

# AN ANALYSIS OF THE SECUNDA COAL-TO-LIQUIDS FACILITY IN THE CONTEXT OF SOUTH AFRICA'S ENERGY TRANSITION

August 2022

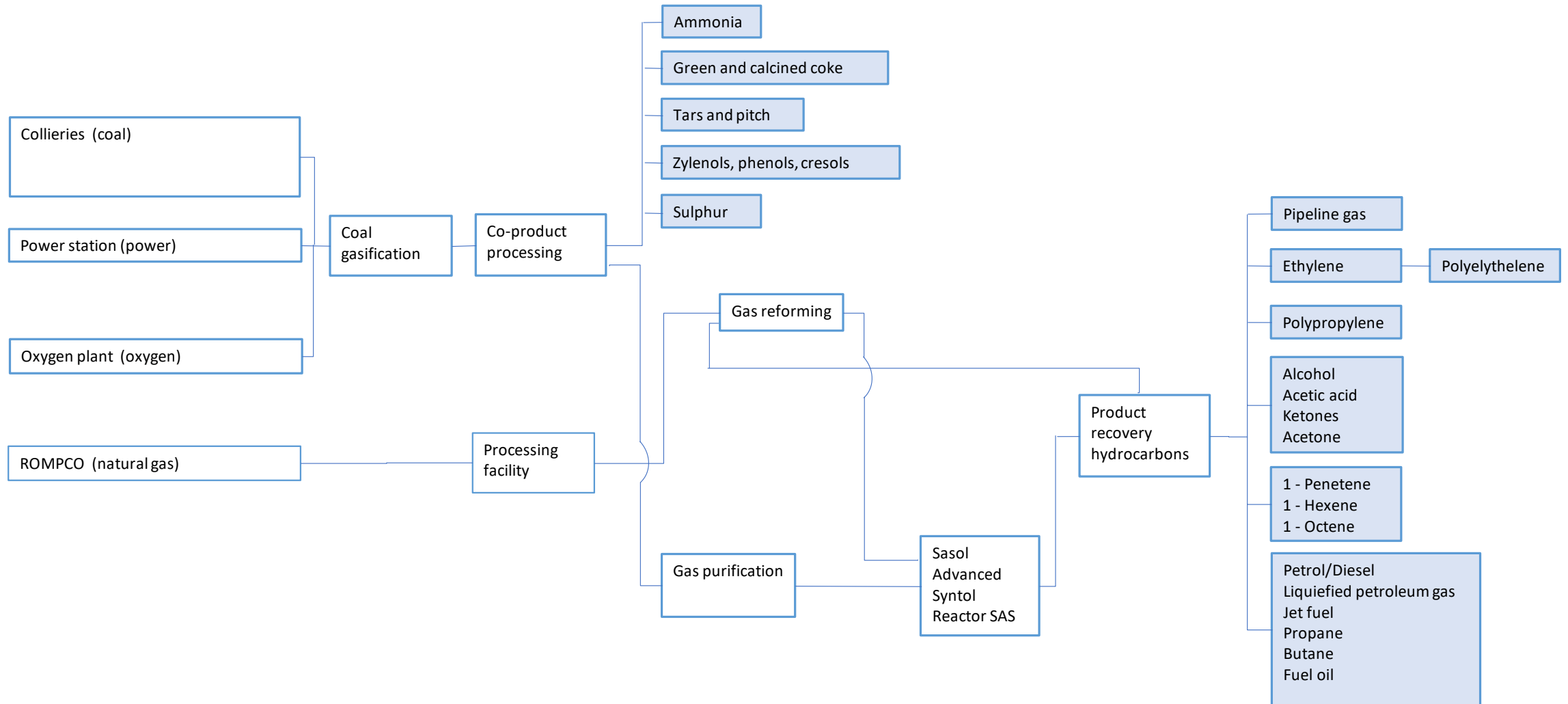
Caitlin Bergh, Bryce McCall, Bruno Merven, Harro Von Blottnitz



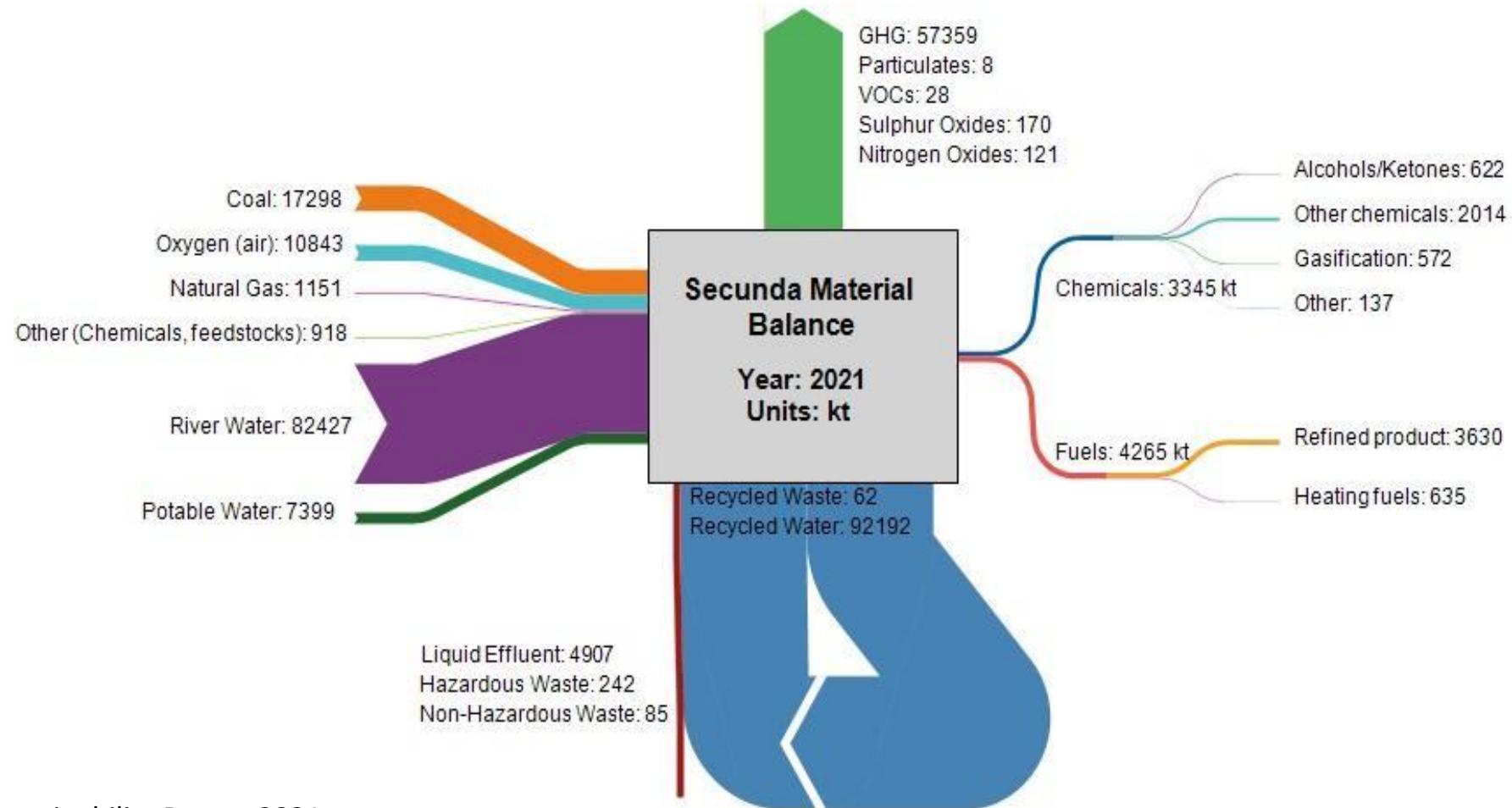
TIPS FORUM 2022

TOWARDS A JUST TRANSITION - THE ROLE OF INDUSTRIAL POLICY

# Sasol's Processes in Secunda



# GHG Emissions and Environmental Impact



# Refining Capacity of SA Liquid Fuel Producers

Refinery (Location)	Ownership	Type	Capacity (barrels per day)			
			Years 2010 to 2015	Years 2016 to 2019	Years 2020 to 2022	Year 2022
Sapref (Durban)	Shell South Africa Refining (Pty) Ltd (50%) and BP Southern Africa (Pty) Ltd (50%)	Crude	180 000	180 000	180 000	0
Enref (Durban)	Engen Petroleum Ltd	Crude	120 000	135 000	0	0
Chevref (Cape Town)	Off The Shelf Investments Fifty Six (RF) (Pty) LTD	Crude	100 000	100 000	0	0
Natref (Sasolburg)	Sasol Oil (Pty) Ltd (63.6%) and Total South Africa (Pty) Ltd (36.4%)	Crude	108 000	108 000	108 000	108 00
Sasol (Secunda)	Sasol Synfuel (Pty) Ltd **	Coal-to-liquids	150 000	150 000	150 000	150 000
PetroSA (Mossel Bay)	The Petroleum Oil and Gas Corporation of SA (Pty) Ltd*	Gas-to-liquids	45 000	45 000	0	0
<b>Total Refining Capacity</b>			703 000	748 000	478 000	288 00

# Estimate of White Oil Production Capabilities of SA Liquid Fuel Producers

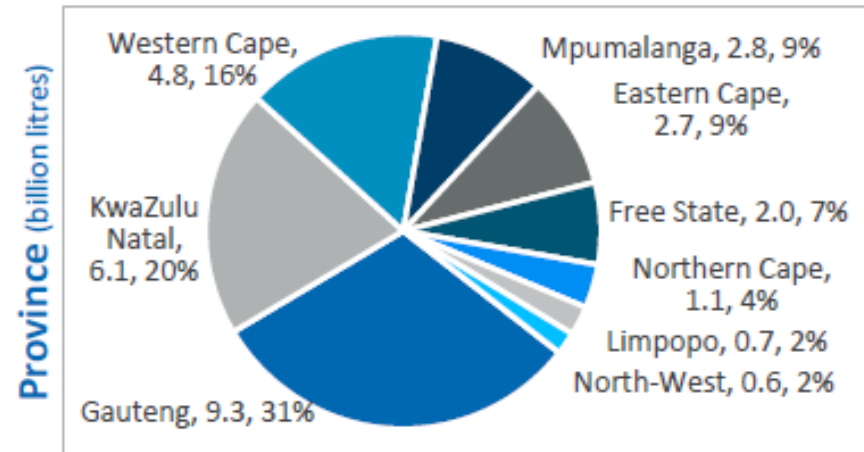
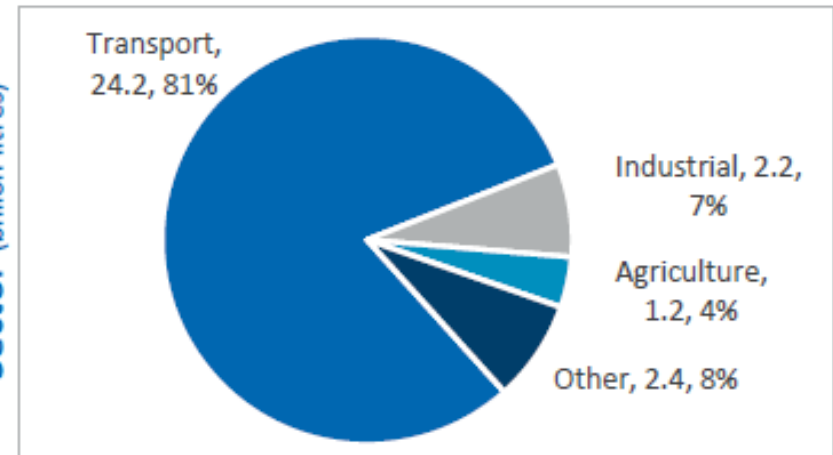
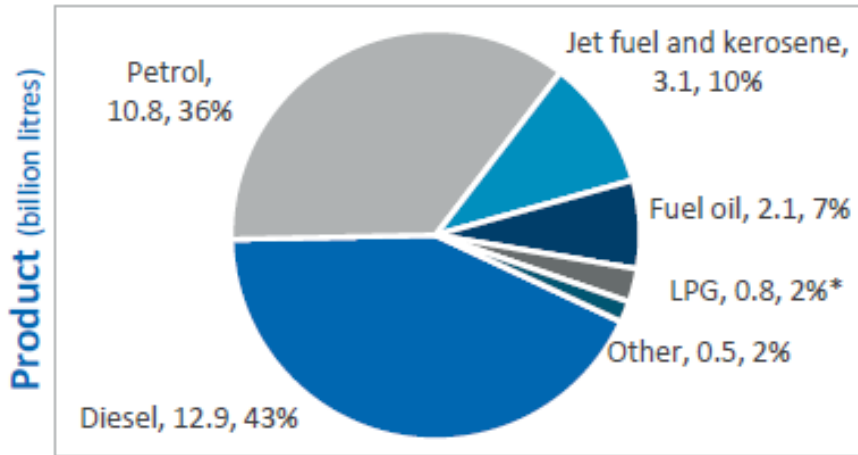
• 2019

Refinery	Type	Crude Equivalent Nameplate Capacity		White Oil Product			
		bbl/d	% Utilisation	Yield	bbl/d	billion litre/annum	% Total
Astron	Crude	100 000	80%	70%	56 000	3,2	13,5
Engen	Crude	120 000	80%	70%	67 200	3,9	16,2
Natref	Crude	108 000	90%	90%	87 480	5,1	21,1
Sapref	Crude	180 000	80%	70%	100 800	5,8	24,3
PetroSA	GTL	45 000	30%	70%	9 450	0,5	2,3
Secunda	CTL	150 000	90%	70%	94 500	5,5	<b>22,7</b>
<b>Total</b>		<b>703 000</b>			<b>415 430</b>	<b>24,1</b>	<b>100</b>

• 2022

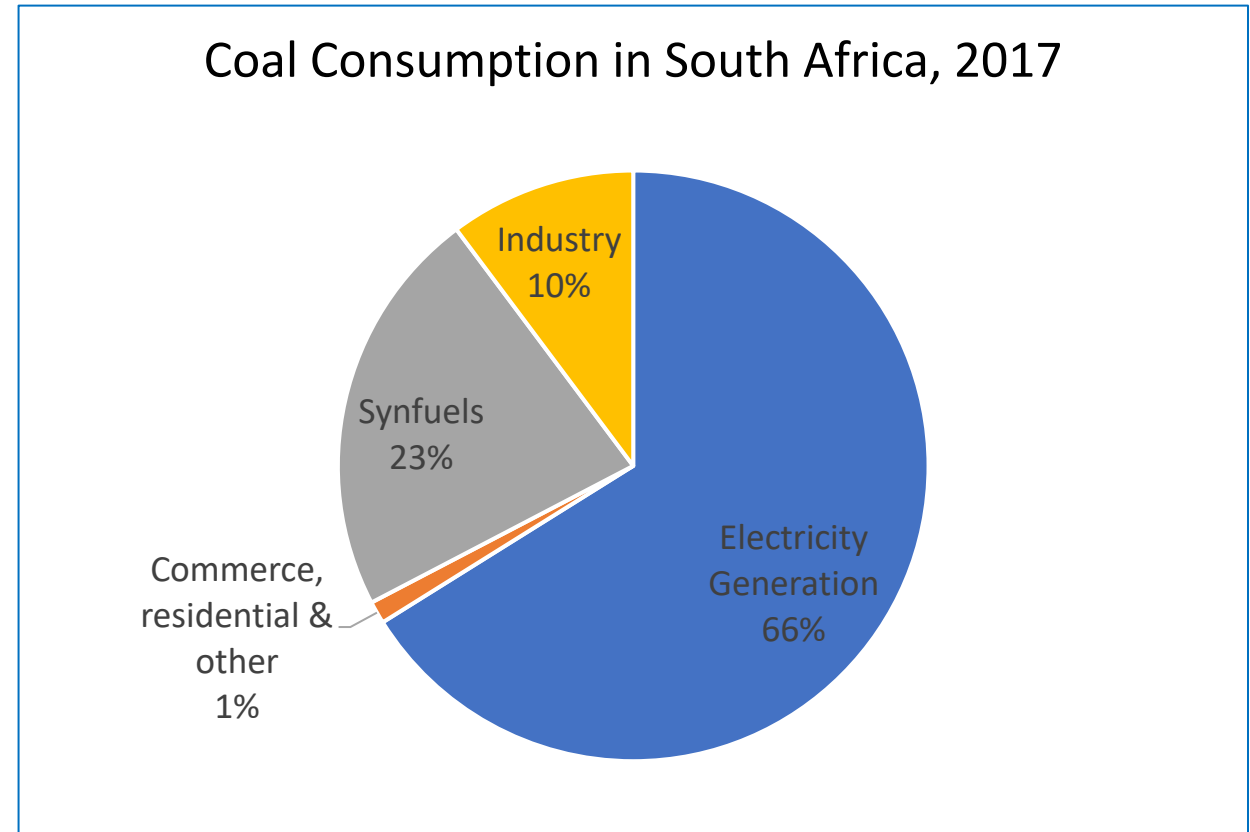
Refinery	Type	Crude Equivalent Nameplate Capacity		White Oil Product			
		bbl/d	% Utilisation	Yield	bbl/d	billion litre/annum	% Total
Astron	Crude	-	-	-	-	0,0	0,0
Engen	Crude	-	-	-	-	0,0	0,0
Natref	Crude	108 000	90%	90%	87 480	5,1	48,1
Sapref	Crude	-	-	-	-	0,0	0,0
PetroSA	GTL	-	-	-	-	0,0	0,0
Secunda	CTL	150 000	90%	70%	94 500	5,5	<b>51,9</b>
<b>Total</b>		<b>258 000</b>			<b>181 980</b>	<b>10,6</b>	<b>100</b>

# SA Liquid Fuel Demand



# Synfuel Relative to Coal Usage

- In 2019, Coal accounted for 21% of feedstock supply for the South African oil industry, 57% was from crude oil imports. Imported finished petroleum product contributed an additional 22%.
- South Africa is the world's sixth largest consumer of coal as well as the sixth largest exporter of coal.



# Synfuel Relative to Chemicals Industry

- The synfuels sector serves as a source of liquid fuel, and is also the country's major source of chemical feedstocks and intermediates. Sasol Secunda produces both synthetic fuel and chemicals from coal feedstock. Their final product is approximately 60% synfuel and 40% chemicals.
- Sasol Synfuels produces most of South Africa's chemical building blocks, including ethylene, propylene, ammonia, phenolics and solvents
- South Africa's second largest chemicals manufacturer, AECI has total turnover of approximately only 7% of Sasol's chemicals revenue
- The Department of Labour and Department of Trade and Industry include liquid fuels in the 'Chemicals' Sector.
- In 2017 the chemical sector (excluding plastics), contributed 2.92% to national GDP, 21.4% to manufacturing GDP and employed 105 690 people.
- In 2021, South African Sasol Limited had more than 28 000 employees. The mining sector accounted for the largest portion of the company's employee numbers (around 7,800). The Sasol chemicals Africa sector followed with 7,414 employees, and its fuels sector with 4,688 employees.



# Liquid Fuel Chain Regulation

The regulatory mandate/ policy instruments are:

- Energy White Paper on Energy Policy of November 1998
- Petroleum Products Act, 1977 (Act No.120 of 1977);
- Central Energy Fund Act, 1977 (Act No. 38 of 1977);
- Gas Act, 2001 (Act No. 48 of 2001);
- Petroleum Pipelines Act, 2003 (Act No.60 of 2003);
- Gas Regulator Levies Act, 2002 (Act No. 75 of 2002);
- Petroleum Pipelines Levies Act, 2004 (Act No. 28 of 2004);
- National Energy Regulator Act, 2004 (Act No. 40 of 2004); and
- National Energy Act, 2008 (Act No. 34 of 2008)

# Fuel Price Structure (inland 95-octane petrol) December 2021

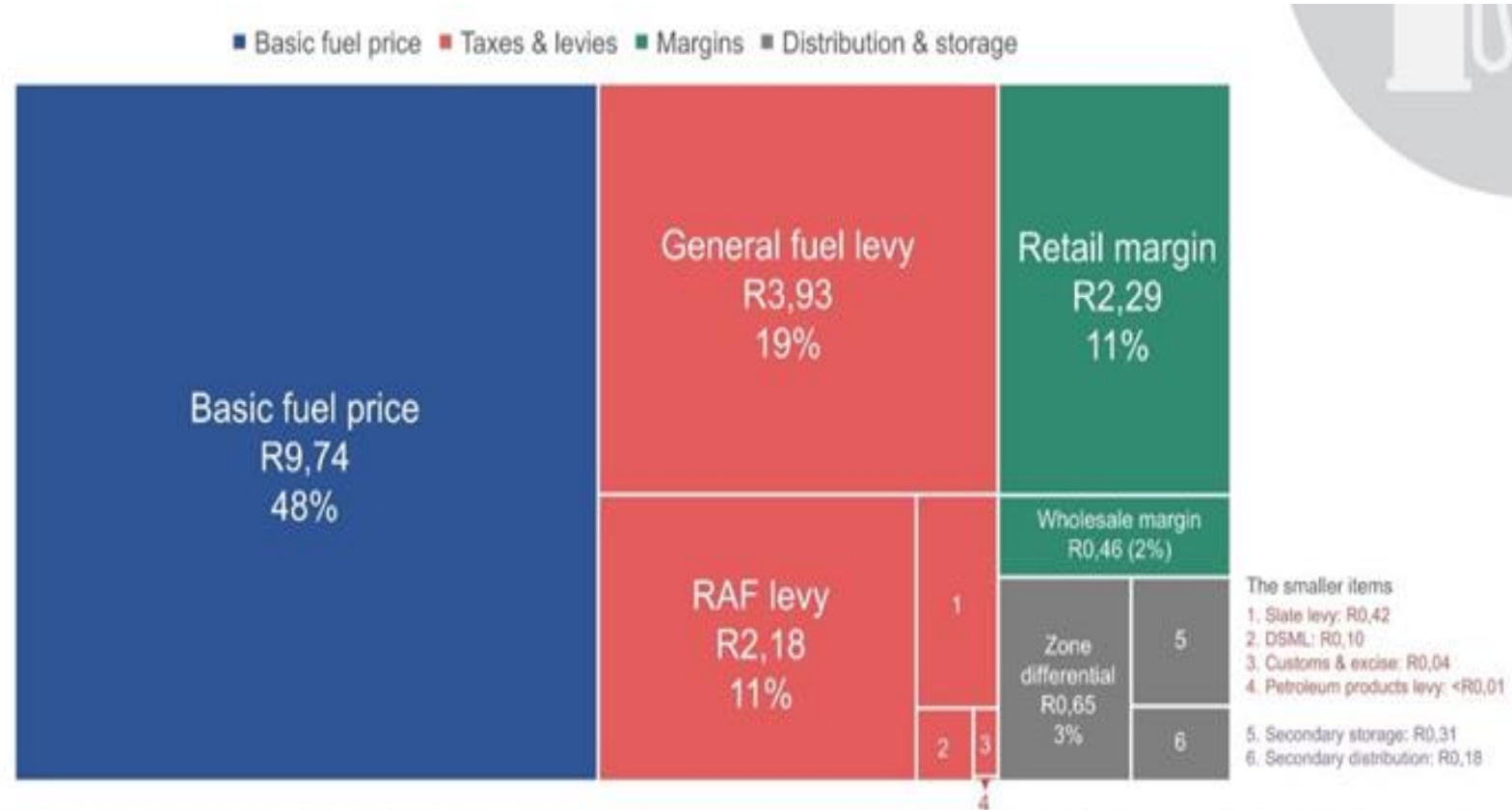
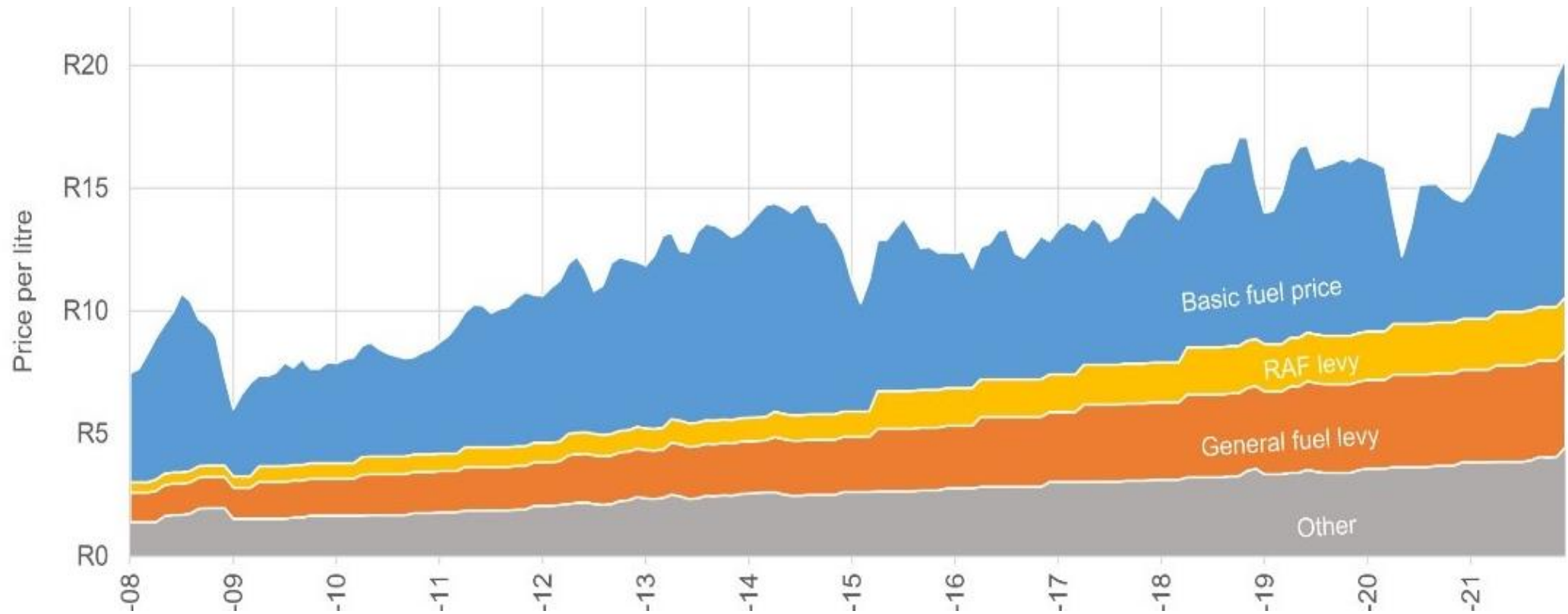


Diagram does not show pump rounding Source: Department of Mineral Resources and Energy, Media statement: "Adjustment to the Fuel Price: Wednesday, 01 December 2021", Annexure 1

# Breakdown of the monthly per litre price of inland 95-octane petrol, December 2021 (Total R20,29)



# Government Revenue

- Top 4 government tax revenue streams - not changed in 20 years
- For the 2019/20 tax year, 9% of total government tax income was from the oil industry (fuel levy, direct and indirect taxes)
- Money from the general fuel levy flows into the National Revenue Fund together with revenue from all other taxes.
- There is a portion of the general fuel levy that is specifically set aside and transferred to South Africa's eight metropolitan municipalities. In 2019/20, this amounted to R13.2 billion.

	1999/2000		2022/2023	
Personal income tax	R 85.88 bn	(42.7 %)	R 621.6 bn	(38.6%)
Value-added tax	R 48.38 bn	(24.0 %)	R 405.6 bn	(25.2%)
Corporate income tax	R 20.97 bn	(10.4 %)	R 258.4 bn	(16.1%)
Fuel levies	R 14.29 bn	(7.10 %)	R 94.17 bn	(5.85%)

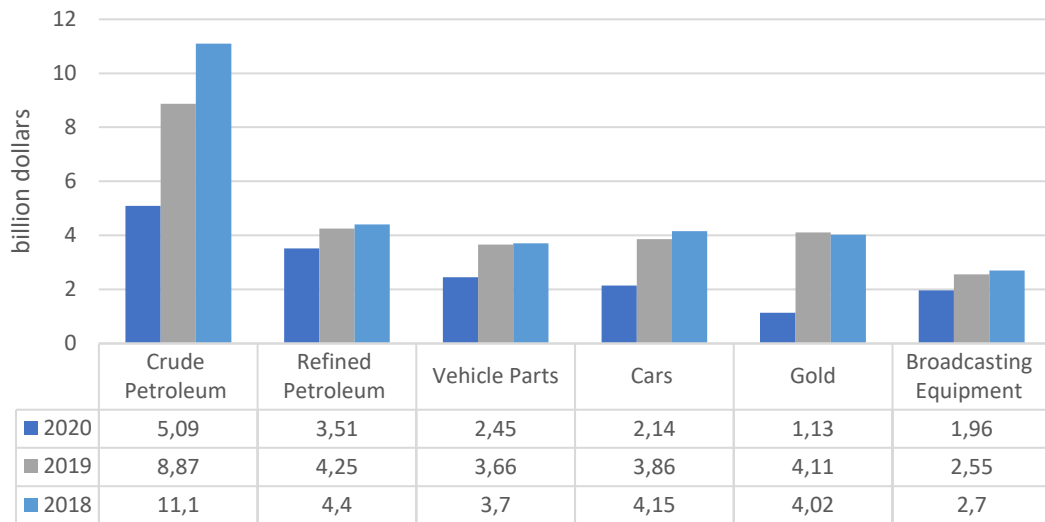
# Sasol Major Shareholders

- The South African government, through the IDC and PIC Equities, continues to hold a 22 per cent stake in Sasol, the world's largest commercial producer of liquid fuels from coal.
- The dividends received by the IDC contribute to the funding that the IDC invests in new projects in fulfilling its development mandate.

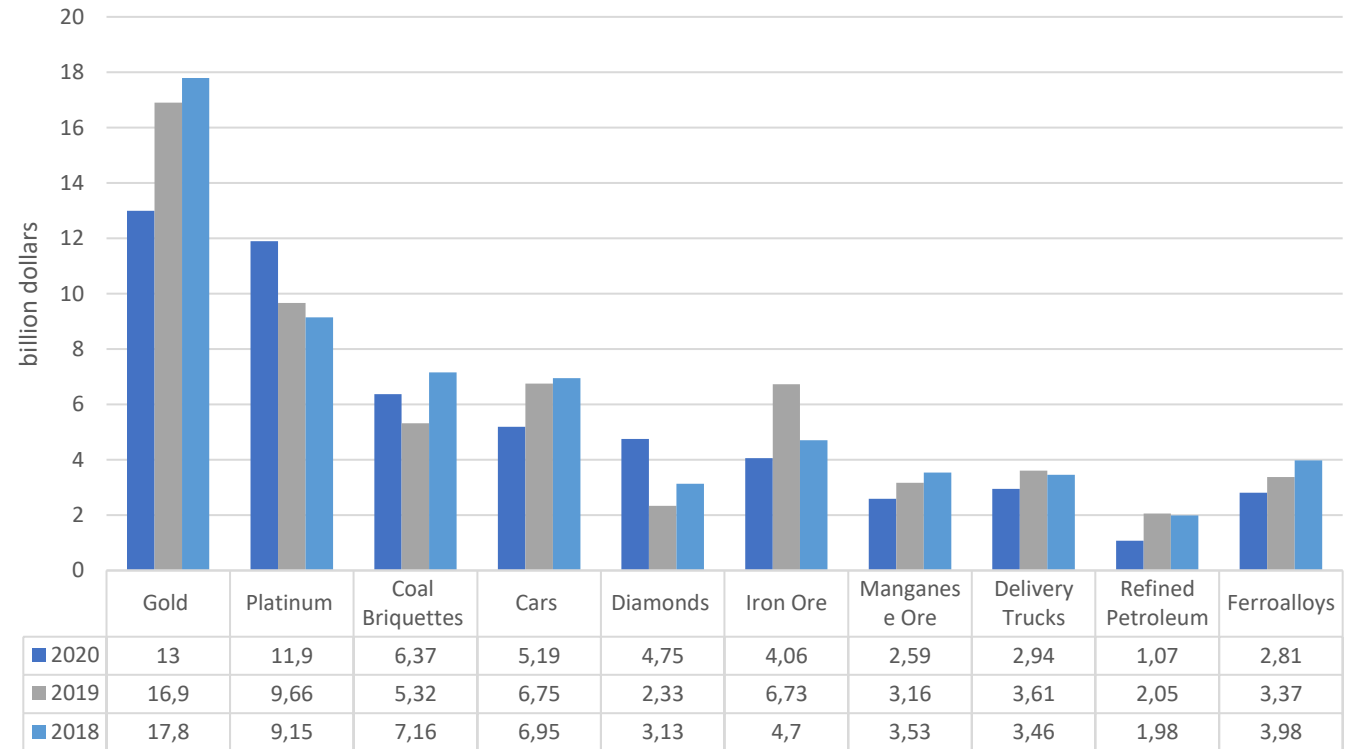
Fund manager	% of total issued securities
<b>PIC Equities</b>	<b>13,99</b>
<b>Industrial Development Corporation of South Africa Limited</b>	<b>8,4</b>
Ninety One SA (Pty) Ltd	5,57
Allan Gray Investment Counsel	5,53
Prudential Investment Managers	4,89
Old Mutual Limited	4,01
Black Rock Incorporated	3,29
The Vanguard Group Incorporated	3,17
Sanlam Investment Management	3,04

# SA Top Imports & Exports (2018-2020)

## Imports



## Exports



# Sasol and Subsidies

- Approximately \$19 billion (in 2022 monetary value) was invested into Sasol II and III (Secunda) in the early 1980's. Sasol Synfuels (Pty) Ltd is the world's largest commercial Coal to Liquids (CTL) synthetic fuel facility.
- From 2017 data of South African energy flow, about 78% of liquid fuels in South Africa are used for transport, 11% of liquid fuels are exported and the remainder is used by industry, commercial, residential and other.
- The pricing mechanism is unable to insulate South African consumers from oil price shocks. The price of fuel has a direct influence on the cost base of the economy.
- Sasol's production cost is largely independent of international oil prices, which form the basis of the Basic Fuel Price
- When oil prices are high, there is a structural propensity for synthetic fuel producers to continue to benefit from excessive economic rents
- Transparent data into the production costs of liquid fuel producers is largely absent, in part due to competition regulations.
  - Further work is needed to validate Sasol's production cost, which would shed further light on the extent to which coal-based fuels may be mispriced in South Africa. Sasol estimates that the breakeven cost of producing synfuels from coal is approximately \$35/barrel. However, the data behind these figures are not publicly available and therefore cannot be critically reviewed.

# Conclusion

- Our overreliance on coal extends, from power production, to coal processing technology in the form of synthetically derived hydrocarbon (fuel and chemical) products. Deep decarbonisation is required in these sectors.
- Quantifying the scale and extent of support that Sasol enjoys is an important first step towards reform of production subsidies
- The basic fuel price mechanism supports the liquid fuels industry, but consequently also supports the single biggest point source carbon emitter in the world, Sasol Secunda. At the same time the state wants to implement a carbon tax, but the state is also a significant shareholder of Sasol.
- There is a need for the basic fuel price to be reviewed, owing to the differing cost structures between fuels produced from crude oil and fuels produced from the synthetic fuel processes.
- Looking towards future technology change (EVs, increased efficiency ICE etc) the tax collected from liquid fossil fuel will decline, which may put pressure on the State to look for alternate revenue streams. Other streams of government revenue should be explored, to balance any future diminishing revenue from fuel levy taxes.



# Next Steps

- Given that the synthesis technology used is CCU (Carbon Capture and Utilisation) compatible, it is conceivable that the complex can be transitioned into a fossil-fuel free future. But this will require analyses beyond replacing the high energy demand of this process from its current coal-based supply to renewables; the source of carbon itself will have to be reconsidered.
- It is worth noting that shutting down (retiring) the CTL facility in the liquid fuels supply sector has a mitigation impact comparable to the decarbonisation of the entire transport sector. But this would have a disastrous effect on the current supply to the chemicals sector.
- As the largest commercial synthetic liquid fuel production facility in the world, Sasol Secunda would be well positioned if it could transition to green synthetic production processes.
- Repositioning Sasol technology and production towards a net zero future, as it has started to outline in its 2021 Climate Change Report, could be a more beneficial mitigation pathway than simply shutting it down.
- However, the continued subsidisation of the single largest point source greenhouse gas emitter in the world has to be questioned in light of alignment with our country's greenhouse gas mitigation goals and commitments.

THANK YOU



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Department:  
Trade, Industry and Competition  
REPUBLIC OF SOUTH AFRICA

