement (Econ 2000). Under the Interstate Commerce Act (1935) and the Energy Policy Act (1992), the Federal Energy Regulatory Commission (FERC) regulates the rates and practices of oil pipeline companies engaged in interstate transportation. The Interstate Commerce Act calls for the establishment of reasonable and just rates for pipeline transport and is the incorporation of the Hepburn Act of 1906, which extended the 1887 Act to Regulate Commerce to cover companies operating pipelines transporting petroleum products. This serves to highlight the long history of tariff regulation in the US.

FERC's objective is to "establish just and reasonable rates to encourage maximum use of oil pipelines while protecting shippers and consumers from unjustified costs." The FERC does not oversee the construction of oil pipelines or regulate the supply and price of oil or oil products, but it does try to "assure shippers equal access to pipeline transportation, equal service conditions on a pipeline, and reasonable rates for moving petroleum and petroleum products by pipeline."

In general, the US system does not leave it up to the commercial parties to set transport tariffs and access conditions and then to intervene if requested as in the UK. Instead, these are proactively regulated by the FERC. Pipeline companies are obliged to file certain financial reports and follow certain accounting procedures. A traditional cost-of-service methodology is used to determine oil pipeline transportation rates, using a trended original cost rate base, and a rate of return based upon the actual embedded debt cost and equity costs reflecting the pipeline's risks. The 1992 Energy Policy Act called for a streamlining of the FERC's procedures and the establishment of a simplified and generally applicable rate-making methodology. This history has implications for South Africa where regulatory capacity has yet to be established and the industry is tiny compared to that of the USA.

FERC regulates the energy markets through a series of Orders. Order 561 (October 1993) sets out the new basis for regulation of oil pipeline tariff rates. Rather than assess the cost structure every year, a formula is applied indexing the ceiling tariffs to the producer price index for finished goods minus 1% (PPI-1). Other rate setting methodologies are permissible under certain defined

circumstances, but it is for the companies to prove they are eligible. The other methodologies include a detailed examination of the cost of service and market-based rates. The former could be invoked if parts of the pipeline system needed to be replaced due to a natural disaster or other unexpected events. The latter can only be charged if the pipeline does not exercise significant market power.

FERC believes that indexing of oil pipeline rates will eliminate the need for much future cost-of-service litigation. However, rates may be subject to cost-of-service review when an oil pipeline company claims it is significantly under recovering its costs, or when its rates become excessive in relation to actual costs. FERC will undertake an examination of the relationship between the annual change in the PPI-1 index and the actual cost changes experienced by the oil pipeline industry every five years, to ensure that rates are just and reasonable.

The attempt to streamline the process of setting transport rates is in recognition of the heavy burden of the previous system. The option of seeking market-based rates indicates that in certain circumstances the regulatory controls are not necessary, but the burden of proof lies with the pipeline companies and is itself a protracted exercise. It should also be noted that to date the litigants have been pipeline owners seeking a review of the rate setting methodology. Since the Commerce Act covers both road and rail transportation between states, intermodal competition is effectively curtailed, limiting competition between pipelines. Liberalizing all the oil transport modes and allowing universal market based prices could be more efficient.

The historical background to the US regulatory environment has led to the current structure and the relatively heavy-handed approach to transport tariff regulation (Econ 2000).

6.7 Brazilian Legislation

The Brazilian system combines aspects of both the UK and US systems (Econ 2000). The key primary legislation is the 1997 Petroleum Law, which established an independent regulatory body, the National Petroleum Agency (NPA), charged with carrying out the country's energy policy. Prior to this law government regulation was carried out through the auspices of the state-owned oil and gas company, Petrobras.

Under article 56 of the Petroleum Act, authorization is required from the NPA to construct an oil pipeline. The NPA is charged to “issue norms on the eligibility of interested parties, and the conditions for the authorization and transfer of its entitlement, observing the fulfillment of the requirements for environment protection and traffic safety.”

Third party access to oil pipelines is guaranteed under article 58, which specifies that “any interested party may use the transportation pipelines and the maritime terminals, existing or to be built, through adequate remuneration to the entitled holder of the installation.” Article 58 (1) specifies that where agreement is not reached between the pipeline owner and third parties, it is for the NPA to establish the level of adequate remuneration, ensuring it is compatible with market prices. The NPA also regulates priority afforded to the handling of third party product. Under article 8 (VI) the ANP must have established the criteria it will use in calculating the fees for pipeline transportation.

In principle it is for the individual companies involved to determine transport tariffs and access charges in line with the UK system. But unlike the UK system it is a regulatory agency and not the Secretary of State who is the arbiter in any disagreement. The agency’s functions are closer to the US FERC’s, but they do not extend to setting all oil pipeline transport tariffs, only for those for which there is a dispute. However, without enshrining the methodology for any dispute resolution in law, it could well mean the NPA is open to legal challenges to its chosen methodology. It is important that a system for challenging the regulatory authorities’ methodology and findings is in place (Econ 2000).

6.8 Other Countries

Most Western European countries have adopted a similar approach to the UK system. In some instances pipeline operators are required to publish or post with the government/regulator their transport tariffs, but the cost basis for the tariffs is not investigated unless called upon by a third party.

In New Zealand, the 1937 Petroleum Act contains similar provisions to the UK’s 1962 Act (Econ 2000). Under normal circumstances the transport tariffs and access conditions are the subject of the commercial parties and the government only gets involved if there is a dispute. Under section

63 of the 1937 Act, third parties can appeal to the Minister for the right to use an authorized pipeline. The Minister can set the charges for access under section 64 (1b) or the matter could be referred to arbitration by the Minister or any other party involved in the dispute.

In Australia, pipelines are regulated by the 1967 Pipelines Act. The Act follows the format of the UK 1962 Act, with third parties able to appeal to the Minister if they fail to reach an access agreement with the pipeline owner (Econ 2000). Under section 23 of the 1967 Act a third party may appeal to the Minister if three months have expired since they requested access and no agreement has been reached. According to a recent review, the provisions under this section of the Act have never been used.

The Australians are currently reviewing the 1967 Pipeline Act. A Paper prepared for the New South Wales government has taken a broad view of the Act and International trends and states that: "While the need for government intervention has not disappeared, the form that this intervention should take has been the subject of review. It is now recognized that prescriptive regulation can be expensive and may not achieve the regulatory objectives. Regulations that concentrate on ends rather than means provide more discretion, and greater accountability; to industry in the way it achieves the necessary regulatory outcomes. An immediate benefit is that this places more of the decision making in the hands of those who are likely to have the most information; industry rather than the regulators." In the context of oil pipeline regulation, this is an important point (Econ 2000).

7. INDUSTRY VIEWS ON PIPELINE REGULATION

7.1 Groupings

The viewpoints of some key stakeholders in the petroleum pipeline industry are briefly summarized in this chapter. The process of soliciting stakeholder views started with grouping key stakeholders into what was considered appropriate categories. The final groups were as follows:

7.1.1 Coastal Refiners:

Comprising of BP, Shell, Engen and Caltex. Between them, they own Sapref and Enref refineries in Durban as well as Calref in Cape Town. These are considered key stakeholders because pipelines, their own or those owned by Petronet, transport crude from port/s to their refineries, as well refined product from their refineries to storage facilities and depots. These companies are also the shareholders of the only crude SBM facility in South Africa, which is in Durban.

7.1.2 Inland Refiners:

Consist of Total and Sasol. Total and Sasol jointly own Natref, the inland refinery based at Coal Brook. Their crude is transported by pipeline from the coast, and their finished product is also transported by pipeline to market. In addition, Sasol, the synfuel producer owns coal-to-liquid refineries at Secunda and Sasolburg. Its finished product is also transported via pipeline to Gauteng markets.

7.1.3 The Major Pipeline owner:

The Department of Public Enterprises, which owns the parastatal Transnet, which in turn owns Petronet. DPE and Transnet were interviewed separately.

7.1.4 The existing regulator:

DME, unlike other regulators whose views were solicited through an identical method, DME's views were expressed through a series of meetings with the Directorate of Hydrocarbons over a three months period.

7.1.5 Empowerment companies:

Empowerment companies are companies owned and controlled by citizens of South Africa previously disadvantaged under the apartheid government whose rule ended in 1994. The companies, which include Tepco (now a member of SAPIA as well), Excel, Afric Oil and Zenex) would normally express their common position through their organization, the African Minerals and Energy Forum (AMEF). However, in this instance, they selected Excel, whose senior executive is one of the most active members of AMEF, to speak on their behalf.

7.1.6 *The aviation industry:*

This stakeholder has a key interest in ensuring competitive transport tariffs for delivery of aviation fuel.

7.1.7 *Independent storage facility operators:*

The management of the Island View storage facility in Durban.

7.1.8 *The pipeline owner and operator:*

Petronet, the pivotal stakeholder in the petroleum pipelines industry was interviewed alone.

7.1.9 *Fuel Users*

It is considered a major weakness of this research that fuel users were not consulted. The users fall into the following categories:

- Domestic users
- Commercial users
- Industry and agriculture users

It is assumed that most of these users have a strong interest in getting tariffs reduced.

After the above categorization, a questionnaire was designed to solicit stakeholder views. The questionnaire is attached as an appendix. The stakeholders were given a choice of responding as follows:

- They could either complete the questionnaire or simply return it.

However, if they felt that issues that they wished addressed were not adequately covered by the questionnaire, they were invited to request personal interviews;

- They could summarize their issues and request personal interviews;
- They could respond with detailed written submissions.

Where the researchers felt that responses did not address the issues in sufficient detail, they requested to see the stakeholder/s for personal interviews.

In the end, the stakeholder views expressed in this report were secured by a combination of responses to the questionnaire, detailed written submissions and interviews. The final set of views was refined through two stakeholder workshops, held as part of the consultation process.

7.2 Key Stakeholder Positions

7.2.1 *The Department of Minerals and Energy*

DME, through its Hydrocarbons Directorate, currently holds regulatory authority over petroleum pipelines. It currently exercises this authority through Petronet. DME is also the driver of the process of regulating petroleum pipelines.

From a series of meetings with its officials, DME made it clear that it expects an effective regulatory regime for pipelines. Unlike gas, for which the department initiated the regulation process recently, where the regulatory regime is considered light, the department feels that the petroleum pipeline industry is mature and requires a stronger regulatory regime.

The department was also clear about third party access in petroleum pipelines. It said this was not negotiable. The driver for this expectation is DME's commitment to black economic empowerment as outlined in the White Paper on Energy Policy (1998).

Furthermore, the department was clear that it wants a regulatory regime attractive to potential investors in pipeline. Consequently, conditions must be clarified on issues regarding taxation.

Among other things, the department expected the study and consultation process to clarify:

- Servitude issues on pipelines in relation to the Municipal Systems Bill.
- Boundary and product definitions. Boundaries must be clarified between activities or utilization of services such as SBMs etc, while definition clarity is required on the different products carried by the pipelines.

- Storage facilities. Here again the focus would be on boundaries and access.

7.2.2 *Petronet*

Together with consumers, Petronet stands to be most affected by pipeline regulation. Petronet expressed its stakeholder views in a detailed response to the questionnaire, through a written submission and personal interviews between the researcher and their chief executive.

Overall, Petronet believes petroleum pipelines are a natural monopoly and must be regulated. However, they believe the regulatory regime must be light and flexible because:

1. The ownership of Petronet itself is uncertain. Thus, they would prefer a regime which can accommodate such future changes;
2. The regulation of the whole petroleum industry itself is uncertain. They would thus prefer a regime flexible enough to accommodate the current status, re-regulation and/or de-regulation of the industry when it comes.

Among other issues, which the regulatory regime must address, Petronet felt that:

- Regulation must address ALL modes of transportation for petroleum products, i.e. road, rail and pipelines. In Petronet's view, there is competition in the industry. In particular, road was singled out as not paying its full cost of damage caused to road infrastructure through transporting petroleum products on long distances. Thus Petronet would consider it a contradiction if pipelines alone were regulated with road and rail excluded.
- A tariff-setting model based on revenue required would be ideal.
- The regulatory regime must ensure industry efficiency (e.g. address slippage and uneven flow issues) and orderly development of the network since there exists capacity constraints.
- The liquid fuels industry is not normal because it is interspersed with regulations based on rules, agreements and arrangements. A number of these arrangements centre

on the synfuel producer, Sasol. These regulations must be normalized by ordinary transparent, legal mechanisms because they affect the operations of Petronet.

7.2.3 *Inland Refiners*

Inland refiners have doubts about the need for regulation of pipelines—they would probably slash Sasol profits. That said, they agree with Petronet in being concerned about road transport not carrying its share of infrastructure costs. They would wish this issue to be investigated by an independent study. They also concur that Petronet is a natural monopoly, rather than one declared by law.

Inland refiners hold a particularly strong position on crude oil pipelines. They would not like them regulated since they consider them part of their production process. In this regard, they do not believe issues of open access, transparency of tariffs, etc, should be applied to crude oil pipelines. Rather, they would prefer that the crude lines be sold to owners of the refiners who utilize all their crude. (Thus ensuring any competitive investment in inland crude refining is impossible).

That said, in the event that a petroleum pipeline regulator is appointed, inland refiner emphasized that:

- Their preferred regulatory option would be the FERC (Federal Energy Regulatory Committee) method applied mainly in the United States;
- Licenses should be approved for pipeline construction on the basis of a business case that adds value to the economy, and also on principles of common carrier, non-discriminatory tariffs, equitable tariffs (fare rate of return);
- The location advantage which inland refiners currently enjoy must be respected and maintained;
- They offer three options which the regulator may choose from in dealing with the issue of so-called “Natreff neutrality”;

- The two-part tariff model is not acceptable to them, as they prefer the same tariff for same service. The refiners also outline a number of what they term 'rules of carriage' that they consider important and must be addressed.

7.2.4 Coastal Refiners

Coastal refiners also perceive the petroleum pipeline industry as competitive, despite Petronet's natural monopoly position. This refers to competition from road and rail, particularly for long distances.

Because of pipelines' natural monopoly position and the fact that these were publicly funded, they believe pipelines should be regulated. They also view the current MRG pipeline as a petroleum pipeline, funded by the state for petroleum purposes. Consequently, they would wish it to be regulated as a petroleum rather than gas pipeline.

The refiners made it clear that for assets that were privately funded, like SBMs and storage facilities, they would oppose any proposal to regulate them. To them, current conditions relating to access on assets like SBMs and storage facilities are sufficiently competitive not to warrant regulation. Complications that could arise from the MPAR guidelines highlight some of the difficulties that would arise from regulating privately funded assets.

Their views of coastal refiners on road haulage correspond with those of their inland counterparts and Petronet. They also believe that road haulers are not paying the full cost of road infrastructure utilization. Because of the distortion of road haulage costs, some storage facilities and depots are being forced to close.

Finally, coastal refiners believe that in the event that inland refiners are allowed to buy their long crude line, they should also be permitted to buy the long line that transports their product to markets.

7.2.5 Empowerment Companies

Empowerment companies have concerns about their survival and growth. They would like to see a regulatory regime, which not only creates a level playing field for them as small companies, but tilts the field in their favor, thus allowing them to catch up. To them, the most important issue is

access, be it to pipelines, SBMs or storage facilities. They believe that owing to lack of transparency, it is possible that they pay higher handling and storage costs than established companies. They believe this situation might get worse when the Sasol agreement expires. They would like regulation to cover the entire logistical infrastructure of petroleum pipelines, including Island View storage facilities that handle imports.

7.2.6 *The Airline Industry*

This industry is most concerned with costs. The airline industry is:

- Advocating for adoption of activity-based costing in the determination of allowed costs;
- Advocating for tariffs which are cost-based;
- Concerned about how assets will be valued;
- Of the opinion that pipeline companies are entitled to a commercial return on assets;
- Concerned about how the regulatory body will be staffed and where it will be located.

7.2.7 *The Department of Transport*

Ordinarily, the Department of Transport would be expected to be a key stakeholder since this industry is about transportation of liquid fuels. However, Petronet's submission observes that:

“The White Paper on Transportation is totally silent on the pipeline transport mode. This is also true of the Moving South Africa (MSA) initiative of the Department of Transport(although it mentions problems with the overall pricing of transport and resultant market distortions that affect pipelines). We have had very close alignment with the Department of Minerals and Energy (DME) as opposed to the other transport divisions in Transnet which have had their links with The Department of Transport.”

The Department of Transport's lack of interest in pipelines might appear insignificant, but it has the potential of creating complications for the pipeline regulator. This is because road and rail, which fall directly under its policy mandate, have a direct impact on volumes, tariffs and investment in pipelines.

7.2.8 *Transnet*

Transnet policy on pipelines is influenced the parent shareholder, the Department of Public Enterprises. In turn, Transnet policies guide their subsidiary Petronet. However, as is indicated above, neither the Department of Transport nor the Department of Public Enterprises has ever been active in the formulation of policies that influence pipelines. The policy process that influenced the creation of a pipeline regulator occurred with minimum input from both departments.

7.2.9 *The Department of Public Enterprises (DPE)*

The DPE is the ultimate shareholder of Petronet. Its policies and strategies are implemented through the parent company Transnet, a key state-owned enterprise.

In 2000, DPE announced to the public its policy towards state-owned enterprises in its policy blueprint called: *'An Accelerated Agenda Towards The Restructuring of State-Owned Enterprises: Policy Framework'*.

These policy guidelines directly affect Petronet and its pipeline business. Among many other policy pronouncements, the policy framework indicates that: The government's economic growth policy (GEAR) proposes a phased process of restructuring in order to maximize value and to ensure adequate regulatory frameworks are put in place.

Heightened competition has necessitated the development of increasingly sophisticated regulatory regimes for the licensing of the energy industry. This has resulted in a trend towards re-regulation of the energy sector and:

- Increasing competition has also meant that there is less need for the regulation of prices.
- Thus, the direction and areas of emphasis of whatever regulatory dispensation for petroleum pipelines must fall within the guidelines of the above DPE policy framework.

There remains uncertainty around Petronet's ownership. Current investigations have examined the possibility of selling it to The Central Energy Fund or disposing it to the private sector.

The Department of Public Enterprises also disclosed that it had received notification from cabinet that it must limit what it describes as "the proliferation of regulators" in all sectors. This is an extremely important point in view of the limited impact that the pipeline regulator is likely to have, especially in relation to cost.

7.3 Summary of Key Issues

Overall, there is *consensus* on the following issues:

- The need for regulation of natural monopolies which were financed by public funds;
- That should regulation occur, it must address empowerment concerns;
- That if it occurs, it must address access issues in one way or another;
- That boundaries around product and services must be clarified;
- That regulation should be through legislation and associated regulations and not agreements;
- In broad terms that pipelines should be regulated in terms of construction, operation and decommissioning;
- That issues such as health, environment and safety should be regulated, and that these issues can be addressed 'up-front' in legislation;
- That expropriation should be included in the regulatory framework;
- That contentious and complex issues might need some measure of discretion in a changing environment;

- That even currently, some form of competition exists in the industry of transporting petroleum products. This competition is between road, rail and pipelines, despite the fact that pipelines are a natural monopoly;
- Road haulage is not paying its full cost of infrastructure utilization, and that this distorts operations of the petroleum transportation industry.

On the other hand, there is *no agreement on*:

- The scope of regulation, particularly whether to include storage facilities and SBMs or not;
- The need, if any, for regulation of privately funded assets;
- The type of regulation for pipelines in respects of:
 - Competition regulation (methodology and scope)
 - Economic regulation (price setting and tariffs)
 - Regulatory methodology for the different pipeline issues;
- How to deal with existing rules, agreements and arrangements which have been operating in the industry for many years;
- How to approach the need for orderly development of the petroleum pipeline network.

Finally, there is no consensus on which issues must fall within the general authority of competition authorities. The authority of the future petroleum pipeline regulator (if it is established), which issues must be left to the industry to deal with, and which ones should remain with DME, the current regulatory authority.

8. LEGAL AND REGULATORY ASPECTS

8.1 Existing agreements that regulate the sector

The petroleum industry in South Africa generally operates on the strength of agreements, both formal and informal based on the understanding of the role players. A relatively small part of the

activities in the industry are governed by legislation. As will be seen below, this raises questions about the appropriateness of establishing a specific sub-sector regulator in an industry that, in its entirety is so highly regulated by both the government through legislation and by large web of agreements among the players themselves.

This in itself makes it difficult to do a satisfactory comparison as far as legislation and regulation are concerned in that agreements are historic in origin, complicated and often open to different interpretations, even among the role-players themselves. However, the important factor is that legislation in general overrides agreements and that in this context it serves an important purpose—to try and determine the influence of legislation, both present and envisaged, on the petroleum industry. Other legislation that may have an impact on petroleum pipeline legislation and regulation is illustrated in Figure 9.1.

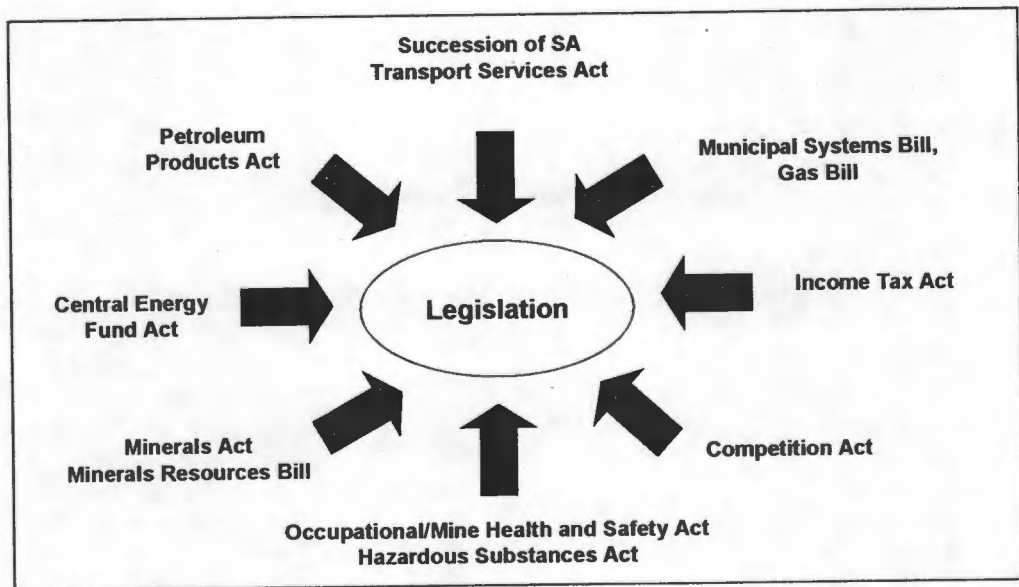


Figure 1: Interface with other legislation

Below is a review of the most important legislation that impacts or may impact on petroleum liquid pipeline matters.

8.1.1 Succession of South Africa Transport Services Act

This Act paved the way for the formation of the old SA Transport Services into different companies with Government as the initial shareholder. As a result thereof Petronet was established as a separate company, albeit as a full subsidiary of the holding company, Transnet.

8.1.2 Petroleum Products Act

This Act, some of whose provisions are currently being reviewed, provides that the Minister may publish the price at which petroleum products are sold to consumers (e.g. the pump price of petrol). Although the Act provides for a wide variety of possible regulations to regulate the industry, this is not used actively. Instead, there is a large reliance on agreements between the industry and government relating to or impacting on issues such as transport costs of fuel, interaction and sales between players, permission to erect and operate service stations and so on. In reality the Petroleum Products Act is thus only used as a mechanism to enforce the effect of the contractual arrangements and other governmental objectives (such as taxes) toward third parties not involved or bound by the agreements. To some extent it serves as a deterrent in the sense that the “threat” exists that Government may use it if needed.

8.1.3 Central Energy Fund Act

This Act *inter alia* provides for the establishment of the Petroleum Equalization Fund as a mechanism whereby the price of crude oil can be equalized over a period of time. (All purchases and all sales of crude are channeled through the fund). The CEF (Pty) Ltd operates it, a company wholly-owned by the state. As part of its operations CEF, through one of its subsidiaries called the Strategic Fuel Fund (SFF), also owns large storage facilities in the Western Cape. Mossgas, another one of its subsidiaries is involved in producing petroleum products from gas, while its other subsidiary, Soekor, undertakes production and exploration in South African territorial waters. The Central Energy Fund Act does not per se impact on petroleum pipelines, but it might do so indirectly regarding storage facilities and exploration pipelines.

The Central Energy Fund as an organization is currently undergoing a major restructuring process to bring its objectives in line with the expectations of the democratic government.

8.1.4 Minerals Act

In terms of the Minerals Act, currently undergoing major changes, the offshore rights to oil and gas deposits belong to the Government. Prospective developers and prospectors of fields have to obtain permission (prospecting and mining permits) from the Government or Soekor (now The Petroleum Agency of South Africa) to explore and develop. Part of the condition relates to standards of construction and operation while the Mine Health and Safety Act govern safety aspects. The Minerals Act also deals with environmental aspects, such as rehabilitation, guarantees etc. This applies both to offshore facilities and pipelines from those facilities inland in so far as it forms part of the "mining" area. There is new proposed legislation called The Minerals Development Bill, which is currently going through the Parliamentary process. Significant changes that affect mineral rights are the cornerstone of this bill.

8.1.5 Occupational Health and Safety Act

The normal provisions of the Occupational Health and Safety Act will apply to the construction and operation of liquid pipelines, except for offshore pipelines where the Mine Health and Safety Act will apply. The same holds true for environmental legislation, where the offshore part will be regulated through the Minerals Act and the rest through general environmental requirements and legislation. The Hazardous Substances Act plays a role in the storage, sale and transport of such substances.

8.1.6 Municipal Systems Bill

This bill spells out the competencies of local authorities in its area of jurisdiction. Although petroleum pipelines do not form part of the constitutional capabilities of local authorities, local authorities may have an indirect affect on the construction and operation of pipelines over its geographical area of responsibility. Examples are the power to expropriate, granting of servitudes and health, safety and environmental concerns. It could have a direct influence on a petroleum pipeline being converted into a gas pipeline or *vice versa*. Gas reticulation is a local authority competency in terms of the constitution and this would be especially important at the distribution side of the pipeline.

8.1.7 Income Tax Act

In terms of the Taxation Laws Amendment Bill, 2000, a new section 12D is inserted into the Income Tax Act. This section allows a deduction for the actual costs of a new pipeline, and includes gas, oil and petroleum product pipelines per definition. The allowance will be 10% per year. In other words, a new pipeline can be written off in 10 years.

8.1.8 Competition Act

In terms of the Competition Act, the Competition Authority is responsible to investigate and report on competition issues. At present the Competition Act specifically exclude the activities of any person whose activities are governed under other legislation. However, the Act is in the process of being amended to the effect that the powers of the Competition Authority will extend to all competition issues. This means that the activities of sectoral regulators in relation to competition issues will also fall under the auspices of the Competition Act.

Because of the proposed changes to the Competition Act, it might be considered prudent to delay the establishment of all regulators whose role might overlap with the Competition Act, the pipeline regulator being one. Indeed, some might argue that in view of these changes which are expected to give the Competition Commission more effective powers to be pro-active, the need for independent regulators for small industry sectors becomes questionable. The manner in which the Competition Act currently functions is very much *ex post facto* (except on issues relating to mergers), in the sense that investigations are only lodged and complaints investigated after the industry is established, or if something is deemed worth investigating. It differs in this context from the electricity industry, for instance, where a license is needed before the activity is embarked upon. What is important for any envisaged regulation is that the interface between that legislation and the scope and ambit of the Competitions Act is clearly addressed if the former in any way is to impact on or regulate competition aspects.

8.2 Present Regulatory Arrangements

The South African liquid fuels industry is characterized by a web of complex regulations, which impact the transportation of liquid fuels. These regulations are currently in the process of being amended and government has embarked on a major program to re-regulate the industry (Minister

of Minerals and Energy, 2000). This development brings into question the appropriateness of introducing a specific sub-sector (i.e. pipelines) regulator into an industry which is right in the middle of such wide-ranging regulatory up-changes.

8.2.1 Price control

Petroleum products are divided into regulated and non-regulated products. These are further divided into controlled (petrol, diesel and kerosene) as well as non-controlled products (jet fuel, power paraffin, bitumen, lubricants, fuel oil and LPG). The basic price for controlled products is calculated daily and published by CEF. Petrol price is regulated up to the retail price, whereas retail price for diesel is not, but there is a set maximum wholesale price.

8.2.2 IBLC

The Petroleum products pricing chain comprise of the following components: Free on Board Price (FOB), Rand/Dollar Exchange Rate, Freight cost, Insurance and Losses, Landing and Wharfage, IBLC Price, Refining Margin; Wholesale Price, Retail Margin, Taxes and Levies.

8.2.3 Wholesale Price

The wholesale price is made up of the IBLC and various other components listed below. Wholesale prices are maximum prices and may be discounted. Wholesale price is controlled. The wholesalers lift the product at the refinery gate at an IBLC price and take it to various depots, service stations and direct consumers throughout the country. Rail, trucks and pipelines do transportation of the products. The service station and direct consumers pay the wholesale price to the wholesaler.

Components of the wholesale price include:

- Zone Differential (for inland transportation);
- Service Differential (for inland transportation);
- Taxes and Levies (Fuel Tax, Customs and Exercise, Road Accident Fund and Equalization Fund);
- Other costs;

- Wholesale Margin.

8.2.4 Taxes and levies

Taxes and levies on liquid fuels include:

- Custom and Excise Duty which is imposed on petrol and diesel;
- Road Accident Fund levy that is determined by the Minister of Transport in conjunction with the Minister of Finance and used to finance road accident third party claims. RAF contribution is approximately 14.5% a litre for petrol and 10.3% a litre for diesel;
- Equalization Fund levy is a fixed monetary levy, determined in terms of the Central Energy Fund Act, by the Minister of Minerals and Energy in conjunction with the Minister of Finance.

8.2.5 Control of wholesale margins on petroleum products

The issue of controlled margins has a major impact on regulation of any aspect of the petroleum sector in South Africa. Wholesale (marketing margin) is aimed at granting marketers a benchmark return of 15% on depreciated book value of assets with allowance for additional depreciation, but before tax and payment of interest. The profitability of the wholesale marketers is calculated on the previous year's results and does not take into account the inflationary increase in the current year. The wholesale margin is determined by the DME using the MPAR (marketing of petroleum products activities return) guideline. The wholesale margin is only adjusted if the industry average return on assets is above 20% or below 10%. An independent firm of accountants audits the returns.

The regulation of pipelines alone, to the exclusion of other modes of transportation of product like rail, road and storage will have a major impact on the heart of the regime currently controlling prices. This is because, as indicated earlier, the transportation of crude and product from the coast to retail outlets is integrated, and current costing is based on this integration.

8.3 Industry Agreements

There are number of agreements currently governing or impacting on the regulatory environment for the petroleum pipelines industry. These agreements are extremely important, and will have a major impact on the effectiveness of regulation of pipelines. Because they are so far-reaching and so intricate, any regulatory dispensation that ignores them runs into problems of possible ineffectiveness.

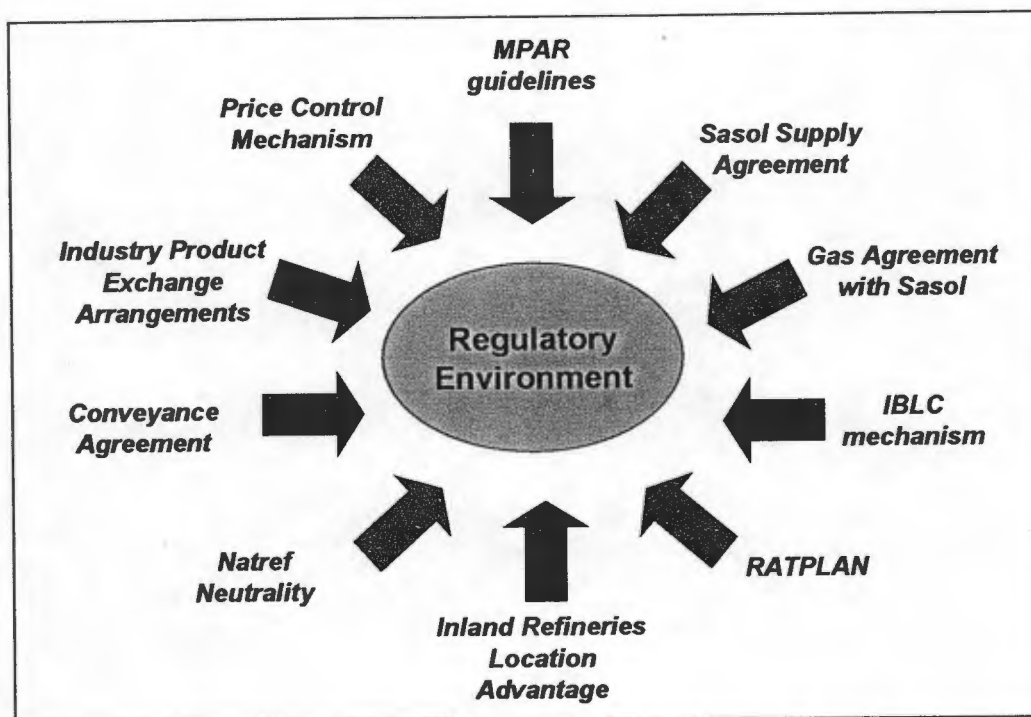


Figure 2: Industry agreements impacting petroleum pipeline transport

The following two are probably the most important: the 1992 'Natref Neutrality' agreement and the Sasol Supply Agreement. The key features of these two agreements are outlined below.

8.3.1 'Natref Neutrality'

The so-called 'Natref neutrality' has been given various names by people, but basically refers to the current link between the refined product pipeline tariffs and Natref's crude oil pipeline tariffs. The agreement is, in fact an unwritten commercial understanding, a 'gentlemen's agreement' aimed at ensuring that the inland refinery, Natref, is not unduly disadvantaged by its location, and that the tariffs charged for finished products are balanced with tariffs charged for crude transportation. The history of the agreement dates back to the days when Transnet, using the cheapest mode of transport for each zone, transported all liquid fuels. Total had intended building its own refinery at Richards Bay, but was convinced by government to join with Sasol and the National Iranian Oil Company and build Natref on the promise that being an inland refinery

would not disadvantage them. The enforceability of the agreement is questionable and would be over-ruled by legislation/regulation.

Today, all oil companies, except Mossgas profit from transport in the over recovery in the zone price, which is conservatively estimated at about R80m/annum. This is a very important issue in the petroleum industry today, yet it is an issue that the proposed regulatory regime for pipelines will not address. Logistics is a key aspect for any oil company that profits through optimization. Much investment has gone into Natref, upgrading it to a refinery with cracking capacity to obtain a 90% white oil yield to prevent backhauling of residual and other products.

8.3.2 Sasol Supply Agreement

When Natref was established in 1971, it was agreed with South African oil companies that Sasol would not establish its own retail chain but would sell its white products through other oil companies' outlets, subject to contract volume limits—each company doing so in proportion to its national market share. To better balance the supply and demand of fuels, this commercial agreement was expanded to include all of the group's synthetic fuel production after Sasol 2 and Sasol 3 were commissioned. This agreement entitles Sasol to furnish about 7.7 billion litres of finished product per annum in the "Sasol Supply Area". Sasol has given notice on the present upliftment agreement. The oil industry and the Sasol are at present negotiating a new agreement. Synthetic fuels save South Africa billions in foreign exchange and hence the view of the Energy White Paper that synfuels should be accommodated in the economy as much as possible. At \$20/bbl crude oil prices, Sasol saves the country more than US\$1 billion per annum in foreign exchange. This agreement gives Sasol the task of deciding the product flow pattern and hence the pipeline utilization as Sasol plans the supply to the oil companies in the area. It must be noted that Sasol also distributes Total's production volume from Natref into the inland market. According to an exchange agreement between Total and other oil companies, Total's production is supplied to them inland and in exchange they provide volume to Total at the coast.

The current upliftment agreement includes Sasol's portion of Natref production in the Sasol quota, giving Sasol flexibility in deciding on the source of product. Sasol production volumes are allocated between the various oil companies. The Sasol supply group, on routine monthly basis, determines the product availability from Natref and Secunda and assesses for which area, within

Sasol's supply area, has sufficient product to supply. The balance of the requirement in the Sasol supply area will be declared as a shortfall and will be supplied by the oil companies from coastal refineries. This information is formally communicated, with a four-week notice period to the oil industry to give it time to supply the balance of the requirement that Sasol is unable to meet. These variations are reflected in the ex-Durban product pipeline utilization that ranges from below 30% to over 100%. The annual volume supplied by Sasol to the oil companies is fixed. Sasol uses the oil company market forecasts to plan the monthly supplies to them.

8.3.3 Other relevant industry agreements

A number of other industry agreements also impact the petroleum pipelines industry and on pipeline tariffs in particular. These are illustrated below.

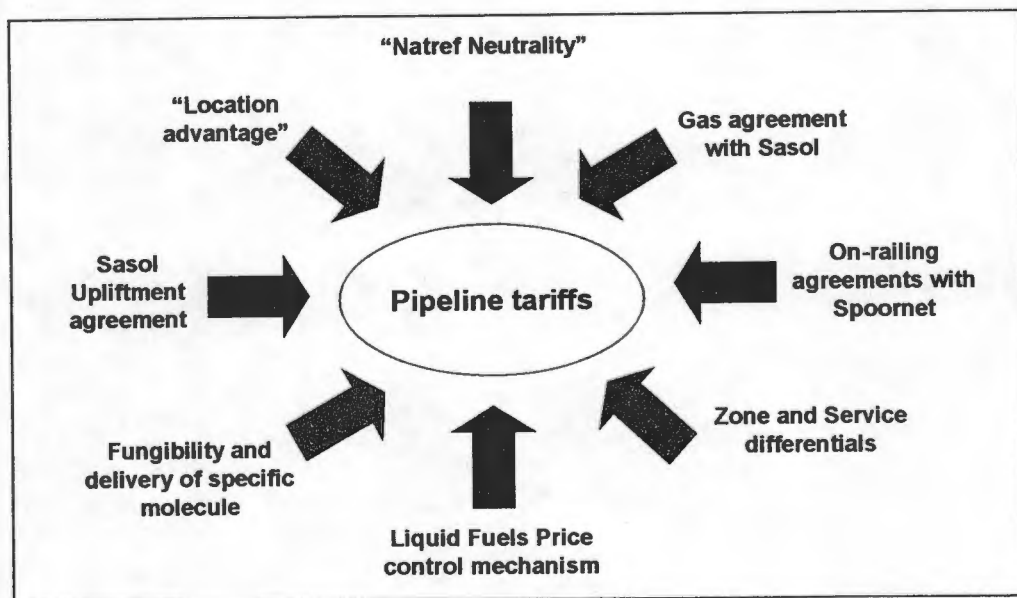


Figure 3: Industry agreements impacting pipeline tariffs

Some of these existing agreements are briefly described below.

8.3.4 Blue Pump Agreement

This agreement limits Sasol's direct marketing of petroleum products. In terms of this agreement, Sasol is not allowed to operate its own service stations. Sasol is only allowed to market its products at the roster sites allocated by DME in terms of the Ratplan. Out of the 194 roster sites available countrywide, 30 are Sasol branded through blue pumps on the forecourts of the service stations of other oil companies. In addition, Sasol may not exceed 9.23% of the total market and sales are also geographically restricted to the Sasol supply area.

The blue pump agreement is scheduled to expire at the end of 2003, but could be brought forward by the Competition Commission which in August 2001, commenced investigations into Sasol contracts (Business Day, 2001). In June 2001, Sasol announced its intention to enter the retail market, a move that might force government to intervene in order to facilitate an orderly transition from the old order (Business Day, 2001).

8.3.5 Product Exchange Agreement

The wholesalers or refiners have entered into product exchange agreements to serve different geographic markets in the country. The Durban refineries supply the KwaZulu-Natal area, neighboring countries and parts of the Cape region. Calref supplies the Cape Province. Mossgas supplies the areas surrounding Mossel Bay, Port Elizabeth and East London. SSF and Natref supply Gauteng, Free State, Mpumalanga, Northern Province, parts of KwaZulu-Natal and Northern Cape.

8.3.6 Conveyance Agreement between Sasol and Petronet

This agreement was entered into between Sasol and Petronet. It came into effect on 1 November 1965. This agreement governs: the operation of pipelines, ownership, operation and maintenance of feeder lines, metering of petroleum products, custody of products, quality control, sampling, disposal of intermixture, quality control, mode of transporting products after commissioning of main pipeline, condition of conveyance, tariff and termination of agreement.

The above web of agreements literally “run” or manage the petroleum industry. This will certainly affect how the regulator of pipelines will be able to discharge his her responsibilities. Yet, as currently designed, the regulator will not have any direct power over these agreements. This certainly brings into question the relevance and appropriateness of such a regulatory institution.

9. CONCLUSION

The huge administrative burden of the American FERC system make it unattractive for the South African economic situation. As a developing country, SA has limited administrative capacity and has been struggling to effectively implement telecommunications regulation, among other regulatoion. Technical capacity is a crucial resource not to be used up in unnecessary procedures that can be achieved in more effective ways. The burden on companies will deter investment and/or require a larger return—hence higher tariffs—as the “regulatory risk” increases. As a blueprint for South Africa, a more light-handed form of regulation is recommended. The biggest burden of the US system arises from its huge administrative demands and large amounts of work imposed on pipeline operators (Econ 2000).

A web of regulations, agreements and arrangements surround the petroleum industry in South Africa. These have been outlined above. This web has a major impact on how transporters of petroleum products, in particular, do business. In the event of establishing a regulator for pipelines who has no authority over these other agreements and arrangements, legal complications are almost inevitable. It can be envisaged that a regulator of pipelines is likely to find itself making decisions that have major knock-on effects on this web of agreements and regulations. To implement decisions is likely to require shifting through this huge web of regulations, agreements and legislation thereby causing delays resulting in frustration and ineffectiveness of the regulator. Petronet has indicated that these arrangements have a major impact on how they do business (Petronet, 2000).

Over the years, the transport part of the regulated system has been “deregulated by default.” Producers get transporters to do the transport at rates/tariffs lower than that recovered in the

pump price and then “pocket” the difference. The regulation process requires that the pump price be adjusted to the lower transport cost level but that never happens. Non-transporters are presently making money out of transportation (Petronet, 2001)

This is just one of several critical areas of the petroleum transportation industry which a pipeline regulator cannot have authority over. Yet it is an area that directly affects the returns of pipeline operators. This in turn affects the industry’s attractiveness to investors, and thereby potential growth. It could be argued that a sub-optimal regulatory regime could in fact do more harm than good. This area alone calls into question the appropriateness of establishing a regulator that cannot regulate an important component of the industry.

It was indicated at the beginning of this study that the road is the overall main mode of transportation for petroleum products. Transport by truck is a cheap alternative (without assuming discounts on return trips) in 38 of 219 road routes (Road Freight Association, 2000). Even on long distances from Durban to the inland market, more than 20% of petroleum products are moved by road despite the existence of a pipeline infrastructure with spare capacity at times.

As currently designed, the pipeline regulator would have no authority over this activity, yet it is an activity which has had a major impact on volumes with a pipeline operator. With such a major impact on volumes, it affects projected returns as well as investor attitudes towards new pipelines.

Petronet operates 3000km of pipelines, and is by far the largest petroleum pipeline owner and operator in South Africa. Most crude pipelines (except the one feeding Natref) are owned and operated by the oil companies that own the refineries that they feed with products. By world standards, the pipeline infrastructure, which transports 64% of product consumed in the country, is tiny in an industry whose major barriers to entry is the amount of capital required (Econ, 1999). It had a replacement value of only R7b in 1999. The current proposal to establish a pipeline regulator aims to create an institution that will have no say in the mode of transportation of 36% of product.

It has been estimated that the costs of establishing it is R2.4m (Sad-Elec, 2000). It is further estimated that the costs of running the institution would be approximately R4.3m per year (Sad-

Elec, 2000). Yet, that institution would have no regulatory powers over how 30% of petroleum product is transported. This is quite clearly a sub-optimal regulatory institution.

Finally, the Competition Commission is undergoing major changes expected to give it more “teeth”. Competition issues are likely to constitute a major component of the pipeline regulator’s work because of the needs for third party access. Several of the industry agreements are likely to come under the spotlight of the commission as economic empowerment gathers pace simultaneously with the re-regulation process. An example of this possibility has already appeared with conflict between empowerment company Tepco and its supplier Sasol that went for adjudication (Business Day, September 2001).

If the Competition Act were being revamped to be able to deal with such issues effectively, would it not be more prudent for the cabinet to wait for the outcome of this process, rather than contradict its own commitment to minimize regulators?

A regulator focusing on petroleum pipelines alone is likely to find it difficult to be effective. This is because pipelines transport just two-thirds of petroleum products. The remainder is road and rail, which the regulator would have no authority over.

A second complication is likely to arise from the fact that the authority over policies that guide road and rail is vested in a separate government department from the department that directs the affairs of petroleum pipelines. Stakeholder interviews conducted as part of this study indicate that the Department of Transport (with responsibility for road and rail) has never made reference, or shown interest in petroleum pipelines.

Thirdly, this study outlined a range of regulations, arrangements and agreements, some formal and some informal, which have a major impact on the operations of the entire petroleum industry of South Africa. A regulator established in isolation would sooner or later run into implications of some of these arrangements, and might find their job made impossible. As indicated above, Competition Commission was requested to adjudicate in a case involving Tepco Oil and Sasol over the alleged uncompetitive nature of the Sasol Supply Agreement. (Business Day, 2001). If the Competition Commission is the appropriate regulatory authority to deal with these informal

agreements, does it remain necessary to create another regulatory institution with limited powers over such important regulatory issues that affect the petroleum industry?

Fourthly, the Department of Minerals and Energy itself is in the process of re-regulating the petroleum industry. This is being done over a period of time. This re-regulation will have a major impact on the web of industry agreements and some of the current legislation. This raises the question of just how relevant a pipeline regulator will be when the deregulation process is complete.

Finally, for an industry of such a small size as pipeline transportation in South Africa, the necessity of a pipeline regulator might need to be reviewed. At running costs of over R4m per annum, but minimum impact over key issues of the transportation of petroleum products, justification becomes difficult. More so when the cabinet has issued a caution to government departments warning about its discomfort with a proliferation of regulators in the country (Department of Public Enterprises, 2000).

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