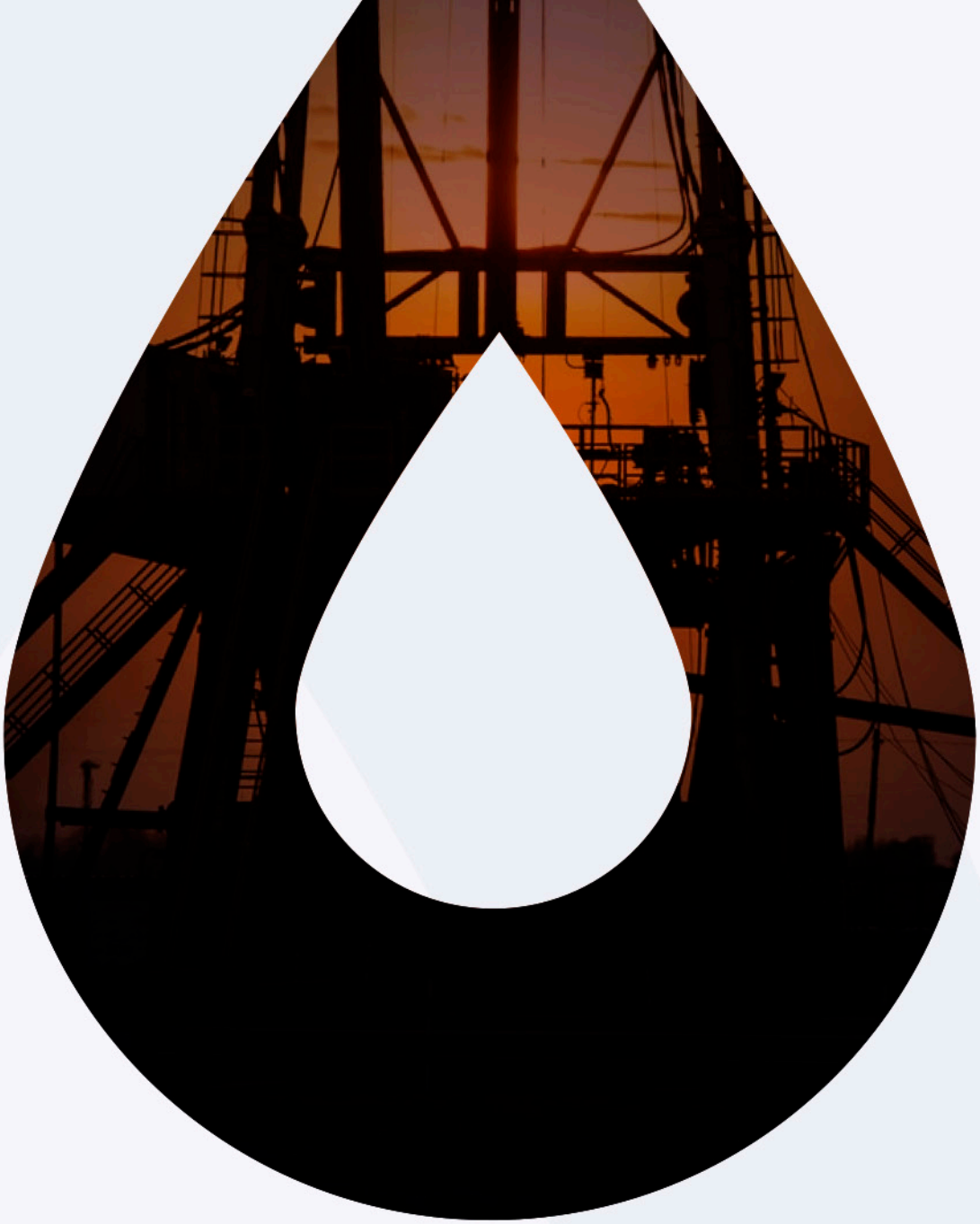

2018 INDUSTRY REPORT

GHANA'S PETROLEUM DOWNSTREAM

CBOD

GHANA CHAMBER OF BULK OIL DISTRIBUTORS

Released in October, 2019

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LIST OF ABBREVIATIONS

ABB	All Buoy Berth
APD	Accra Plains Depot
BDC	Bulk Distribution Company
BoG	Bank of Ghana
BOST	Bulk Oil Storage and Transportation
CBOD	Ghana Chamber of Bulk Oil Distributors
COT	Cirrus Oil Terminal
CREPT	Credit Rating in Practice
ESLA	Energy Sector Levies Act
FOB	Free on Board
FX	Foreign Exchange
FLUR	Forex Loss Under Recovery
GHS	Ghana Cedi
GoG	Government of Ghana
GRA	Ghana Revenue Authority
IMP	International Market Price
LBL	Legacy Bonds Limited
LPG	Liquified Petroleum Gas
NPA	National Petroleum Authority
OMC	Oil Marketing Company
OTC	Oil Trading Company
PPAM	Price Parity Margin
PMS	Premium Motor Spirit
PSPs	Petroleum Service Providers
RFO	Residual Fuel Oil
RVF	Real Value Factor
SPT	Special Petroleum Tax
TFC	Tema Fuel Company
TOR	Tema Oil Refinery
TTF	Tema Tank Farm

Units

bbls	Barrels
bcf	billion cubic feet
bn	Billion
GHS	Ghana Cedis
ltrs	Litres
mmscfd	milliion standard cubit feet per day
mn	Million
mt	Metric tonnes
ppm	Parts per million
USD	US Dollar
$	US Dollar
m^3	cubic metres
kt	kilo tonnes

CBOD Board

Ivy Apea Owusu

Ivy Apea Owusu is the Chief Executive Officer of Cirrus Oil Services Limited. She has over 19 years' experience in the Energy Sector.

Prior to joining Cirrus, Ivy spent 8 years working with GE Capital in the US and the UK in Energy Financing and Structured Finance, specializing in both Debt and Equity financing in the Oil & Gas, Power Generation, Renewable and Ancillary Energy Services Sectors.

Ivy is the board chairman for the Chamber of Bulk Oil Distributors (CBOD) and a board member of Woodfields Energy Resources Ltd., as well as Legacy Bonds Ltd. She is on the advisory board of Africa Oil Week (AOW), South Africa. She is a member of the Executive Women's Network, Ghana and YPO. She is also a Corporate Executive in Residence for University of Ghana Business School (UGBS), Department of Accounting.

Ivy holds leadership certificates from both Harvard and Stanford Business Schools in the USA, an MBA from Vanderbilt University in TN, USA and a BA (Admin.) from the University of Ghana, Legon.

Ivy has won numerous awards, including the 2018 Oil and Gas Personality of the Year (Downstream) at the Ghana Oil and Gas Awards.

Joyce Heman-Ackah

Joyce Heman-Ackah is the CEO of Oilchannel Limited. She was previously the General Manager (Finance) at NSIA Ghana Insurance Company and played an instrumental role in the growth of the company during her service.

Joyce has immense expertise in the insurance industry and has served as Chair of the Finance Committee of the Ghana Insurance Association and a Director on the Board of the Ghana Insurance College and other important industry committees.

Ms Heman-Ackah's is the Chairperson of the Negotiated Benefits Company Tier 2 Gold Fund and a board member of Oilchannel Limited and Legacy Girls' Scholarship Fund. She is also a Council Member of the Family Health Medical School.

She sits on various committees including the ICT Committee of the Institute of Chartered Accountants, Ghana.

Joyce is a Fellow of the Association of Chartered Certified Accountants, UK and a member of the Institute of Chartered Accountants, Ghana.

She holds a BSc in Mathematics and Statistics.

Kwame Bediako

Kwame Bediako is the Chief Operating Officer of Chase Petroleum Ghana Ltd., a major Ghanaian Petroleum Trading and Distribution Company. He has more than 15 years' managerial experience in the Oil and Gas industry.

He serves on the Boards of Chase Logistics and Tema Tank Farm Limited, one of the largest privately-owned petroleum products terminals in Ghana. Kwame Bediako holds a Bachelor's degree in International Marketing from Baruch College, USA.

Elton Dusi

Elton Dusi is the CEO of Maranatha Oil Services Limited (MOSL). He was previously the CEO of Ebony Oil and Gas, one of the most successful BDCs in Ghana. He also held top managerial positions in Oando Ghana. Elton has great experience and an in-depth understanding of the petroleum market. With over a decade's experience in the oil and gas industry, Elton is an astute entrepreneur with a penchant for growing start-ups in the industry.

He holds an MBA from the Ghana Institute of Management and Public Administration (GIMPA) and a BSc. in Chemical Engineering from the Kwame Nkrumah University of Science and Technology (KNUST).

Sebastian Asem

Sebastian Klenam Asem is the CEO of Vihama Energy. Prior to joining Vihama, Sebastian held senior banking positions at Standard Chartered Bank, Stanbic Bank and Access Bank. He is a Trade Finance and credit expert and has led teams to undertake various transactions including International Syndications and Sovereign Transactions with in-depth experience in government and Oil financing over the years.

He currently doubles as Chairman of Ecoatlantic Oil & Gas (Gh) and Petrogulf (Gh) Limited who with other partners are operating in the upstream Oil and Gas sector.

He has a passion for farming exhibited by his holdings in large acreage mango farming.

He holds an MBA in Finance from the University of Ghana – Legon; a certificate in Negotiations from the Harvard Business School, Cambridge, Massachusetts and a diploma in oil trading, supply and marketing from Oxford Princeton Programme UK.

Yaw Koduah-Sarpong

Yaw Koduah-Sarpong is the Chief Finance Officer & Head of Investments at Fueltrade Limited, a leading bulk distributor of refined petroleum products. He is also on the board of Fueltrade Limited. Yaw previously held the position of Chief Finance Officer at Bulk Oil Storage & Transportation (BOST) Company Ltd.

He worked as a Tax and Legal Consultant with Ernst & Young Ghana before that. Mr. Koduah-Sarpong is a qualified accountant (ACCA), with a Postgraduate Degree in International Economic Law (LLM) from the University of Warwick, UK and a BSc. Administration (Accounting Option) from the University of Ghana.

Emmanuel Egyei-Mensah

Emmanuel Egyei-Mensah is a serial entrepreneur with vast experience in many sectors, including oil trading, power generation, petroleum infrastructure development, communications & information technology and accounting practices spanning a working carrier of over 22 years.

He is the Chief Executive Officer for the Sage Trading Group, a leading Oil Trading and Bulk Distribution Group.

Prior to starting his entrepreneurial journey, Emmanuel worked with a number of companies including Cirrus Oil Services Limited and KPMG, where he served as commercial director and deputy manager, respectively.

Emmanuel holds an MBA in Accounting and Finance from the School of Administration, University of Ghana. He is also a member of the Ghana Institute of Chartered Accountants and the Institute of Taxation.

Senyo Hosi

Senyo Hosi is a Ghanaian thought leader, finance and economic policy analyst and the CEO of the Chamber for Bulk Oil Distributors. He is an experienced management professional with several years of experience in the downstream petroleum industry, public policy, industry advocacy and commodity trading among others.

As a renowned industry advocate, Senyo has been instrumental in the development of major policies in Ghana's energy sector. He is an advisor to the Ministry of Energy and serves on the boards of some public and private organisations, including the Ghana Highway Authority, the Private Enterprises Foundation, Legacy Bonds Limited and NDK Capital Ltd.

Mr. Hosi holds an MBA in Finance and an MA in Economic Policy Management from the University of Ghana, Legon. Senyo Hosi, in 2018, received the Osagyefo Young Leadership Award and in 2016, was adjuged the Most Outstanding Oil and Gas Personality (Downstream).

Key Industry Personalities

Hon. John Peter Amewu

John-Peter Amewu is the Minister of Energy in Ghana. He is the immediate-past Minister for Lands & Natural Resources and is credited with leading the fight against illegal small-scale mining (galamsey).

Mr. Amewu is a cost engineer with broad knowledge in the energy and mining industries and an International Consultant in mining and petroleum.

He is also a co-founder of the African Centre for Energy Policy (ACEP). Mr. Amewu is a highly-trained mining professional, having attained various certificates from the Universities of Sydney and Western Australia.

He has more than 15 years' experience in Government, Private Sector, Civil Society and International Development Organisations. The Minister chairs the boards of some major private institutions in Ghana. Mr. Amewu is an astute politician and the immediate-past Regional Chairman of the New Patriotic Party (NPP) in the Volta Region.

He holds an MBA (Finance) from the University of Ghana, a Post-Graduate Degree (Executive MBA in International Energy Industry Management) and a Master's in Petroleum Law and Policy from the University of Dundee (UK).

Hon. Dr. Mohammed Amin Adam

Dr. Mohammed Amin Adam is a Deputy Minister for Energy, responsible for the Petroleum sector. He founded the Africa Centre for Energy Policy (ACEP) and served as its Executive Director.

He previously worked in other public and private organisations, such as the Ministry of Energy, as an Energy Policy Analyst; the Public Utilities Regulatory Commission (PURC) as a Commissioner, as a Deputy Minister of State for the Northern Region and Mayor of Tamale. Globally, he has worked extensively in the extractive industries and in resource management.

He, currently, serves on two international advisory boards – the Open Contracting Partnership and the Natural Resources and Community Review. He is a member of several global initiatives, including the Thematic Network on Good Governance of Extractive and Land Resources under the Sustainable Development Solutions Network, a global initiative of the United Nations.

In Ghana, he was a member of the Technical Committee, set up by the Government of Ghana to review the Ghana Petroleum Revenue Management Act.

Dr. Adam holds a PhD in Petroleum Economics from the University of Dundee in the UK.

Alhassan Sulemana Tampuli

Mr. Hassan Tampuli is the CEO of the National Petroleum Authority (NPA). He is a graduate of the School of Administration of the University of Ghana (now University of Ghana Business School) and Faculty of Law, UG. He was called to the Ghana Bar in 2011. He holds a Master of Laws degree (LL.M) in Energy and Environmental Law from Ohio State University Moritz College of Law. Mr. Tampuli previously worked with the National Service Scheme and rose to the rank of Deputy Head of HR and Acting Director of Postings.

In October 2011, he worked with the prestigious law firm, Bentsi-Enchill, Letsa & Ankomah's Energy and Natural Resource Practice Group as an Associate. He later set up and headed the Legal Department of the National Service Scheme between April 2014 and November 2015. Also, in 2015, he co-founded the law firm, Eastbridge Associates, which is a corporate law firm.

Mr. Tampuli also taught constitutional law at the Faculty of Law of the Wisconsin International University College for the 2014/15 academic year before resigning to concentrate on his private legal practice.

He is a member of the Energy Sector Levy Act (ESLA) Bond Board of Directors, as well as a member of the Board of Directors at Tizaa Rural Bank in Gushegu in the Northern Region of Ghana.

Kwaku Agyemang-Duah

Kwaku Agyemang-Duah has been involved in the industry since 1987. He has worked in various senior management capacities in health and safety, production/operations, marketing, logistics and projects.

He is also an astute Quality Management systems expert and served on the Ghana Quality Standards Committee in the 1990's.

Currently, he is the CEO/Industry Coordinator of the versatile Oil Marketing Association of Ghana with more than one hundred Oil Marketing Companies and LPG Marketers.

He is also the Chairman of the Governing Council of the Private Enterprises Federation, an organisation of fourteen major private associations in the country. Kwaku holds a degree in Engineering and a Post-Graduate Diploma in Industrial Management as well as an MBA in Finance.

Edwin Alfred Provençal

Edwin is the current CEO of the Bulk Oil Distribution Company. Prior to his appointment at BOST, he served as the Technical Advisor to the Minister of Energy.

He has over 15 years' experience in Executive Management roles in various organisations. He also served as the MD of Vodafone Wholesale/ National Communications Backbone Company and Director of Strategy at Vodafone Ghana where he led the Strategy Execution via Balanced Scorecard implementation organisation-wide.

He had previously worked at Ghana Telecoms and K-Net, a leading Internet Service Provider in Ghana. As a project manager and engineer in the telecom sector, he has managed over 15 projects, including Wide Area Networks for Ghana Commercial Bank, Standard Chartered Bank, VALCO and Ghana Bauxite, amongst others.

Edwin holds an MPhil in Economics, an MBA in Management Information Systems, a BSc in Electrical Engineering, a Post-Graduate Diploma in Financial Management from ACCA. He also holds a PMP from the Project Management Institute in the US.

Edwin is also a graduate of the College of Executive Coaching, USA and is a Certified Balanced Scorecard Practitioner.

Benjamin Boakye

Benjamin Boakye is an energy governance professional with the Africa Centre for Energy Policy. He is currently the Executive Director at the Centre. Prior to this, he served as the Deputy Executive Director.

Benjamin has made contributions to the extractive sector governance in Ghana and Africa with a focus on corporate, institutional development, fiscal and contract governance and the evolution of legal frameworks for the effective management of extractive resources.

He has also consulted for the World Bank, UNDP and other research institutions in the resource sector.

Benjamin also has extensive experience in power sector reforms. He currently chairs the stakeholder Committee of the Millennium Development Authority (MiDA), advising the MiDA Board on the implementation of the Power sector reforms.

Benjamin holds an MSc from the University of Dundee, UK, in Energy Studies and BA Hons. in Sociology and Information Studies from the University of Ghana.

CYLINDER RECIRCULATION MODEL STAKEHOLDER ENGAGEMENT FREQUENTLY ASKED QUESTIONS

The Cylinder Recirculation Model is the LPG marketing model which involves automatic and controlled filling of LPG cylinders at bottling plants and then supplying the filled cylinders to consumers at specialized retail outlets called Exchange points. The consumer exchanges an empty cylinder for a filled one at the Exchange point.

Q1: What measures will be put in place to ensure that empty cylinders submitted by customers will be exchanged for filled ones that are in good condition?

The LPG Marketing Company (LPGMC) will ensure that the cylinders are in good condition before handing them over to the consumers.

Q2: How does the NPA ensure that the policy does not negatively impact low income earners, especially those who are unable to afford the full cost of filling the cylinders?

There will be different sizes of cylinders to meet the needs of all income earners. The LPGMCs are expected to have different sizes including 3kg and 6kg to cater for those who would want to purchase smaller quantities.

Q3: What happens to those with domestic fiber glass cylinders in their homes, will their fiber glass cylinders be exchanged with filled fiber glass or steel cylinders?

The LPGMCs will have different types of cylinders for different classes of customers including fiber glass.

Q4. what happens to the old cylinders we are using now?

The old cylinders will be taken from consumers and tested to check whether it can be reused and then added to the pool of cylinders available to consumers. The rest of the cylinders that are not fit for reuse will be removed from the market.

CYLINDER RECIRCULATION MODEL STAKEHOLDER ENGAGEMENT FREQUENTLY ASKED QUESTIONS

The Cylinder Recirculation Model is the LPG marketing model which involves automatic and controlled filling of LPG cylinders at bottling plants and then supplying the filled cylinders to consumers at specialized retail outlets called Exchange points. The consumer exchanges an empty cylinder for a filled one at the Exchange point.

Q5: Who will provide the cylinders, the new players or the government?

The LPGMCs will be responsible for providing the cylinders. They will own and brand the cylinders

Q7. Does this mean autogas users can still refill within town at low risk stations?

Yes. The distance they have to travel will depend on where the low risk stations are sited. The safety standards in the low risk stations will be enhanced.

Q6: What will happen to existing LPG Refilling plants?

LPG refilling plants will be classified into low risk, medium risk and high risk based on their efficiency in meeting safety standards in a risk assessment of all refilling plants by the NPA. High risk stations will be decommissioned and turned into cylinder exchange points while medium and low risk stations will be allowed to upgrade and sell autogas or operate as cylinder exchange posts

Q8: Are we also going to be guaranteed leakage proof cylinders?

Yes because all cylinders will be checked according to standards by the bottling plants for leakage and other defects before they are released to the LPGMCs. Those which are unusable will be sent to Cylinder Manufacturing Companies for major refurbishments or recycling.

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Acknowledgement

The 2018 Ghana Chamber of Bulk Oil Distributors (CBOD) Industry Report was prepared by a team, led by Senyo Kwasi Hosi (CEO). Members of the team included Richard Kissi (Head of Finance, Corporate and Industry) and Dennis Newton Dei-Tutu (Research Analyst). Specific contributions were made by Ben Boayke (Executive Director, ACEP), Charles Gyamfi Ofori, Kodzo Yaotse and Eric Opoku.

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Excellent recommendations and extensive inputs were also received from Board members, Government officials, Heads of Banks and other Petroleum Service Providers. Their diligence and assistance contributed immensely towards making this report possible.

EXECUTIVE SUMMARY

The 2018 CBOD Industry Report reviews the 2018 fiscal year and, for the first time, is structured in six chapters with the introduction of a review of the gas sector by the African Centre for Energy Policy (ACEP). As with previous reports, it reviews the policy, finance, market and infrastructure sectors and issues relative to the period under review and its recent relevant information as at the time of publishing. It also shares an outlook and recommendations on the downstream market and its happenings.

The LPG promotion policy remained the most dominant medium-term policy intervention for the downstream. It is core to Government's strategy to improve safety and LPG penetration. The report anticipates the likelihood of an upward pressure on pre-tax prices of LPG and disruptions in the marketing and retailing structure of the LPG industry. It also projects significant disruptions in the retail market structure for LPG. The LPG Marketing Companies' (LPGMCs) dominance of the market (62% share) is expected to be threatened by the more consumer-friendly Oil Marketing Companies (OMCs) (38% share) which are generally more accessible, by virtue of their location and significantly outnumber the LPG outlets by a ratio of about 5:1.

It may be necessary that LPGMCs swiftly invest in multiple consumer-friendly outlets, like self-service propane outlets in the US which are operated at supermarkets, and develop a delivery-to-consumer option to stand a fighting chance of maintaining their market share.

The petroleum hub agenda remains government's major long-term policy. Government hopes to drive the agenda through the establishment of a petroleum hub development corporation and is engaging stakeholders on the drafting of a bill for its establishment. The development of the 650,000bbls/day Dangote petrochemical refinery in Nigeria and the low utilisation of existing storage assets in Ghana are expected to raise concerns among potential investors in the hub. It is imperative that the value proposition to investors is well established and will require initiatives to de-risk investment considerations.

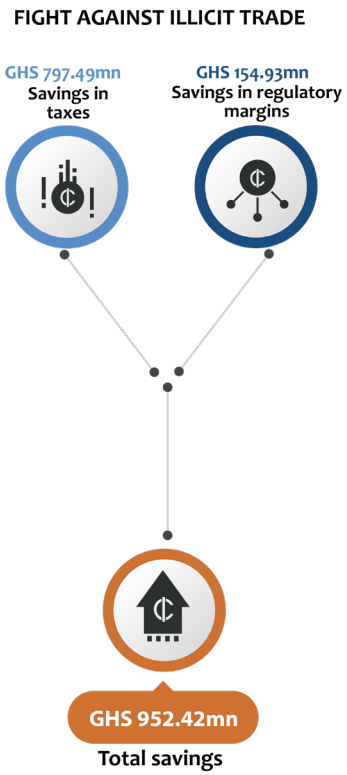
In pursuit of this, it is advised that recommendations in the report for increasing storage asset utilisation through the positioning of Ghana as a redistribution hub be favourably considered. Leveraging the Tema Oil Refinery as a refinery trigger for the hub will minimise the investment risk, as it is equipped with some useful assets which make incremental investments lower than a greenfield refinery project. Its success is expected to de-risk subsequent investments in petrochemical refineries in the hub.

Other key policies dominant in the year under review include the fuel quality policy, license rationalisation, HSSE policy, Ghanaian Content and Ghanaian Participation Policy.

A reconciliation of official national stocks movement data revealed that 54.36mn litres, 168.48mn litres and 794.75mn litres could not be accounted for in 2015, 2016 and 2017 respectively.

The associated petroleum tax revenue evasion to these stocks stands at GHS1,438.75mn, while the associated evaded regulatory margins amount to GHS238.96mn. The NPA, aided by elements of the central government, made progress towards tackling the challenges of smuggling and tax evasion, some of which were covered in the 2017 CBOD industry report. This was a welcome move in the industry and yielded tangible results, even though there remains a lot to be done to bring sustainable finality to the illegal trade. The interventions by the NPA minimised the evasion of official channels of distributions and hence, an increase in official volumes of the most tax-evaded products, AGO regular and PMS, which shot up by 17% and 19%, respectively.

In 2018, no loss related to unaccounted stocks is estimated, as it was revealed that 574.25mn litres more than the official stocks saleable in the country were sold. This indicates that smuggled stocks in the monitored depots must have been 'trapped', as a result of the NPA's regulatory interventions to curb the illicit trade of petroleum products and forced to be sold through official channels. This saved the nation GHS797.49mn in taxes and GHS154.93mn in regulatory margins, yielding a total savings of GHS952.42mn.



The year under review saw a deepening of the unhealthy BDC competition, with average BDC premiums falling from USD66.60/mt to USD65.75/mt for gasoline and USD64.12/mt to USD49.23/mt for gasoil. Coupled with the growing forex risk and trade credit risk faced by the BDCs, the commercial viability of the BDC sector remains bleak. It is imperative that these risks are addressed for the industry's sustainability. It is anticipated that the CREPT and OFMAK proposals, jointly developed and submitted by the CBOD and the Ghana Association of Bankers to Government, will go a long way to de-risk the sector and improve fundability.

The petroleum tax revenue increased on the back of reduced illegal trades which reflected in an increase in official volumes. This, nonetheless, did not eliminate the under-reporting of taxes on official sales by GHS433.75mn in 2018, after adjusting for tax exemptions and waivers.

For the period 2015 to 2018, total taxes evaded, based on official unaccounted stocks, stands at GHS1,390.73mn, while total under-reported taxes, based on official accounted sale volume after adjustments for exemptions, stands at GHS1,168.33mn. This implies that the country has lost a total of GHS2,559.06mn in taxes for the period 2015 to 2018. Combined with the evaded regulatory margin of GHS231.53mn, a total of GHS2,790.59mn has been lost to the nation in taxes and regulatory margins for the period 2015 to 2018.

There was progress made on Government's legacy debt to BDCs with the payment of all outstanding principal sums (USD25.68mn) and the validation of the interest components. This brings to total an amount of USD806.25mn in payments made by government for Forex Losses incurred between 2011 and 2015. Following an audit of the Forex Loss Under-recoveries Interest (FLURI) and Real Value Factor (RVF) claims by BDCs that commenced in 2018, an additional USD174.08mn (GHS905.88mn) was validated and accepted by Government. In respect of this, an amount of USD123.33mn (GHS648.93mn) was paid by government in June 2019.

Ghana's gross national consumption reached 4.46 mn mt in 2018. A total of 3.73mn mt was consumed by the non-power sector, representing 83% of gross

consumption, while 738,076 mt (17%) was consumed by the power sector (fuel oil, crude oil and propane for power). Petroleum products consumption in 2018 was about 3.88mn mt, 12.3% higher than 2017 consumption of 3.46mn mt. This rode on the back of successes realised in the fight against the illicit petroleum trade, thereby increasing official demand for gasoline, gasoil and LPG. This volume of consumption is the highest observed to date.

Out of a total of 165 registered OMCs and LPGMCs in 2018, 14 companies were inactive, 63 sold products above 10,000mt, while 88 sold volumes below 10,000mt in 2018. The top 25% (first quartile) LPGMCs/OMCs accounted for about 83.53% of the total market share, the second quartile accounted for 11.36%, while the 3rd and 4th quartiles accounted for 4.27% and 0.83%, respectively.

The BDC market consolidated with the top 10 increasing their cumulative market share from 78.65% in 2017 to 80.13% in 2018. In a similar trend, the top 5 also increased their grip on the market from 56.94% in 2017 to 59.63% in 2018. 27 BDCs distributed products above 10,000mt in 2018, while 11 distributed products below 10,000mt. Eight BDCs were inactive during the year.

The country's storage capacity reached 2.18mn m^3 in 2018 from a national storage capacity of 2.093mn m^3 in 2018. This followed the completion of a 69,059m^3 storage capacity by Quantum terminals and GOIL's 13,500m^3 Marine Gasoil Facility at the Takoradi Habour.

The All Buoy Berth and Single Point mooring facility, operated by Ghana Petroleum Mooring System Company, accounted for 74% of total volumes imported into the country, compared to 70% in 2017, while the Tema Oil Jetty and Takoradi Oil Jetty accounted for 13% each of total imports in 2018. This is as a result of the monopoly it operates, as well as the over-concentration of storage facilities in the Tema enclave. This situation poses a major security challenge to the availability of products across the country.

The ABB poses the biggest infrastructure risk to the country's petroleum supply as no major refurbishment work has been undertaken since its operationalisation in 2006. The need for an alternate facility continues to compound with every passing year.

The gas market continued to be supplied by imports from Nigeria and domestic producing fields: Jubilee, TEN and Sankofa. These sources will remain important in the short- to medium-term to meet the needs of the country. There are contestations about the adequacy of the supply sources and whether an additional source through LNG will not be necessary. However, in 2018, domestic production was constrained below capacity due to poor planning to coincide gas productions with the needed infrastructure to transmit gas to the demand centre. The three producing fields can produce, at least, 315mmscfd; 180mmscfd from Sankofa, about 135mmscfd from the Jubilee and TEN fields, yet production averaged 100mmscfd. This came at significant cost to the government for the take or pay commitments on the Sankofa field.

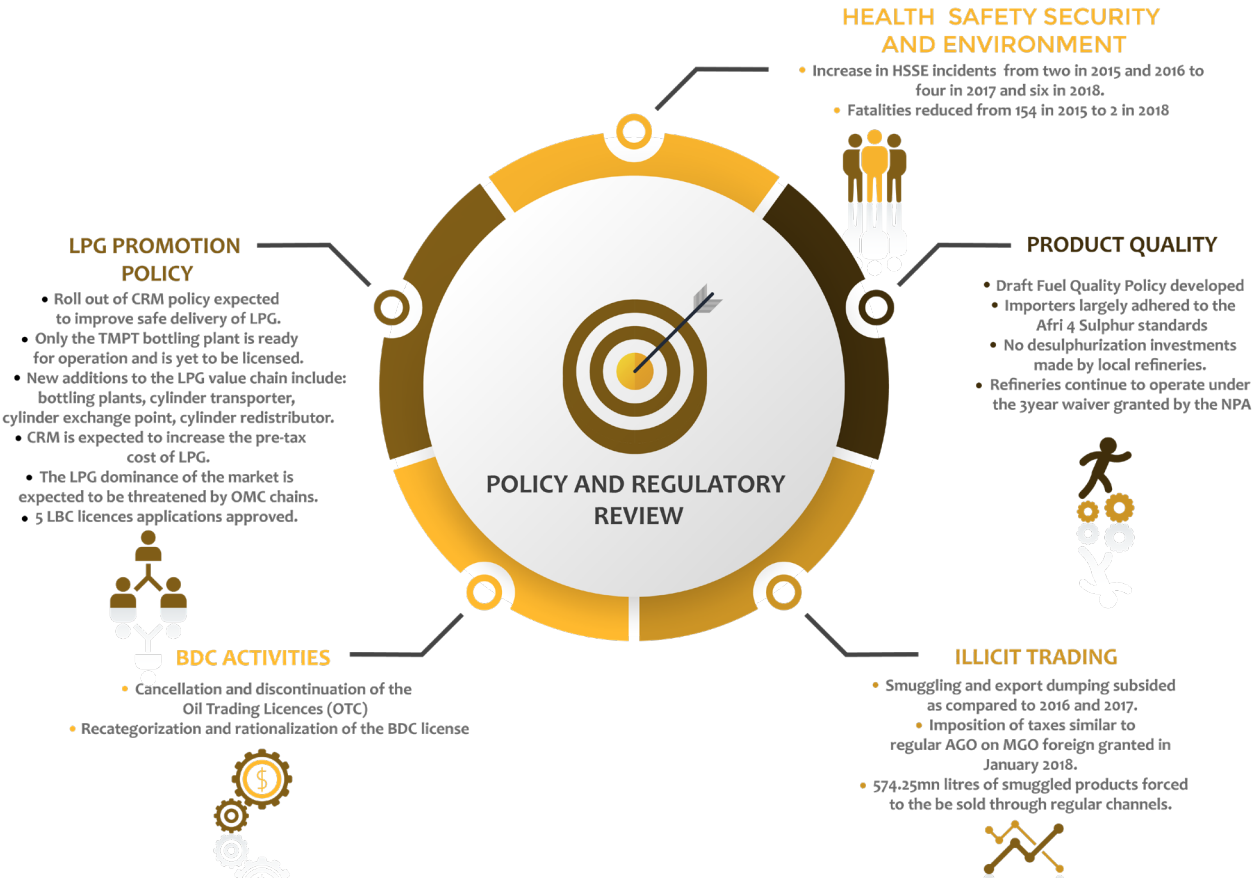
Projections into the 10-year horizon show that focus on domestic gas optimisation has benefits of reducing the financial burden on the state and encouraging investment in the upstream petroleum sector. The reverse is true for importation through LNG. Demand growth will remain linked to the power sector. Other demands from industry, anticipated by government, will be hampered by high gas prices. Most industrial application of gas requires cheap gas which cannot be provided by the current gas market without subsidy from government. Ghana's focus, therefore, should be on leveraging existing discoveries and infrastructure in the sector to achieve lower gas prices in the medium-term.

Key recommendations covered in this report include,

- Marpol 2020 and its implication for Ghana;
- A way forward for Tema Oil Refinery;
- The impact of Dangote's Refinery on Ghana downstream;
- An analysis and way forward on Ghana's illicit downstream petroleum trade.

1

Policy and Regulatory Review



The Policy space saw a change in the leadership with the replacement of the Minister of Energy in the early part of Quarter 3 of 2018. This did not materially change the path of regulation and broad policy direction for downstream petroleum. The LPG Promotion Policy and the tackling of export dumping and smuggling were the most dominant policies for the year with the latter experiencing the most success. The regulator, aided by elements of the central government, made progress towards tackling the challenges of smuggling and tax evasion, some of which were covered in the 2017 CBOD industry report. This was a welcome move in the industry and yielded tangible results, even though there remains a lot to be done to bring sustainable finality to the illegal trade.

Other key policies, dominant in the year under review, include the fuel quality policy, license rationalisation, HSSE policy, Ghanaian Content and Ghanaian participation policy and the petroleum hub agenda.

1.0 LPG PROMOTION POLICY

The LPG Promotion Policy Implementation Committee, as constituted by the Ministry of Energy (MoE) in 2017, continued its work in 2018.

The committee's mandate is to plan, oversee and ensure the smooth and successful implementation of the National LPG Promotion Policy. As part of its work, members of the committee embarked on working visits to Morocco, Senegal, India, La Cote d'-Ivoire, Colombia and Peru, who operate the Cylinder Recirculation Model (CRM). The visits were to enable them understand the supply chain dynamics, regulatory framework and challenges associated with the implementation of the model to guide the development of the best implementation strategy for Ghana.

The committee's original task is now expected to be completed by Q4 of 2019. Its mandate may, however, be expanded to include overseeing the rollout of the pilot phase of the programme's implementation.

1.1 THE CYLINDER RECIRCULATION MODEL

The proposed new LPG distribution model will begin with the Bulk Distribution Companies (BDCs). They will either import or buy the LPG from local refineries or gas processing plants, such as Tema Oil Refinery and the Ghana National Gas Company and store the LPG in their Bulk Storage facility. The BDCs will then sell the LPG in bulk to either the Bottling Plant for the sole purpose of filling the empty cylinders or to the LPG Marketing Companies (LPGMCs) for bulk sale to industrial end-users (factories, restaurant, and mini-power plants) and also to auto gas users. The LPG Bottling Plant Companies (LBCs) will be responsible for filling the empty cylinders for distribution by LPGMCs. Besides the retail distribution, the LPGMCs will be

Figure 1 :Current LPG Value Chain (Source: National Petroleum Authority)

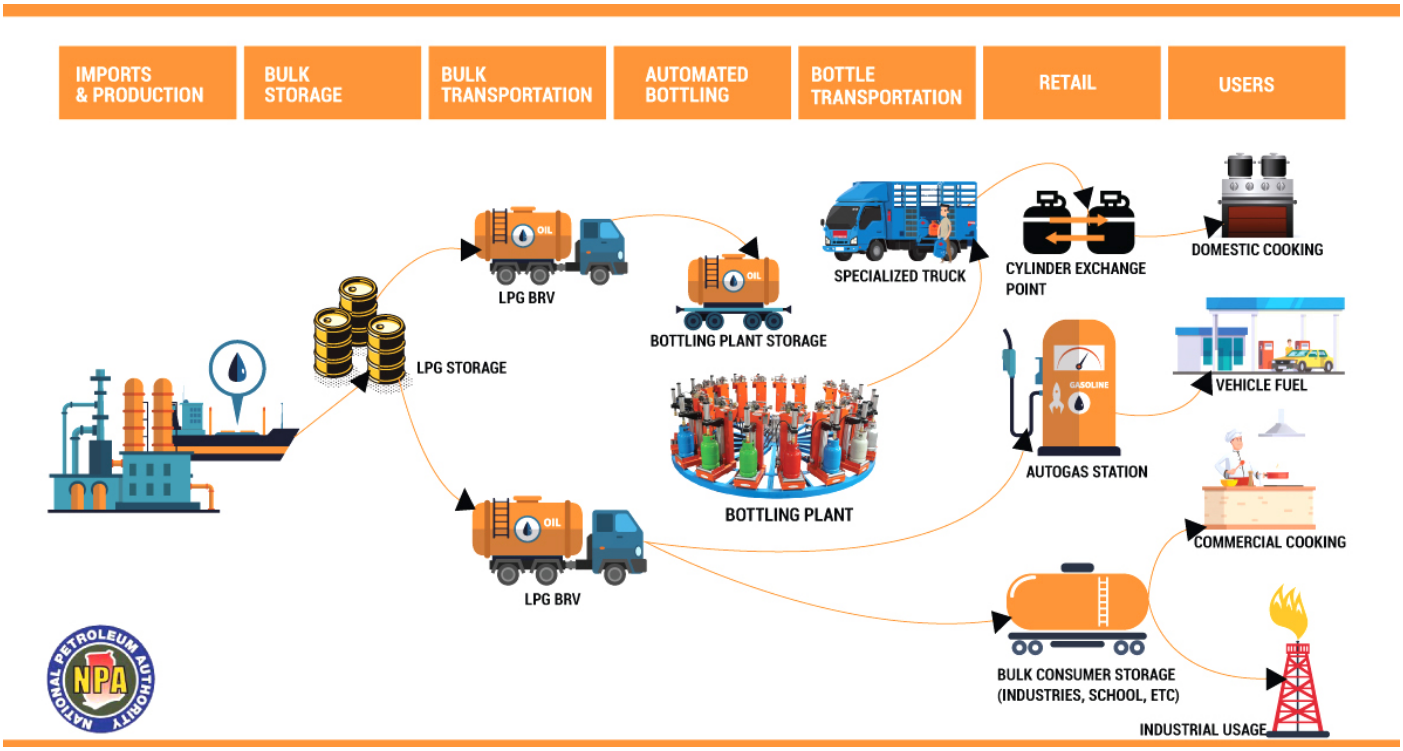
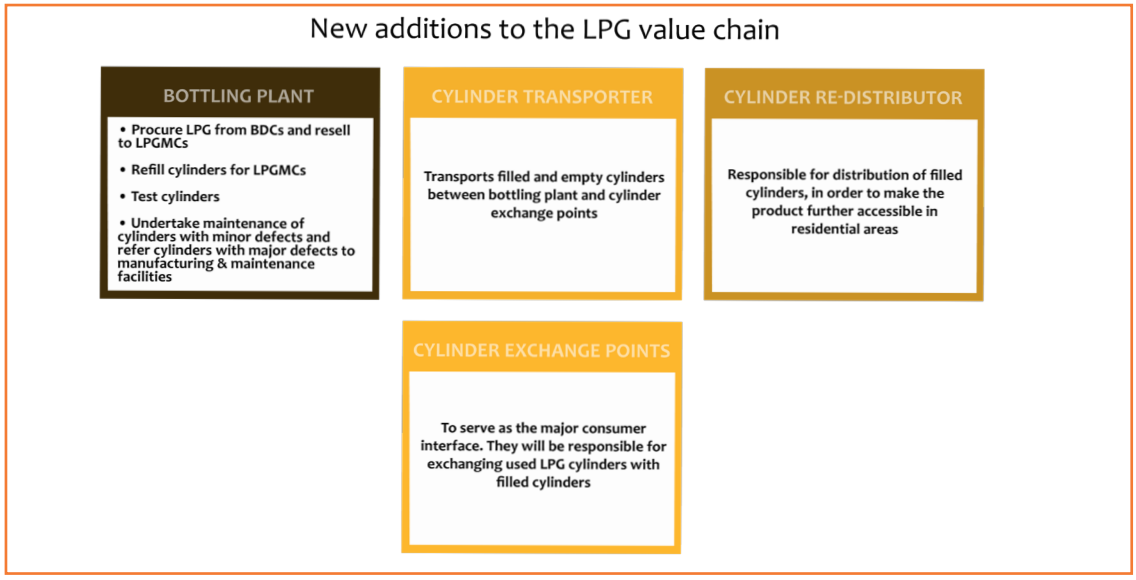


Figure 2: New LPG Value Chain (Source: National Petroleum Authority)



responsible for procuring, branding, and maintaining the cylinders.

In order to ensure safety and the smooth implementation of the policy, existing LPG refilling plants will be classified into low, medium and high risk, based on their deficiencies in meeting safety standards in a Risk Assessment of all plants by the NPA. The high risk refilling stations may be converted into filled cylinder retail and distribution outlets, whereas low risk refilling stations may be dedicated to the retail of bottled LPG and supply of autogas only, with improved safety standards.

Specialised trucks will be used to transport the filled cylinders from the bottling plants to the retail stations or exchange points, where consumers will exchange their empty cylinders for filled ones.

1.2 PILOT PHASE

A sub-committee was created to develop a comprehensive strategy for the bulk acquisition of LPG cylinders for the roll-out of the CRM, with a focus of ensuring full cost recovery. The sub-committee is currently developing a cylinder recall strategy for the pilot phase and eventual roll out of CRM, as well as a pilot phase implementation strategy.

Currently, the CRM is scheduled to be piloted in Q4 of 2019. The Kwaebibirem and Denkyembuor Districts in the Eastern Region and the Obuasi Municipality and Adansi North District in the Ashanti Region have been selected for the pilot based on volume of sales, number of active LPG refilling outlets and the ability to control and easily trace the distribution of cylinders amongst others.

1.3 POLICY OUTLOOK

1.3.1 Pricing

The relatively higher cost of transporting bottled gas compared to bulk LPG means a higher logistical cost per kilogram (kg). This, coupled with investments in cylinders required of LPGMCs, and the introduction of new players in the supply chain will lead to a rise in the pre-tax cost of bottled gas. This poses a major challenge to the success of the entire project and may require Government to favourably consider proposals for the downward revision of taxes to partly or wholly compensate for any rise in pre-tax prices. At the current total tax rate (1st September 2019) of Ghp103/kg on LPG, Government may relinquish up to Ghp62/kg of the total tax, leaving the balance still committed to the E.S.L.A[1]. Plc bond programme.

The higher relative cost of transporting bottled gas compared to bulk LPG means a higher logistical cost per kilogram (kg).

1 *ESLA stands for the Energy Sector Levies Act 2015 (Act 899) amended to the Energy Sector Levies (Amendment) Act 2019 (997).*

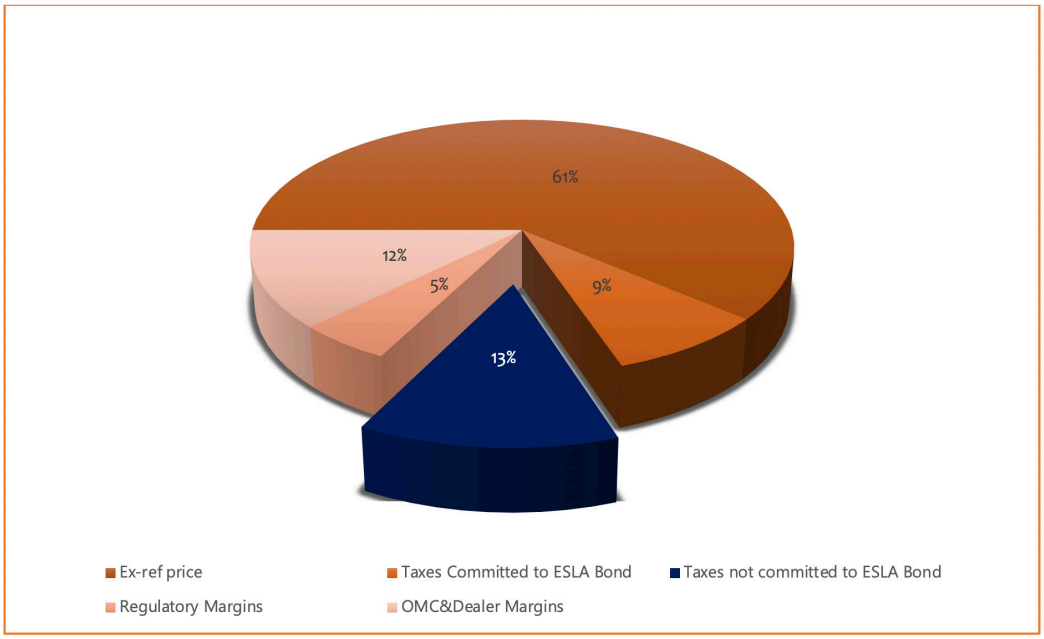


Figure 3: 2019 LPG Price Structure

Government may relinquish up to Ghp62/kg of the total tax, leaving the balance still committed to the E.S.L.A . Plc bond programme.

1.3.2 Market Shifts

The roll-out of the CRM policy is expected to improve safety in the delivery of LPG and will reshape the existing market structures beyond the new roles noted in figure 3 above. The biggest disruption is expected at the retail level and is projected to be driven by the OMCs who are also licensed to retail LPG. The LPGMC dominance of the market (62% share) will be threatened by the more consumer-friendly OMC chains (38% share). The OMC liquid fuel outlets are generally more accessible by virtue of their location and significantly out-number the LPG outlets by a ratio of about 5:1. They also possess more easily recognised and trusted brands. An addition of LPG retailing to their traditional liquid fuel retailing will significantly hurt the market prospects of LPGMCs who are only licensed to retail LPG. It may be necessary that LPGMCs swiftly invest in multiple consumer-friendly outlets, like

The LPGMC dominance of the market (62% share) will be threatened by the more consumer-friendly OMC chains (38% share).

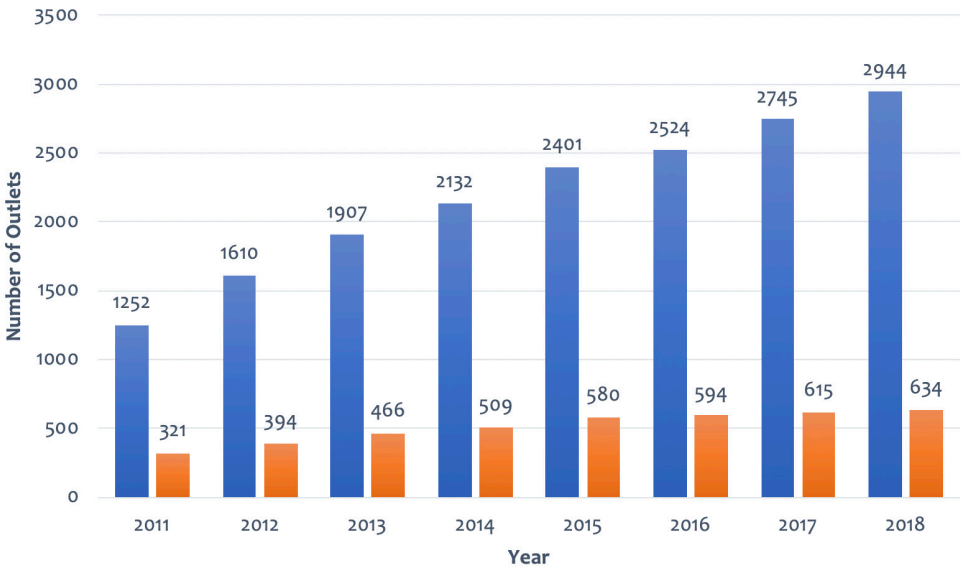


Figure 4: OMC Liquid Fuel Outlets vs LPG Outlets

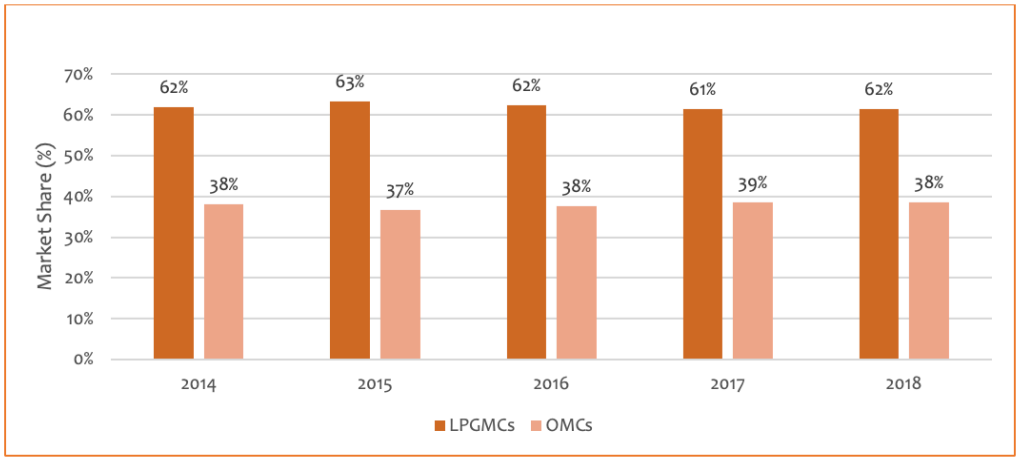


Figure 5: LPGMCs/OMCs LPG Market Share

Figure 6: A consumer using the AmeriGas self-service propane outlet. Source: AmeriGas

Figure 7: A self-service bottled propane retail dispenser positioned in front of a supermarket in Oklahoma, US. Also see links: http://bit.ly/cbodpropane | http://bit.ly/cbodpropane1

self-service propane outlets in the US and develop a delivery-to-consumer option to stand a fighting chance of maintaining their market share.

1.3.3 Infrastructure Shortfall

The key infrastructure required remains the bottling company facility. As at September 2019, only Tema Multi Product Terminal (TMPT) has fully constructed a bottling plant, while Quantum Terminals' plant is expected to be completed by Quarter 2 of 2020. Unfortunately, the Ghanaian content and Ghanaian participation policy

It may be necessary that LPGMCs swiftly invest in multiple consumer friendly outlets...to stand a fighting chance of maintaining their market share.

requiring LPG Bottling Companies (LBCs) to be 100% Ghanaian has constrained the operability of the TMPT facility, which is owned by Blue Ocean Investment Ltd., a partly foreign-owned company. This situation is unfortunate and inhibitive of foreign investment and may be legally contestable, especially with their investment made under regulatory approval prior to the Ghanaian content policy. TMPT's posturing has not been to contest the situation legally, but to explore alternate options for licensed operatives to utilise their facility. GOIL, through its subsidiaries, is seeking to invest in a bottling plant in the major market zones, Accra and Kumasi. A total of 5 companies have had their license applications as LBCs approved and are expected to commence the development of their plants over the next 2 years.

1.4 PRODUCT QUALITY

1.4.1 Fuel Quality Policy

The Ministry of Energy commissioned the development of a fuel quality policy with a purpose to provide the framework for the development of guidelines, standards and regulations. This forms part of Government's development agenda of creating prosperity and equal opportunity for all. This is in

The GCGP policy requiring LPG Bottling Companies (LBCs) to be 100% Ghanaian has constrained the operability of the TMPT facility, which is owned by Blue Ocean Investment Ltd, a partly foreign owned company.

Figure 8: TMPT's LPG Carousel. Source: Blue Ocean Investment Limited

Figure 9: A full view of TMPT's LPG Bottling System. Souce: Blue Ocean Investment Limited

line with Government's vision for the energy sector which is to make energy services universally accessible and readily available in an environmentally-sustainable manner.

A review of the draft policy indicates that it will also provide the basis for strategies, programmes and actions required to reduce the risk of poor-quality fuels to the environment, health and durability of equipment, using the fuels, and contribute to efforts towards curbing climate change. This policy provides the framework for deploying strategies to achieve cleaner air. The policy will help policymakers and implementers think about the strategies, programmes and actions required to reduce the risks of poor-quality fuels to the environment, health and safety of the public, durability of motor vehicles, as well as contribute to the efforts against climate change.

1.4.2 Low Sulphur

Petroleum product importers have largely adhered to the sulphur content standard in gasoil and gasoline of 50 ppm since its revision in 2017, except in one case of a 5000mt import.

Quality monitoring,[2] 6 months into the implementation of the policy, revealed that the sulphur standard dropped from an average of over 2,000ppm to an average of 302ppm. The private depots showed an improved drop to 76ppm while the BOST and TOR depots averaged 462ppm and 451ppm, respectively. The situation for BOST and the private depots is expected to have fallen below the 50ppm mark as at September 2019. As a result of the comingling of local production at 1,500ppm max and imports at 50ppm max, TOR depots are unlikely to report sulphur levels at 50ppm max. An update of tank quality is yet to be formally undertaken by the monitoring committee.

2 *This involved sampling and testing at various depots by the Ghana Standards Authority.*

1.4.3 Temporary Waiver for Refineries

The three local refineries operate under a three-year waiver granted by the NPA in March 2018. This allows them to produce up to 1,500ppm for Automotive Gasoil (AGO or Diesel) and Premium Motor Spirit (PMS or Petrol). This waiver also barred PSPs from selling or branding their products as purely low sulphur products, thereby making quality comingling at the pump mandatory.

To partly neutralise any price advantage accruing to high sulphur product traders, refineries are required to pay the differential between the Platt AGO benchmarks of 0.1% FOB New Barges and the ULSD 10ppm MS FOB Rotterdam Barges. This differential was not applicable to PMS and was christened the Price Parity Margin (PPAM). As at December 2017, a total of about USD1.6mn had accrued to the PPAM fund, but no payment had been made as at December 2018.

There were no investments by any of the local refineries to upgrade their facilities into low sulphur refineries. The market remains doubtful of the willingness and likelihood of these refineries to make the necessary investments. The smaller refineries (Akwaaba and Platon) are expected to revise their business model to focus on the Ghanaian MGO, Naphtha and RFO market, as well as the AGO and PMS export markets, instead of investing capital that may not necessarily yield price premiums to justify the investments.

TOR is also not expected to make the necessary investments due to the lack of capital under its current ownership and structure. It may, however, see a strong flow of capital for a desulphurisation plant under a strategic divestiture structure or partnership. Traders with a bullish outlook on the West African market present the most likely strategic fit.

Petroleum product importers have largely adhered to the sulphur content standard in gasoil and gasoline of 50 ppm since its revision in 2017, except in one case of a 5000mt import.

There were no investments by any of the local refineries to upgrade their facilities into low sulphur refineries. The market remains doubtful of the willingness and likelihood of these refineries to make the necessary investments.

1.5 ILLICIT TRADING

The menace of smuggling and export dumping which bedevilled the market in 2016 and 2017 subsided on the back of strong leadership and policy interventions, spearheaded by the NPA. In a massive turnaround, the recorded national consumption of the heavily-smuggled products, AGO regular and PMS, shot up by 19% and 17%, respectively.

Unaccounted volumes of gasoil and gasoline, which form the primary tax base for downstream petroleum tax revenue, saw a sudden drop in 2018, from a peak of 781.63mn litres in 2017 to negative 574.25mn litres. This is deduced from a stock reconciliation of all NPA's official stock movement information and is further explained in Section 2.4 of Chapter 2.

The heavily diverted Marine Gasoil Foreign (MGO Foreign), which saw an inexplicable rise of 3620% in 2017, suddenly dropped to normal levels as can be observed in figure 10. The marker concentration failure rates of 4.9%, recorded in 2017, also fell to 1.24%, thereby indicating lower levels of product dumping at the retail stations. As indicated in the 2017 report, the fuel marking programme, introduced in 2012 by LI 2187, empowered the National Petroleum Authority to identify and legally deal with participants in the illicit

The 2018 recorded national consumption of the heavily smuggled products, AGO regular and PMS, shot up by 19% and 17% respectively.

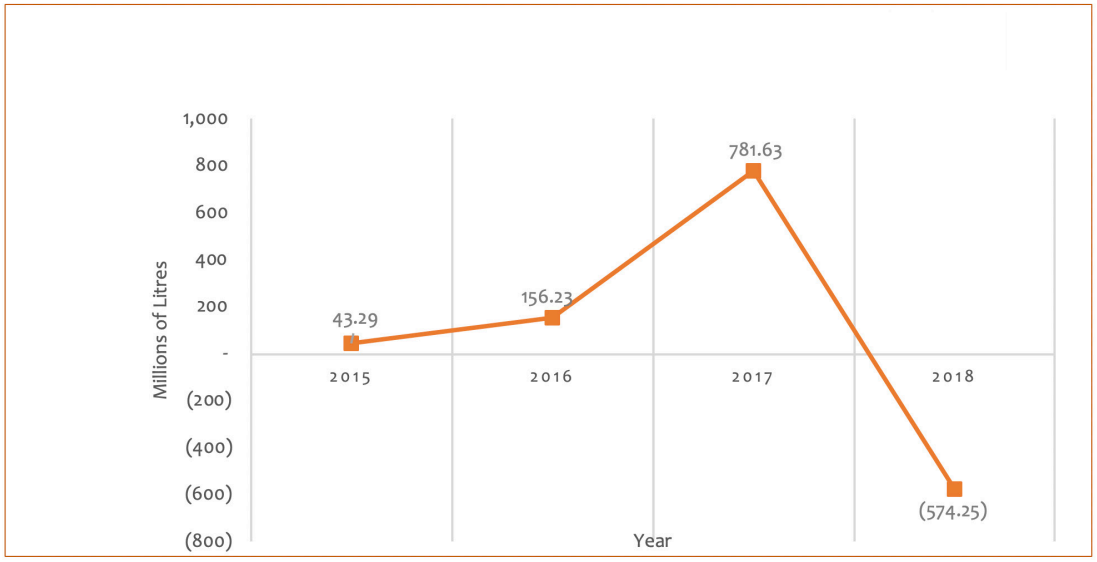


Figure 10: Variances between Expected Sales and Reported Sales - Official Unaccounted Volumes (2015-2018)

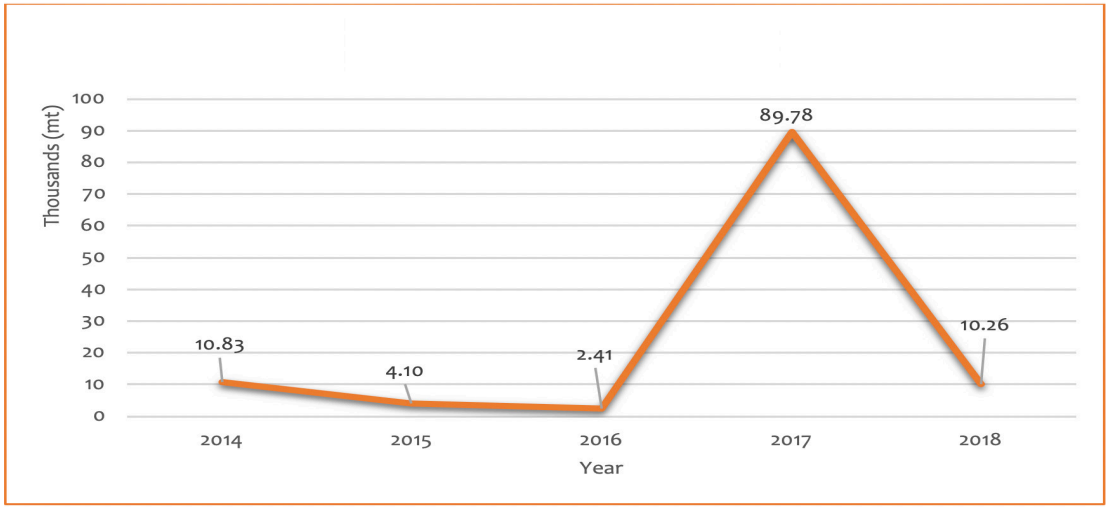


Figure 11: MGO-Foreign Consumption (2014-2018)

trade in the retail chain of the petroleum downstream sector.

Evidence of lower marker concentration in a petroleum product, when tested in the field with the required equipment, provides some proof that illegal products have been introduced at the said fuel station. This act is evidence of tax evasion. Unfortunately, government does not treat it as such, but has rather opted to have the NPA impose regulatory fines. A given breach attracts a fine of only GHS10,500 with operators, sometimes, allowed to continue to sell the offending products.

While there are reasons to celebrate, data continues to show the existence of smuggling, sale under-declaration, re-export and premix dumping. The existence of low marker concentration and the unaccounted sales affirm evidence and reports of these occurrences. The NPA found some OMCs and BDCs guilty of under-declaring liftings which resulted in tax evasion. It remains unclear whether criminal proceeding will be preferred against culprits. Section 6.6 of Chapter 6 shares a perspective on this.

1.5.1 Regulatory Interventions

Imposition of Taxes on Marine Gasoil for Foreign Vessels (MGO-Foreign)

Industry (BDCs and OMCs), led by the National Petroleum Authority, advocated for the imposition of taxes similar to regular AGO on MGO Foreign and was granted on January 16, 2018 (See Appendix 1). This move was to curb the diversion of the product onto the local AGO market.

MGO foreign was exempted from taxes and, as such, sold at a discount to regular gasoil. Perpetrators of this criminal trade gained undue advantage by diverting the relatively cheaper MGO to be sold as regular gasoil at the full cost in the local market, thereby evading taxes and regulatory margins. MGO-Foreign, at the peak of the illicit trade, grew by 3620% from 2,413mt to 89,775mt between 2016 and 2017. The imposition of the tax to ensure market parity led to the sudden fall in demand to pre-dumping levels.

1.5.2 Revision of Export Guidelines

The revised export guidelines (see Appendix 2), introduced by the NPA in September 2017, came into full effect in 2018. Whilst the guidelines succeeded in stemming illegal activities; it also inhibited the operations of legitimate exporters. Ghanaian multinationals, like Zen Mali and Zen Burkina, were compelled to adopt alternate routes of supply in order to meet the demand of their customers. Official export volumes dropped by about 51% to 223,709 mt from the bloated 2017 level of 453,080mt. Ghana's share of export to the Sahelian market also saw a major drop from 17% to 6%.

The marker concentration failure rates of 4.9% recorded in 2017 also fell to 1.24% thereby indicating lower levels of product dumping at the retail stations

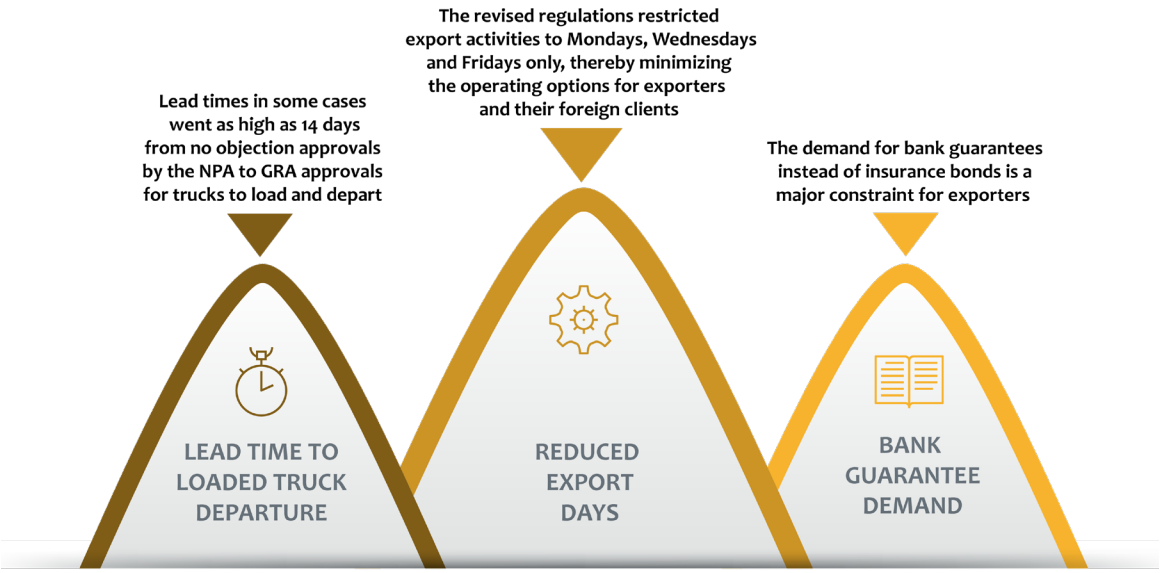
The key challenges, highlighted by exporters, include:

a. Lead time to loaded truck departure

Lead times, in some cases, went as high as 14 days from no objection approvals by the NPA to GRA approvals for trucks to load and depart. This increased exporters' price risk and the importers' operating cost, especially for demurrage. Benin, which is the largest route for Sahelian supplies, operates with a 2-day lead time to depart.

b. Reduced Export Days

The revised regulations restricted export activities to Mondays, Wednesdays and Fridays only, thereby minimizing the operating options for exporters and their foreign clients. This restriction also raises operating cost, access and price risk for the parties. Such restrictions are not existent in lead competitor export routes along the West African Coast.



c. Bank guarantee demand

The demand for bank guarantees instead of insurance bonds, is a major constraint for exporters as it holds up their trading lines and minimises their volume of trade.

These experiences negate efforts to turn Ghana into a petroleum hub. It is imperative that industry and its regulators develop an improved system to position Ghana as a major route, both to boost our forex earnings and to improve storage asset utilisation in a market that is highly over-tanked.

1.6 HEALTH SAFETY SECURITY AND ENVIRONMENT

1.6.1 Industry HSSE Manual

The NPA reported an increase in HSSE incidents from two in 2015 and 2016 to four in 2017 and six in 2018. Fatalities saw a major dip from 154 in 2015, 15 in 2016, 7 in 2017 to 2 in 2018.

The Ministry of Energy completed work on its HSSE manual for the industry in April 2019 after 14 months of work. The manual presents a holistic approach to tackling the short falls in attaining Health, Safety, Security and Environment (HSSE) targets in Energy Sector Organisations. The development of this Manual involved a wide range of stakeholders, from Ministries, Departments and Agencies (MDAs), Industry Players, CSOs and Academia.

The Manual is divided into four sections: HSSE Management System, Standard Operating Procedures (SOPs), Incident Notification and Investigation and Record Retention Standard.

The Minister of Energy, in his foreword to the manual, explained that "*users should consider it as a minimum requirement and not necessarily a sufficient condition in addressing all HSSE issues in the energy sector. Users should note that HSSE is a line responsibility and, hence, people cannot be absolved from accountability with the mere excuse of compliance to this manual.*"

Copies of the manual may be accessed on the CBOD website via the following link: http://bit.ly/cbodhsse

1.6.2 HSSE Performance

The NPA reported an increase in HSSE incidents from two in 2015 and 2016 to four in 2017 and six in 2018. Fatalities saw a major dip from 154 in 2015, 15 in 2016, 7 in 2017 to 2 in 2018. Injuries also saw a dip from the height of 154 in 2015, 53 in 2016, 134 in 2017 to 9 in 2018.

Eight out of the 14 reported incidents, that occurred between 2015 and 2018, took the lives of about 178 people with over 350 people sustaining injuries.

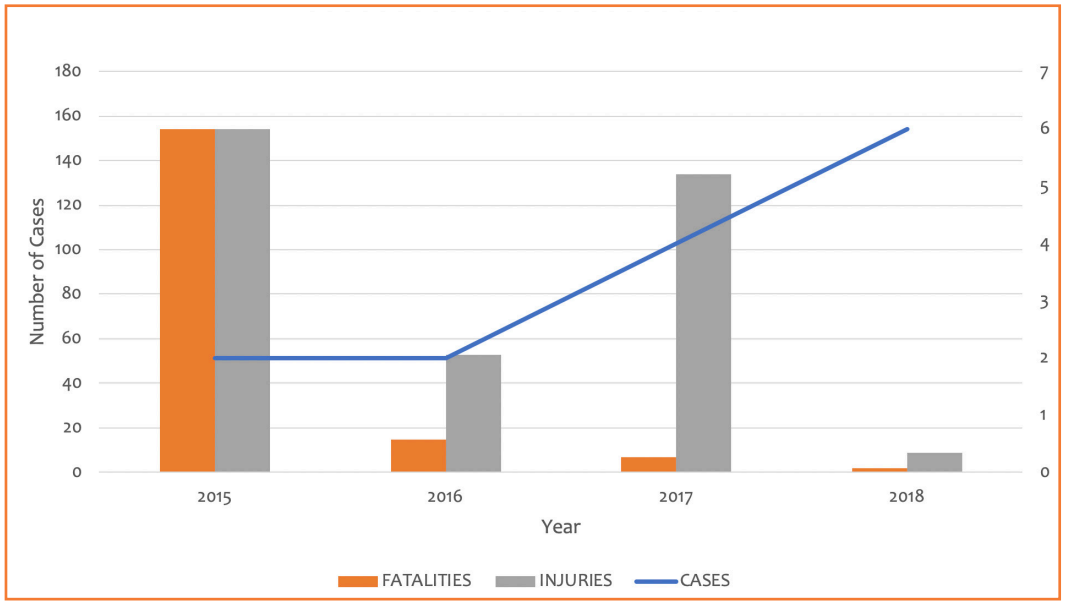


Figure 12: HSSE Cases, Fatalities and Injuries (2015-2018)

Five of these incidents were related to LPG.

The most catastrophic incident occurred in 2015 with about 154 deaths and 154 injuries in the twin flood and fire disaster at the GOIL retail station at Circle-Accra. Victims of the incident have since filed a suit at the High Court against the Accra Metropolitan Assembly, GOIL and two individuals, seeking compensations.

In 2017, there was a suspected siphoning of fuel at a tanker yard of one OMC in Accra which resulted in 13 burnt BRVs and3 people sustaining injuries.

Two of the incidents in 2018 were related to BRV accidents and another two related to LPG discharge. One of the LPG incidents led to the two (2) deaths, recorded in 2018. The safety challenges, with respect to the operations of LPG distribution and marketing, have been a major driver for the promulgation of the LPG cylinder recirculation policy.

While it is expected that the CRM programme will minimise the HSSE risk, it must be noted that the key issues of accountability and inadequate enforcement are core to the present and future problems. The NPA will have to operate more forcefully and fearlessly to address these.

1.7 GHANAIAN CONTENT AND GHANAIAN PARTICIPATION POLICY

The Ghanaian Content Policy, hitherto known as the Local Content Policy, was revised in 2018 and finalised in January 2019 for consideration by the Cabinet of the Government of Ghana. Cabinet considered it and approved it in March 2019 with additional directives.

1.7.1 Policy Vision

The Government of Ghana is committed to deploying an effective Ghanaian Content[3] and Ghanaian participation[4] policy as the platform for achieving the goals for the downstream petroleum industry with participation by Ghanaian citizens in all roles, at all levels and in all activities relating to the petroleum downstream value chain. These activities refer to those carried out under:

Petroleum licenses and permits for importation, exportation, re-

3 Ghanaian Content refers to the quantum/percentage of locally-produced materials, personnel, financing, goods and services rendered to an industry and which can be measured in monetary terms.

4 Participation refers to a minimum of 51% Ghanaian equity ownership shareholding by Ghanaian citizens. For PSPs supplying goods and services in the downstream industry, the equity participation shall target one hundred percent (100%) for the Ghanaian private sector.

...it must be noted that the key issues of accountability and inadequate enforcement are core to the present and future (HSSE) problems.

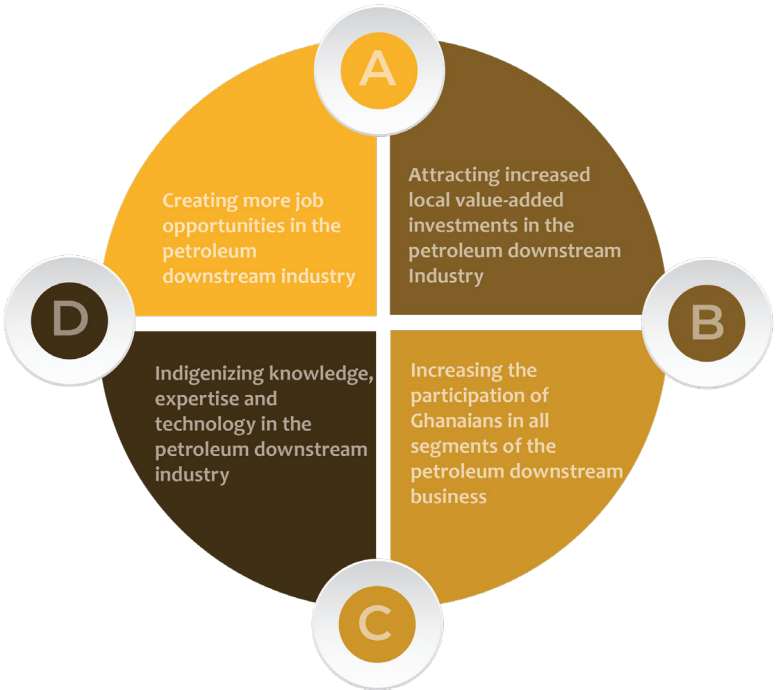
Within 10 years of the commencement of activities of a PSP, the level of Ghanaian Content targeted shall be 100% for supplies and services identified by the Regulator as being of priority to Ghana.

exportation, shipment, transportation, processing, refining, storage, distribution, marketing and sale in Ghana.

Provision of supplies and services, directly or indirectly, to the Petroleum Service Provider (PSP) under any license or permit, whether such supplies or services are provided inside or outside Ghana.

Within 10 years of the commencement of activities of a PSP, the level of Ghanaian Content targeted shall be one hundred percent (100%) for supplies and services identified by the Regulator as being of priority to Ghana. For all other supplies and services, appropriate target levels of Ghanaian Content shall be set by the Regulator. To this end, Government shall seek to provide the enabling environment and opportunities for Ghanaians to benefit from the economic wealth resulting from activities in the petroleum downstream industry through participation of Ghanaians in the ownership, operations, control and management of businesses in the sector. Participation by the Ghanaian private sector will target one hundred percent (100%) equity for PSPs involved in major projects.

GOVERNMENT COMMITTED TO THE FOLLOWING



1.7.2 Policy Goals

a) Creating more job opportunities in the petroleum downstream industry.

b) Attracting increased local value-added investments in the petroleum downstream industry.

c) Increasing the participation of Ghanaians in all segments of the petroleum downstream business.

d) Indigenizing knowledge, expertise and technology in the petroleum downstream industry.

1.7.3 Policy Objectives

The Ghanaian Content policy will seek to:

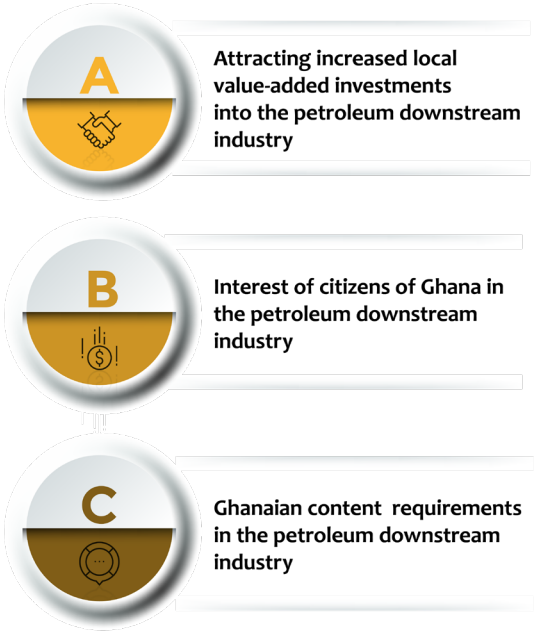
- Achieve one hundred percent (100%) equity participation by Ghanaian petroleum companies and their suppliers in petroleum downstream related-activities;
- Maximize value additions and job creation, through the use of local expertise, goods and services, businesses and financing in petroleum downstream activities and the retention of benefits within Ghana;
- Develop Ghanaian capacity in all aspects of the petroleum downstream value chain through education, skills and expertise development, transfer of technological know-how and active research and development;
- Achieve, at least, 98% Ghanaian employment in all aspects of petroleum downstream-related activities within 5 years from the commencement of operations, other than exceptional cases;
- Increase capabilities and international competitiveness of

domestic businesses and industries[5];

- Provide rigorous and transparent monitoring and reporting system to ensure delivery of Policy Goals;
- Outline strategies for Small and Medium Scale Enterprises (SMEs) to increase their participation; and
- Ensure compliance with national and internationally-accepted standards and safety regulations within the industry.

1.7.4 Policy Direction

The policy objectives will be attained through the implementation of the following policy actions:



1.7.4.1 Mandatory Ghanaian Content in the Petroleum Downstream Industry

All downstream petroleum activities, including processing, manufacturing, supply and marketing activities, bulk purchases of petroleum products, logistics, trading, marketing, and distribution shall incorporate Ghanaian content as an important element in their business strategy and activities. Every activity in the downstream supply logistics chain must have or form part of a Ghanaian content plan which includes all aspects of the local content framework. Implementation of the Ghanaian content plan shall ensure measurable and continuous growth of Ghanaian participation in all aspects of operations.

1.7.4.2 Interest of Citizens of Ghana in the Petroleum Downstream Industry

Ghanaians have the capacity to handle most of the petroleum downstream activities in areas, such as management and operations. However, the introduction of new technologies into the sector may occasionally require some foreign participation. Therefore, there is the need to secure the interest of Ghanaian citizens in this sector.

All petroleum downstream activities shall be carried out by companies licensed by the relevant Regulator of the downstream petroleum industry (currently the National Petroleum Authority). The workforce shall be made up of Ghanaian citizens, holding a minimum of 80% managerial and executive positions and 100% non-managerial and other positions.

Ghanaians have the capacity to handle most of the petroleum downstream activities in areas such as management and operations.

Ghanaian Content requirements in the Petroleum Downstream Industry

Specific activities in the petroleum downstream value chain shall have different levels of Ghanaian Content and Ghanaian Participation requirements. Requirements for various activities will be as follows:

- **Ghanaian Content requirements for activities in the Petroleum Downstream Industry**

Activities in the petroleum downstream sector, such as trading and shipping (all activities and services included, but not limited to vessel charter) of crude oil, Oil Trading, Bulk Oil Distribution, Oil Marketing and retailing of petroleum products at the retail outlets, etc., - in the domestic market shall be reserved for licensed companies with a 100

5 *Exceptional cases as approved by the regulator*

percent (100%) Ghanaian ownership. The activities are:

a) Trading of Crude Oil and refined Petroleum Products.

b) Shipping of Crude Oil and Refined Petroleum Products.

c) Distribution & Marketing of refined petroleum products.

The above, notwithstanding, existing PSPs, which are partly or wholly foreign-owned companies, shall be allowed to continue operating in the country.

- **Ghanaian Content requirements for infrastructure development in the petroleum downstream industry**

For the engineering, fabrication, construction, ownership and operations of capital-intensive downstream facilities, such as port discharge facilities (construction of jetties, SPM, CBM, ABB, pipelines, fabrication and welding works, dredging, and operation and maintenance of the facilities), storage, refineries and petro-chemical plants, lube blending and packaging plants, as well as LPG bottling and cylinder-manufacturing plants, shall be reserved for licensed companies with a minimum of 51% Ghanaian ownership. However, the Regulator, in consultation with the sector Minister, may vary this requirement in circumstances where there is proven lack of investment capacity by Ghanaians or for national strategic reasons.

...the award of contracts for supply of petroleum products and goods and services to the Mining industry shall be reserved for companies with one 100% Ghanaian ownership.

The facilities are:

a) Port Facilities for Crude Oil and Refined Petroleum Products;

b) Construction, Ownership and Operation of Storage Facilities for Crude Oil and Finished Petroleum Products ;

c) Refinery, Gas Processing and Petrochemical Plants;

d) Lube Plant, Blending and Packaging Plant;

e) LPG Bottling and Cylinder Manufacturing Plant.

Requirements for bulk and commercial supply of petroleum products

The award of contracts for supply of petroleum products and goods and services to the aviation sector, power generation plants, upstream petroleum facilities, construction projects, quarries, and other industries as determined by the Regulator, in consultation with the Minister, shall be executed by all existing PSPs. The above notwithstanding, the award of contracts for supply of petroleum products and goods and services to the Mining industry shall be reserved for companies with 100% Ghanaian ownership.

Provision of Goods and Services by Ghanaian Companies

Procurement of goods and services for the petroleum downstream industry shall prioritize sourcing from Ghanaian companies compliant with Ghanaian content and Ghanaian participation requirements on a competitive basis and in a transparent manner. Where bids are being evaluated, evaluation criteria shall include Ghanaian content and capacity development. A preference for the provision of the said goods and services shall be for Ghanaian companies, even if they are more expensive, all else being equal. In the case where the price for the said goods and services is more expensive, the World Bank domestic preference percentage or 10% price increment will be used as the preference ceiling, whichever is greater. Standards and certifications applied to the provision of goods shall be in accordance with guidelines of the Ghana Standards Authority (GSA) or internationally acceptable standards as approved by the GSA. Where a foreign entity is to provide goods for the petroleum downstream industry, the foreign entity

shall "operate from Ghana"[6] and partner with a Ghanaian-owned company and in compliance with the Ghanaian Content policy directives.

1.7.5 Policy Implementation

Implementation Institutions

The policy on Ghanaian Content and Ghanaian Participation shall be coordinated, implemented and monitored by the Ministry of Energy, the National Petroleum Authority and the Ghanaian Content Committee. These institutions shall have the following roles:

Ministry of Energy

The Ministry of Energy shall monitor implementation and coordination of the Ghanaian Content Policy and provide further policy directions in the implementation process, where necessary. The Minister for Energy may vary various requirements for Ghanaian Content upon consultations with the Regulator in circumstances where there is proven lack of investment capacity by Ghanaians or for national strategic reasons.

National Petroleum Authority

The National Petroleum Authority (NPA), the Regulator, shall be responsible for implementation of the Ghanaian Content Policy. The NPA shall provide the necessary logistical support for the activities of the Ghanaian Content Committee. The Committee shall report to the Authority in carrying out its mandate.

Ghanaian Content Committee

There shall be established a Petroleum Downstream Ghanaian Content Committee (GCC) under the National Petroleum Authority. The GCC shall be a five-member Committee comprising three (3) members from the private sector and two (2) members from the public sector. The appointment of the Committee members shall be made by the Minister for Energy, in consultation with the President. The Committee shall supervise, co-ordinate, administer, monitor and manage the development of Ghanaian Content in the downstream industry. It will also coordinate the implementation of the provisions in the downstream Ghanaian Content regulations to be developed. The GCC shall ensure transparency in its work by periodically publishing its reports on Ghanaian Content activities.

There shall be established a Petroleum Downstream Ghanaian Content Committee (GCC) established under the National Petroleum Authority.

1.7.6 Policy Application and Compliance

1.7.6.1 Policy Application

This policy shall apply to new entrants and existing PSPs in the downstream petroleum industry. The regulator, in consultation with the sector Minister, shall review the local equity participation levels in existing PSPs with majority foreign ownership and, when necessary, recommend an increase in local equity participation in these existing PSPs. Existing PSPs, operating in the industry, will have to comply with the local equity participation sections of the policy in any future changes in ownership and/or control[7]. Existing PSPs, which are partly or wholly owned foreign companies, shall be allowed to continue operating in the country. In the event of a change in ownership and control (whether partial or whole) of an existing PSP, which is partly or wholly foreign-owned to another foreign owned entity, this policy shall be fully complied with, unless such existing PSP is transferring ownership or control to a Ghanaian person through the floating of shares on the Ghana Stock Exchange (GSE) or private placement. A

The policy on GCGP shall be coordinated, implemented and monitored by the Ministry of Energy, the National Petroleum Authority and the Ghanaian Content Committee.

6 *"Operate from Ghana" means that the foreign entity shall be incorporated under the Companies Code, 1963 (Act 179).*

7 *Control means the direct or indirect ownership of more than fifty percent (50%) of voting capital or voting rights, or the entitlement (directly or indirectly) to appoint a majority of directors or equivalent management body, or the entitlement to direct the policies or operations of an entity.*

Ghanaian shareholder in existing PSPs in the downstream petroleum industry shall not sell or transfer shares of the company to a foreign-owned entity.

1.7.6.2 Compliance

The Regulator shall be required to enforce compliance to the Ghanaian Content and Ghanaian Policy Regulations. The Regulator shall, in the discharge of its duties, be required to conduct due diligence on Ghanaian Content submissions to ensure there is no fronting for foreign companies by Ghanaian(s) in the ownership of the companies in the petroleum downstream industry.

1.7.6.3 Key Implementation Considerations

Equal employment opportunities and participation of women in petroleum downstream industry activities will be actively encouraged, facilitated and promoted.

Capacity Development (Human & Institutional)

As part of measures to ensure active Ghanaian participation in the petroleum downstream industry, foreign-owned petroleum downstream players shall carry out a staff development programme for the promotion of technology transfer to Ghanaians in relation to their activities. The annual Ghanaian Content Plan (GCP) shall contain an employment and training sub-plan which shall include among others:

- Hiring and training schedule of the foreign entity with the breakdown of the skills needed;
- Anticipated skill shortages in the Ghanaian labour force;
- Project specific training requirements; and
- Projected expenditure as against the actual expenditure incurred during the period for implementing the employment and training plan/ programme. Where Ghanaians are not employed because of their lack of training, the foreign-owned company shall ensure that every reasonable effort is made within a reasonable time to supply such training locally or elsewhere. The procedure for execution shall be contained in the company's employment and training plan.

The Regulator shall coordinate capacity development initiatives to ensure that programmes and initiatives by downstream players conform to national objectives.

Efforts will be made to ensure strategic partnerships that will lead to the transfer of technological know-how within the sector. The Regulator will put in place procedures in granting exceptions in a fair, open and transparent manner.

Gender in the Downstream Petroleum Industry

While Government will provide equal opportunities for all citizens of the Republic of Ghana, equal employment opportunities and participation of women in petroleum downstream industry activities will be actively encouraged, facilitated and promoted. The Regulator will ensure that all actors in the petroleum downstream value chain maintain gender balance in their annual recruitment and training programmes.

Legislation of Ghanaian Content & Ghanaian Participation and Implementation

To ensure effective implementation of Ghanaian Content and Ghanaian participation policy for the petroleum downstream industry, these policy directives will be legislated. The Legislation will provide the Regulator with the necessary legal backing to ensure full implementation of the Ghanaian Content and Ghanaian participation policy for the petroleum downstream industry. The GCC will be established under the legislative instrument and

mandated to oversee and ensure the full implementation of the Ghanaian Content and Ghanaian participation policy. The GCC will comprise public and private sector stakeholders.

Cabinet Approval

Cabinet considered the policy and approved it in March 2019 with additional directives as follows:

i. Ghanaian-Owned OMCs should be granted a five-year, instead of ten-year grace period to enable them acquire the necessary capacity, requisite certification and trained personnel to take over successfully the supply of aviation fuel in the downstream.

ii. Measures should be established to ensure that a minimum of 25% of the market share for the supply of aviation fuel is reserved for wholly-owned Ghanaian OMCs.

iii. With regards to the supply of petroleum products to the mining industry, the award of contracts for petroleum products should be reserved solely for companies with 100% Ghanaian ownership.

1.7.6.4 Implementation and Market Reaction

The policy faced fierce resistance from the foreign companies which, together with their representative associations (CBOD, AOMCs, etc.) and diplomatic bodies, pressured government to moderate its position on the policy. The earlier draft required existing foreign companies to comply with the Ghanaian shareholding thresholds, defined in the policy within a 10-year period by divesting their stake in the industry to Ghanaian shareholders. This was modified to require them to only engage Ghanaians, if they wish to divest part or all their shares.

The policy is seen as contradictory to Government's investor appeal for the development of Ghana as a petroleum hub. Government's pitch for about USD50bn investment by the private sector in the hub is heavily threatened by the GCGP policy which restricts foreign participation in a local market which naturally will be an offtake nucleus to consider in an investment evaluation. There will be a need to review the place of the GCGP policy within the broader vision of a petroleum hub.

The policy as at quarter 2 of 2019 had still not been advised to the industry. It is expected that a few new foreign entrants may be permitted into the industry before full policy implementation. However, the directives on petroleum supplies to the mining sector are being fully implemented and have led to the loss of contracts previously held by OMC majors like Vivo Energy and Total Ghana Ltd. While this may inure to the benefit of local majors, like Zen who command 67% of the mine's supply, it is also a new opening for more local OMC competition. Goil, Gaso and other local OMCs have taken a bullish view to the mining market and are expected to increase the market share dispersion in the industry.

The GCGP policy is seen as contradictory to Government's investor appeal for the development of Ghana as a petroleum hub

1.8 PREPARATION FOR MARPOL 2020

In response to concerns raised by the 2017 industry report, the Ministry of Energy constituted a committee of key stakeholders in November 2018, comprising the NPA, GMA, GPHA, AOMCs, EPA, GSA, Ministry of Energy among others to review the implications of MARPOL 2020 on Ghana and recommend the necessary technical, regulatory, policy and operational interventions required to be optimally prepared as a country. The work of the committee is expected to be completed by the end of quarter 3 of 2019. Key market reviews and recommendations

for Ghana are discussed in Chapter 5.

1.9 LICENSING

The discontinuation of the Oil Trading Licenses (OTC), the re-categorisation and rationalisation of the BDC license and the licensing of LPG bottling companies were the major licensing activities for the 2018 fiscal year. These interventions would significantly redefine the petroleum downstream landscape going into the future.

1.9.1 Cancellation and Discontinuation of OTC licenses

The OTC license which allowed PSPs to import petroleum products for sale to BDCs and major bulk buyers like the power sector, was cancelled and discontinued

The OTC license, which allowed PSPs to import petroleum products for sale to BDCs and major bulk buyers like the power sector, was cancelled and discontinued by the NPA board in December 2018, after various consultations and engagements with the Ministry of Energy and the industry. The license, hitherto, attracted an annual license fee of USD20,000 as against USD400,000 per annum fee for BDCs. It also did not require dedicated storage or minimum capital as is expected of BDCs, but entitled the OTCs to import petroleum products just like BDCs. Its only comparative limitation was its inability to trade directly with Oil Marketing Companies (petroleum retail companies).

The OTC license, which precedes the advent of the BDC license, was introduced in 2005 as a mechanism to allow private entrepreneurs to import products for resale through the Tema Oil Refinery which used to be the sole distributor of petroleum products to the retail market.

The license was introduced after the Tema Oil Refinery, which used to be the sole importer of petroleum products, became debt-ridden and lost the financial capacity to serve the market. The BDC license was introduced to combine the function of the OTC with breaking bulk to OMCs (the role played by TOR in the OTC structure) and in addition stimulate investments in storage infrastructure. At the inception of the BDC license construct, it was a requirement that licensees invest in storage facilities of about 30,000 cubic meters within a period of two years to maintain their license and transition from a provisional license to a permanent license. In essence, the BDC license rendered the OTC license largely redundant except in cases where the OTC principals were the same principals of the BDCs.

In recent times, International Oil Trading Companies (IOTCs) expressed keen interest in securing OTC licenses to enable them trade ex-rack to BDCs. This in effect would have usurped the role of BDCs which is to manage the supply chain and trade from FOB (ex-refinery) in USD per metric tonne to GHp per litre ex-rack Ghana.

This development was inspired by the financial weakness in the BDC industry resulting from years of government non-payment of under recoveries to BDCs. It also proved to be an easier way to enter the market, as its barriers to entry were much lower when compared to the BDC license.

OTC licenses were not renewed for 2019. The NPA granted temporary waivers, not exceeding October 2019, to some OTCs with active contracts to enable them wind up on their OTC operations.

1.9.2 Rationalisation of BDC license

The NPA reaffirmed its commitment to fully enforce the NPA requirement for BDC licenses as notified to industry in October 2017. The NPA board introduced a two-tier system for licensing BDCs to allow non-compliant BDCs to be able to operate in a partly restricted manner. As a result, BDCs are to be tiered as category 1 and category 2 BDCs.

- Category 1 BDC license holders will

be authorized to import crude oil as well as procure, store, distribute and sell petroleum products wholesale to OMCs and LPGMCs as per the current scope of the BDC license. There was no change in the license requirements.

- Category 2 BDC license holders will not be permitted to import petroleum products into the country. They will, however, be authorized to procure petroleum products in-tank from the local refineries or Category 1 BDC license holders for sale to OMCs and LPGMCs. They will also be allowed to market condensates and export petroleum products to neighbouring countries under custom's seal. The BDC license requirements were varied by reducing the equity capital and trade finance requirements by 50% to GHS15million and USD30million, respectively. The requirement for a dedicated storage for 40,000cubic meters was downgraded to a non-dedicated storage agreement.

As at the end of quarter 2 2019, no category 2 license had been issued. BDCs non-compliant with the category 1 requirement continue to work towards regularizing their category 1 status.

Prior to the implementation of these new categories, some BDCs had their licenses revoked for their inability to meet the existing requirements and/or non-payment of license fees. The total number of BDCs, subsequently, reduced to twenty-four as at December 10th, 2018 (source NPA website). All non-compliant BDCs were granted up to 31st May 2019 to meet their license requirements or have their licenses also revoked.

As at the end of quarter 2 of 2019, a total of 26 BDCs were fully compliant and have had their licenses renewed. We expect that 2 more BDCs may have their licenses renewed by end of 2019. We also anticipate that the efforts by International Oil Traders (IOTs) to integrate forward through the acquisition of BDCs licenses will lead to the issuance of about two more licenses prior to the full enforcement of the Ghanaian content and Ghanaian participation policy.

The NPA board introduced a two-tier system for licensing BDCs to allow non-compliant BDCs to be able to operate in a partly restricted manner.

1.9.3 Petroleum Service Providers' (PSP) licenses

BDCs

The BDC function, which started in 2007 with three licensees, reached its peak at 41 in 2016 and dropped to 39 in 2017, and 35 in 2018. As at quarter 2 of 2019, the number in good standing had reached 26. Out of the 35 BDCs licensed in 2018, 24 (67%) imported products over

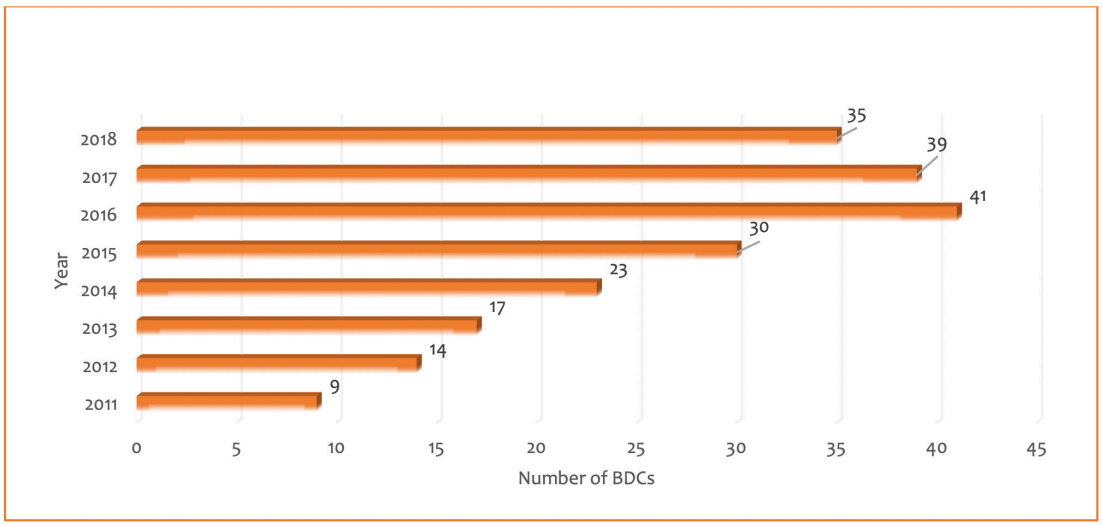
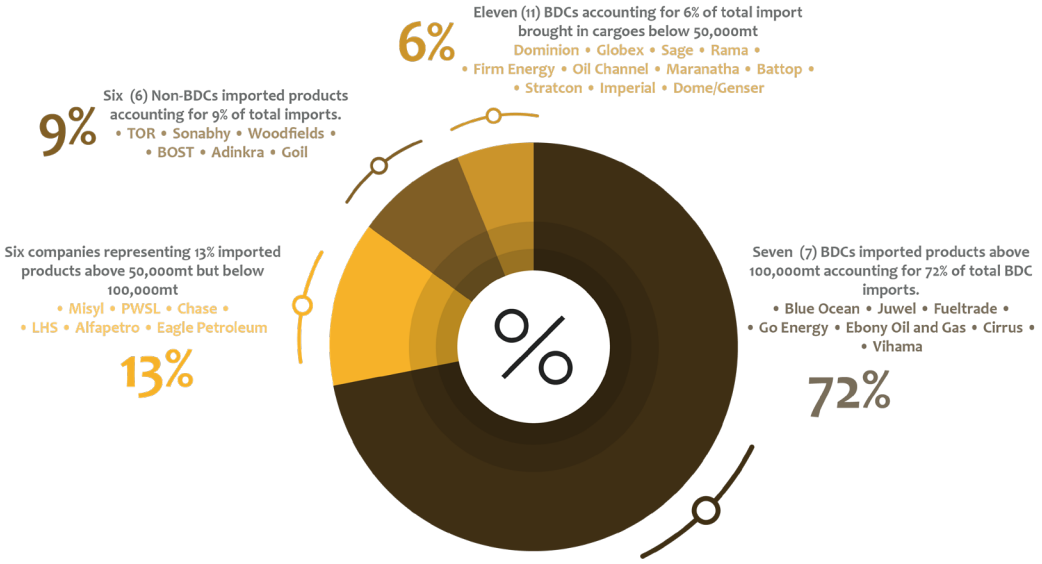


Figure 13: Number of BDCs (2011-2018)



2018 BDC Import Activity

There was an improvement in the number of importers who brought in products equivalent to the standard single cargo size of 30kt

the 2018 fiscal year. This was a reduction when compared to 2017 when 31 BDCs (76%) imported products, out of a total 41 licensees.

Seven BDCs imported products above 100,000mt, accounting for 72% of total BDC imports. Six companies, representing 13%, imported products above 50,000mt, but below 100,000mt, while 11 BDCs, accounting for 6% of total import, brought in cargoes below 50,000mt.

There was an improvement in the number of importers who brought in products equivalent to the standard single cargo size of 30kt as compared to the previous year. In 2018, 15 BDCs, out of 24, imported products above 30kt per annum (63%) as compared to the 15 BDCs out of 33 (45%) in 2017. This is an indication of higher productivity in BDC operations in 2018 relative to 2017.

It still, however, brings into question the commercial viability of the 11 companies whose imports were below 50,000mt

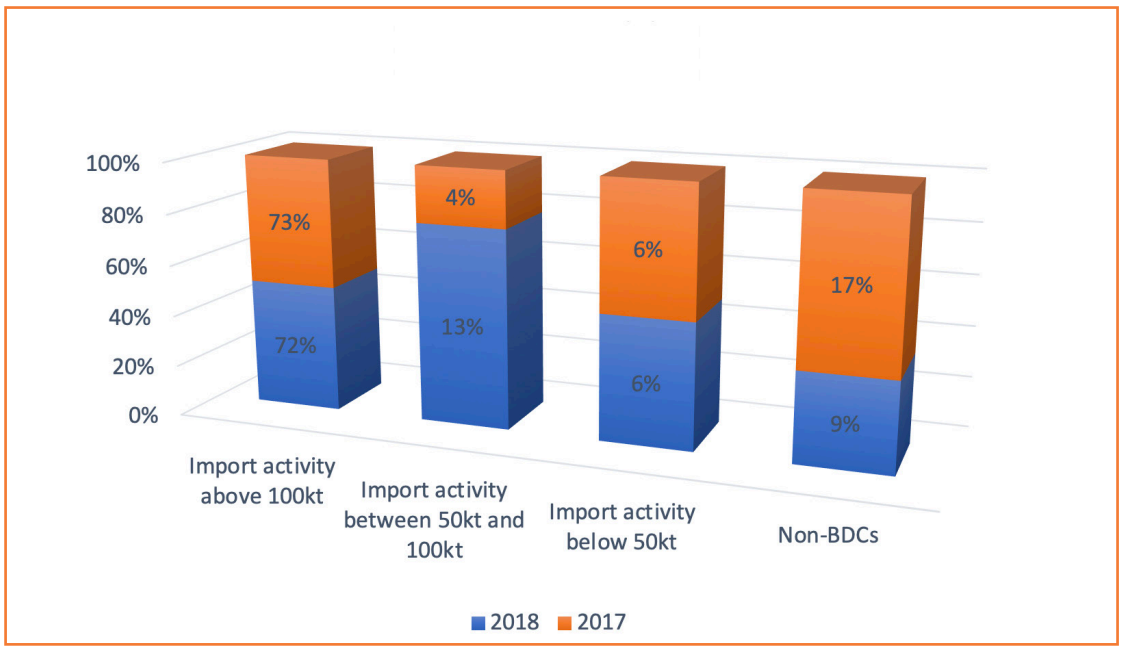


Figure 14: 2017 vs 2018 BDC Import Activity

and yet will have to contend with a payment of a USD400,000 license, as well as other operating expenses and trading risks.

OMCs

The OMC license fee was reviewed upwards from GHS23,000 in 2017 to GHS30,000 in 2018, but did not deter new entrants from joining the OMC market. The number of OMCs grew from 96 in 2017 to 112 in 2018, marking a 17% growth. This affirmed the continous growth observed from 2011, which had 53 players, to quarter 2 of 2019, which had 115 players.

The level of productivity of retail stations in the OMC market has generally declined consistently over the years, from 2011-2017. Productivity for each retail station declined from an approximated average of 2mn ltrs per year in 2011 to 1mn ltrs per year in 2017. This is attributable to the proliferation of retail outlets which saw a 119% increase between 2011 (1,252 retail outlets) and 2017 (2,745 retail outlets).

199 new outlets were added to the stock of retail outlets in 2018 to raise the number to 2,944. Intrestingly, productivity for 2018 defied the falling trend to show an increase from 1mn ltrs per year in 2017 to 1.14mn ltrs in 2018. Contrary to the expectation that this may be a sign of a turn around in the average productivity of retail stations, this observation may rather be attributable to the increase in official volumes on the back of the fair successes recorded in the fight against illicit trading, i.e., export dumping and smuggling. The proliferation of retail outlets, even after the introduction of

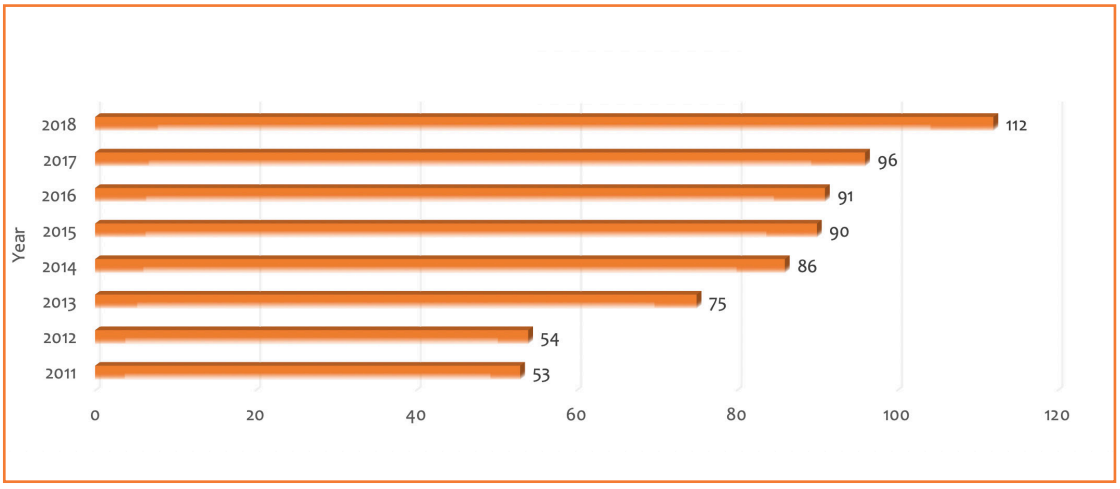


Figure 15: Number of OMCs (2011-2018)

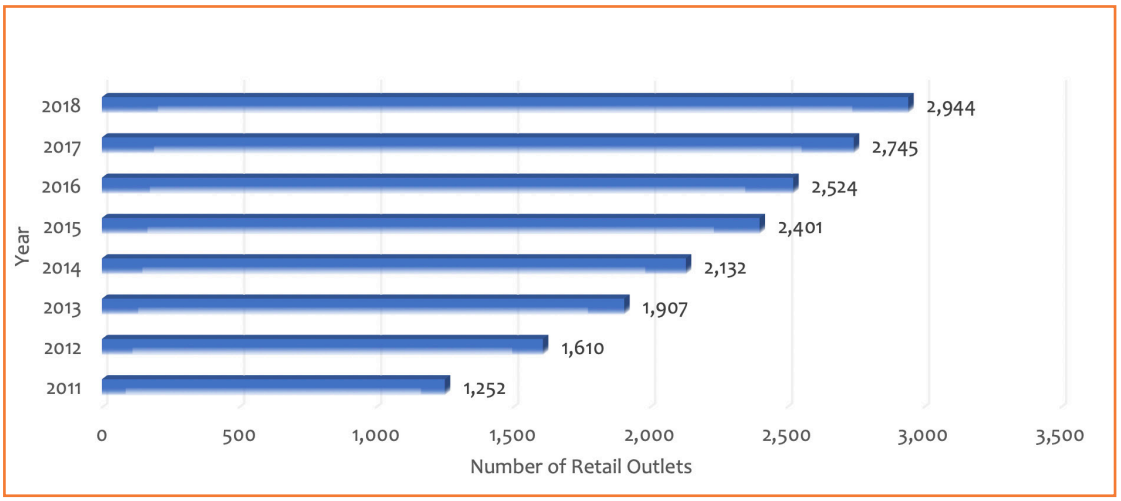


Figure 16: Number of Retail Outlets (2011-2018)

The OMC license fee was reviewed upwards from GHS23,000 in 2017 to GHS30,000 in 2018 but did not deter new entrants.

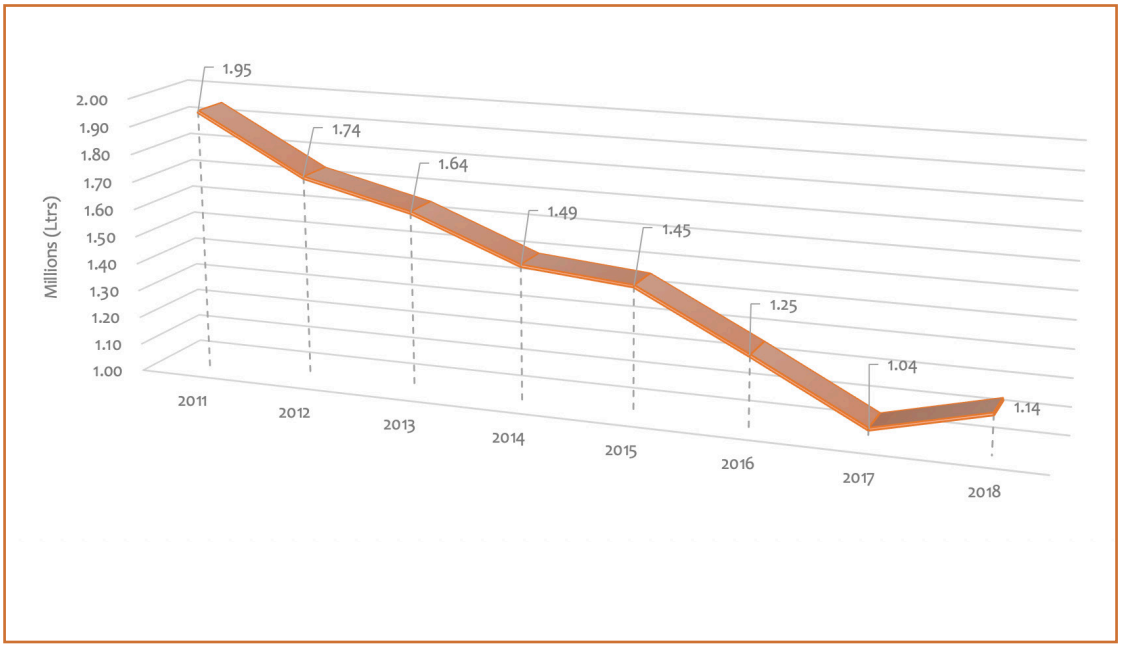


Figure 17: Annual Average Sales per Retail Outlet (2011-2018)

The level of productivity of retail stations in the OMC market has generally declined consistently over the years, from 2011-2017.

the 500 meter[8] rule, is quite concerning and poses a major risk to the commercial sustainability of retail outlets.

1.10 NATIONAL OIL LOSS CONTROL

The National Oil Loss Control Committee was reconstituted in 2018 by the National Petroleum Authority to review the Oil Loss Control Manual previously prepared by the National Oil Loss Control Committee in 2004. The purpose of the review was to ensure that procedures and principles laid out in the manual are in tandem with current trends and practices in the downstream petroleum sector.

The manual highlights minimum standard requirements that must be observed to ensure the integrity of petroleum products loaded, transported and delivered for consumption.

The manual highlights minimum standard requirements that must be adhered to, to ensure the integrity of petroleum products loaded, transported and delivered for consumption.

The manual is also geared towards ensuring that the country is not short-changed in the calculation and collection of revenues from taxes, margins and fees, among others, through abnormal losses of petroleum products.

The following issues have so far been reviewed:

Distribution Losses

Standard requirements are to be designed to curb incidences of the two basic types of losses: Physical losses and Apparent losses[9].

To avoid these losses, proper inspection and preventive maintenance must be carried out to ensure underground tanks and BRVs are in good condition. Also maintenance works of measuring equipment used to check product volumes have been proposed to be carried out every six months.

Potential Sources of Losses

The potential sources of losses identified include, misconduct at depots, transits of products, unloading points and the points of sale.

In the processes of transporting and discharging of petroleum products, some volumes of products may be

8 The National Petroleum Authority's guidelines for the construction of retail outlets requires a 500-meter distance between retail outlets.

9 Physical losses arise through leakages, spillages, evaporation and left on board.

Apparent losses arise from inaccurate measurement of product volumes and also changes in densities due to temperature variations.

lost due to the volatile nature of most petroleum products. Adjustments are therefore to be made to accommodate for normal losses in volume of petroleum products during transit. The following allowable losses apply:

i. Diesel-0.1%

ii. Petrol- 0.2%

iii. Kerosene- 0.15%.

The NOLCC, in 2018, made some additions to ensure tighter compliance and mitigate the loss of petroleum products. On the issue of the unloading a BRV (receipt of white products at retail outlets), the committee recommended that the station manager, in addition to all compliance procedures, should seek clearance from the NPA monitoring centre before seals are opened; however in the event where seals have been tampered with, prior to the delivery point, the discharge process must be halted and the issue reported to the NPA for further action.

Other requirements reviewed by the committee included minimum standard requirements set for the loading of Bulk Road Vehicles (BRVs) at Bulk Supply Points (BSPs), calibration procedures, receipt of petroleum products from vessels by pipelines among others.

The NOLCC's report is expected to be finalised and adopted in 2019.

1.11 GOVERNMENT PARTICIPATION IN THE SECTOR

GOIL/GoEnergy

Government generally was less intrusive in the activities of the sector. GOIL/ GoEnergy remained its most active player in the OMC and import trade. There were no indications of preferential treatments granted GOIL/GoEnergy as was seen in 2015 and 2016. GOIL/ GoEnergy competed just like all PSPs throughout the year under review.

There were no indications of preferential treatments granted GOIL/ GoEnergy as was seen in 2015 and 2016.

Bulk Oil Storage and Transportation Company (BOST)

BOST experienced a change in its Management and Board. Mr. George Okley was appointed Managing Director in June 2018 and Mr. Ekow Hackman appointed Board Chair. These changes inspired a revision in the positioning of BOST in the industry. The Managing Director prioritized improving its relationships and service to its prime customers, the BDCS. A quarterly stakeholder meeting was instituted to enable all parties resolve challenges and gravitate BOST towards being the preferred infrastructure company. This has been key in minimizing strife in the industry and improving cooperation among players for the development of the industry.

Upon the assumption of office of the current government in 2017, the reconstituted Board and management identified BOST as being unsustainably burdened with losses and compounding debt. Management filed a request with the Presidency for financial assistance to help turn BOST around. These findings were at variance with reports by the previous BOST management which publicly reported that BOST had been turned around to profitability. The President constituted a committee comprising representatives from the Ministry of Energy, GNPC, NPA, BOST and Goil to review the financial position of BOST and recommend a way forward for navigating the financial challenges, as well as define the future role of BOST.

These findings were at variance with reports by the previous BOST management which publicly reported that BOST had seen a turnaround to profitability.

It was established that the overall debt position of BOST was about USD423mn (net of recoverable receivables) as at November 2017. This includes trading losses of about USD138mn from BOST's trading activities in 2015 and 2016, despite benefiting from Government's subsidies through the price stabilisation and recovery levy, as well as preferential forex rates granted BOST by the Bank

This bailout granted BOST by NPA brings into question the policy framework for the NPA to fund bailouts for petroleum service providers (PSPs), especially when the NPA is mainly funded by the fees and charges from PSPs.

of Ghana. Other components of the debt resulted from poor management decisions and debt management practices.

The recommendations for addressing the financial challenges of BOST include the ringfencing of about USD129mn of the debt by the Ministry of Finance and a bailout refinancing of USD210mn from GNPC (USD160mn) and the NPA (USD50mn). Of this, GNPC has released USD100mn, while the NPA has released USD20mn. It is unclear how and when BOST will repay GNPC and the NPA. It must be noted that BOST accrues about GHS120mn per annum from the BOST margin (a mandatory charge on regular PMS and AGO sales by all OMCs) for no services rendered. It also charges additional commercial rates for all its services which accrues it extra income.

This bailout granted BOST by NPA brings into question the policy framework for the NPA to fund bailouts for petroleum service providers (PSPs), especially when the NPA is mainly funded by the fees and charges from PSPs. The bail-out of BOST opens a case for other PSPs to expect to be bailed out by the regulator in times of crisis. It is imperative that a policy framework is put in place so as not to abuse the precedence of a BOST bail out by a regulator.

PETROLEUM CONSUMER WATCH

WHAT TO DO WHEN YOU SMELL GAS

- Open doors and windows to get rid of the gas;
- Do not turn electrical switches on or off;
- Extinguish all sources of naked flame (coal pots, cigarettes, etc);
- Don't use matches or naked flames, do not smoke;
- Check and see if the gas has been left on;
- Don't use naked flames to check for leakage;
- If not, there is probably a gas leakage, so turn off the regulator and call technicians to service your stove;
- If it is safe to do so, try to locate the source of the leak by applying a solution of soapy water to the base of your cylinder valve or along the flexible hose. If bubbles appear and become bigger or increase in number, then you have a leak. Knowing where the leak is helps prevent accidents.

SAFETY TIPS FOR MOTORIST AT THE FILLING STATION

Dear Motorist, whenever you are at any filling station to buy fuel, observe the following tit-bits BEFORE AND AFTER you are served to ensure your safety and value for money.

1. Pull up at the pump island before your fuel tank is opened;
2. Switch off your engine;
3. Closely observe both the quantity and price indicators of the pump; ensure that both read ZERO before you are served;
4. Open your tank and request the attendant to serve you. Make your request in litres or the cedi equivalent (not in gallons);
5. Ensure that the quantity / volume of product on the display is in litres;
6. Ensure the amount indicated on the pump display is what you are paying for;
7. Avoid the use of mobile phone, be attentive and be involved in the process;
8. Do not smoke at the forecourt of the filling station;
9. Do not buy fuel dispensed from a pump with a RED STICKER from Ghana Standards Authority;
10. Ensure that a GREEN STICKER from Ghana Standards Authority is displayed on the serving dispensing pump;
11. If you suspect any foul play, report to the manager or a supervisor at the station;
12. If you are not satisfied, contact the NPA on 0545006111 , 0545006112 or on the Vodafone toll free number 080012300 or on NPA's main line 0302-766195/6 email info@npa.gov.gh.

Issued by
The National Petroleum Authority (NPA)
www.npa.gov.gh

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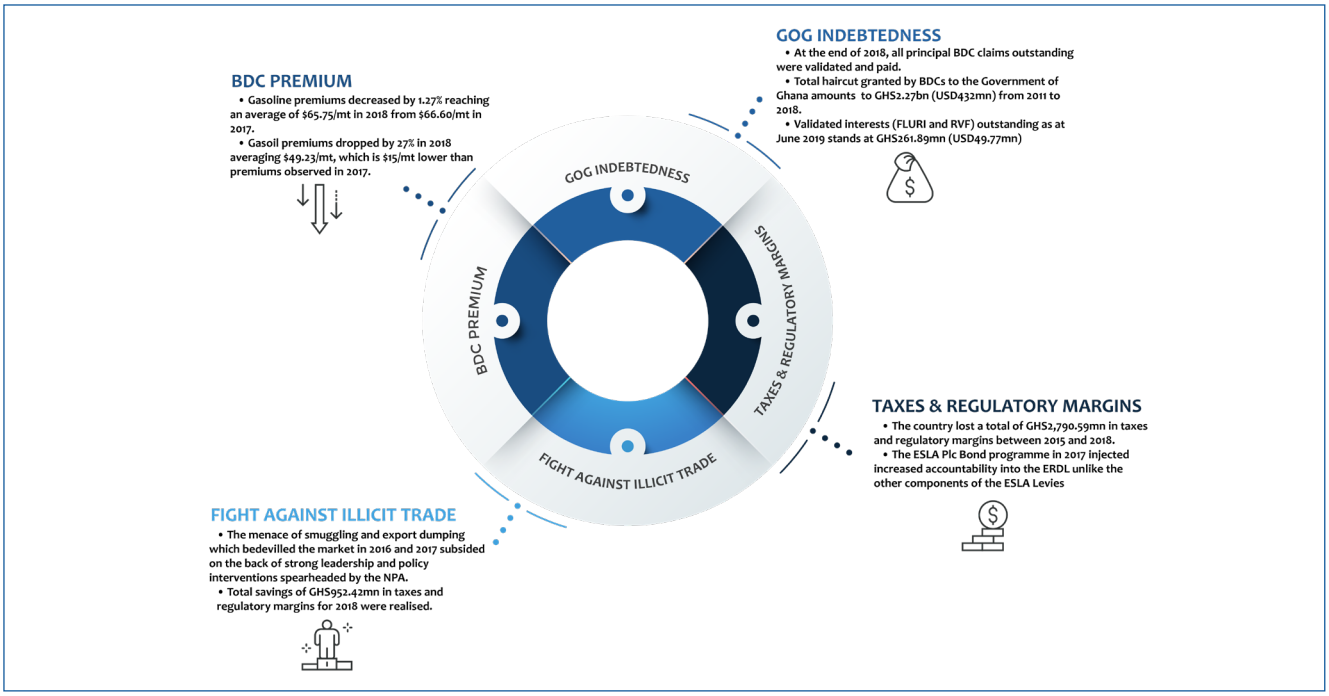
FINANCIAL REVIEW



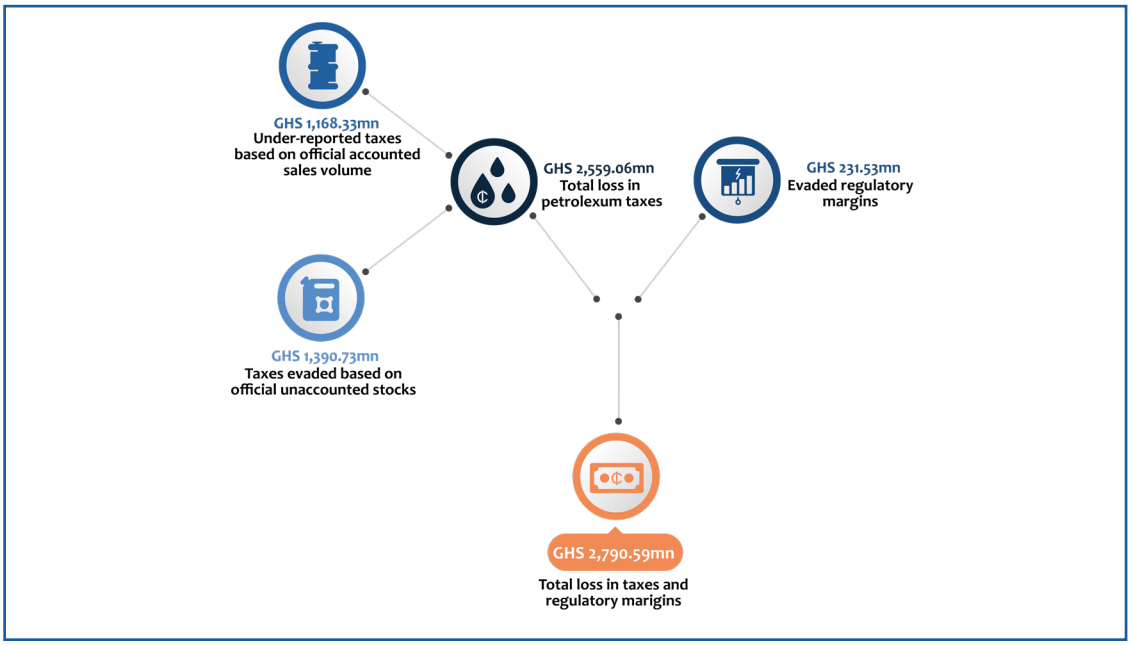
2.1 INTRODUCTION

The year under review saw a deepening of the unhealthy BDC competition with average BDC premiums falling, while petroleum tax revenue increased on the back of reduced illegal trades which reflected in an increase in official volumes.

A reconciliation of official national stocks movement data revealed that 43.29mn litres, 156.23mn litres and 781.63mn litres could not be accounted for in 2015, 2016 and 2017, respectively. The cummulative associated petroleum tax revenue evasion to these stocks stands at GHS1,390.73mn, while the associated evaded regulatory margins amount to GHS231.53mn.

In 2018, no loss related to unaccounted stocks is estimated as it was revealed that 574.25mn litres more than the official stocks saleable in the country were sold. This indicates that smuggled stocks in the monitored depots must have been trapped as a result of the NPA's regulatory interventions to curb the illicit trade of petroleum products and forced to be sold through official channels. This, nonetheless, did not eliminate the under reporting of taxes on official sales by GHS433.75mn in 2018, after adjusting for tax exemptions and waivers.

For the period 2015 to 2018, total taxes evaded based on official unaccounted stocks stands at GHS1,390.73mn, while total under-reported taxes based on official accounted sale volume after adjustments for exemptions stands at GHS1,168.33mn. This implies that the country has lost a total of GHS2,559.06mn in taxes for the



period 2015 to 2018, when the petroleum tax regime was materially varied upwards, first with the SPT in December 2014 and the ESLA in December 2015. Combined with the evaded regulatory margin of GHS231.53mn, a total of GHS2,790.59mn has been lost to the nation in taxes and regulatory margins for the period 2015 to 2018.

There was progress made on Government's legacy debt to BDCs with the payment of all principal sums and the validation of the interest components.

2.2 BDC PREMIUMS

BDC premiums in 2018 were relatively lower, compared to 2017 premiums. On the average, gasoline premiums witnessed a 1.27% decrease in premiums reaching an average of USD65.75/mt in 2018 from USD66.60/mt in 2017. Gasoil premiums dropped by 27% in 2018 averaging USD49.23/mt, which is USD15/mt lower than premiums observed in 2017. The gasoline premiums recorded are 41% below the NPA benchmark premium and 18% below the CBOD breakeven benchmark premium. These

BDC premiums in 2018 were relatively lower compared to 2017 premiums.

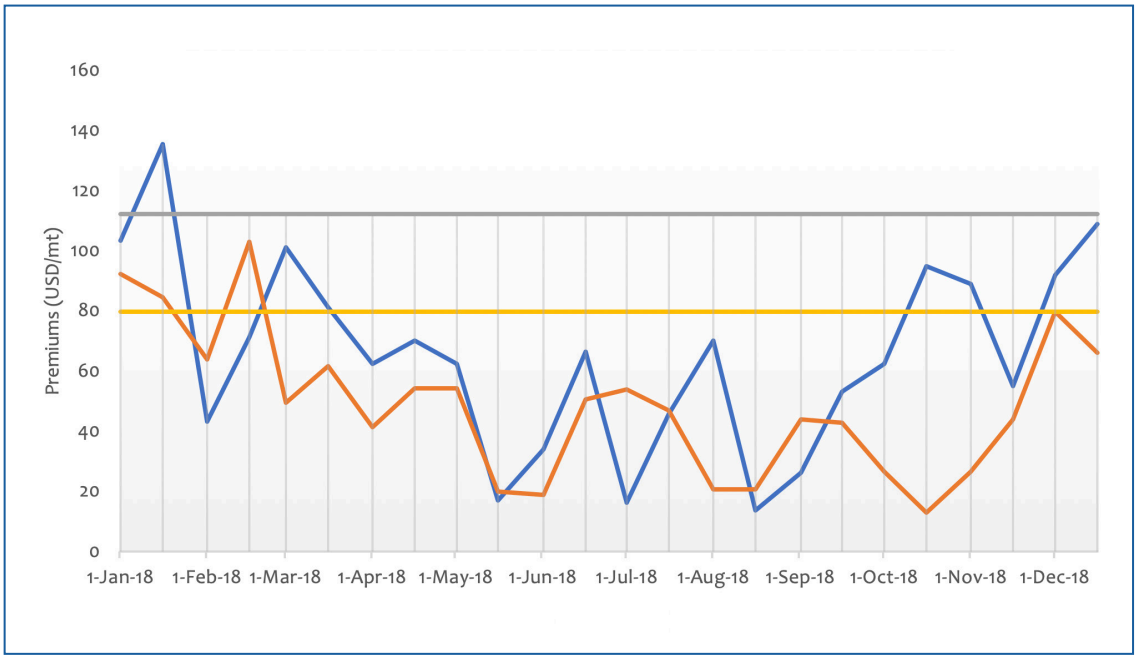


Figure 18: BDC Premiums vs NPA Premium vs CBOD Breakeven Benchmark Price

low premiums observed are of extreme concern to the viability of the BDC industry. Contrary to expectations that deregulation will enhance the commercial viability of BDCs, as a result of the elimination of unfunded subsidies, it is increasingly evident that excessive competition among BDCs is yielding significant trading losses which are unsustainable by the equity capital of BDCs.

It is estimated that the BDC sector has experienced trading losses ranging between USD100mn and USD200mn for their trade of regular gasoil and gasoline in 2018.

It is estimated that the BDC sector has experienced trading losses, ranging between USD100mn and USD200mn, for their trade of regular gasoil and gasoline in 2018. In our assessment, these losses are partly being suppressed by ongoing activities of teeming and lading. This occurrence is not new to the industry, as similar strategies were used to suppress the liquidity losses experienced from the non-payment of government subsidies. Unfortunately, the occurrences of these losses pose a permanent risk to the industry's players as the losses cannot be underwritten by the equity capital of BDCs. We anticipate that the accumulation of such losses shall be ultimately borne by the trade creditors - a situation that will negatively impact the fundability of the industry and, ultimately, the ability of BDCs to sustain the supply of petroleum products to the country.

2.3 GOG INDEBTEDNESS TO BDCS

At the end of 2018, all principal claims by BDCs had been validated and paid off by government. This followed the validation and payment of an outstanding 2013 Forex Loss Under Recoveries (FLUR) claims, of USD25.68mn within the year 2018.

The outstanding claims at year end 2018 comprised Real Value Factor (RVF) and Forex Loss Under Recoveries Interest (FLURI) claims. Real Value Factor refers to the financial cost (interest) incurred by BDCs for the delayed payments of price under-recoveries. Forex Loss Under Recoveries Interest, on the other hand, refers to the financial cost borne by BDCs for the delayed payment of Forex Loss Under Recovery (FLUR) by government.

Date of Payment	Payment by	Payment Type	GHS	USD
1-Oct-2012	NPA	Cash	40,000,001	21,148,356
1-Nov-2012	MoF	Cash	38,032,833	20,070,097
1-Dec-2012	NPA	Cash	21,737,987	10,533,502
1-Jun-2014	BoG	Cash	434,784,919	150,000,000
20-Apr-2015	MoF	Cash	50,000,000	13,073,171
29-Jul-2015	MoF	Cash	195,964,032	56,587,939
16-Oct-2015	MoF	Cash	117,408,563	32,859,939
1-Jan-2016	MoF	Cash	292,929,293	74,862,206
15-Nov-2016	MoF	Cash	124,000,000	31,000,000
23-Dec-2016	BoG	BoG Bonds	900,000,000	219,077,753
10-Jan-2017	MoF	Cash	47,000,000	11,000,070
1-Nov-2017	MoF	ESLA Bonds	542,124,026	122,824,783
9-Nov-2017	MoF	ESLA Bonds	77,356,872	17,526,139
3-Sep-2018	NPA/MoF	Cash	121,466,012	25,684,262
28-Jun-2019	BoG	BoG Bonds	648,928,861	123,332,990

Table 1: GoG Payments (2012-June 2019)

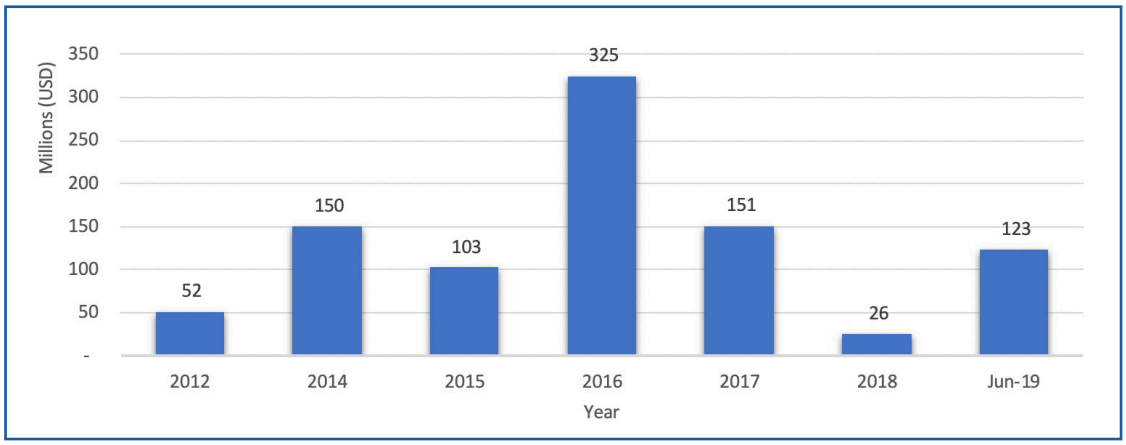


Figure 19: GoG Payments of BDC Legacy Debts 2012-June 2019

10

2.3.1 Negotiations and Validation

Legacy Bonds Limited, assignee of the BDC claims, negotiated and finalised the parameters/terms for establishing the FLURI and RVF claims with government. The negotiations revised the interest rate for computing the claims from 12.00% to 5.25% for the USD indexed FLURI and the NPA approved 31.79% to 19% for the GHS indexed RVF. The 31st of March 2018 was agreed as the cut-off date for Government's accrued liability.

The Ministry of Finance commissioned Ernst & Young (E&Y) within the third quarter of 2018 to validate the FLURI and RVF claims based on the negotiated parameters.

The validation exercise which was completed in May 2019 revised the claims as follows;

Claim	Amount Validated by EY	
	GHS	USD
RVF (GHS)*	461,513,336	88,689,459
FLURI(USD)*	444,363,041	85,393,670
TOTAL	905,876,377	174,083,129

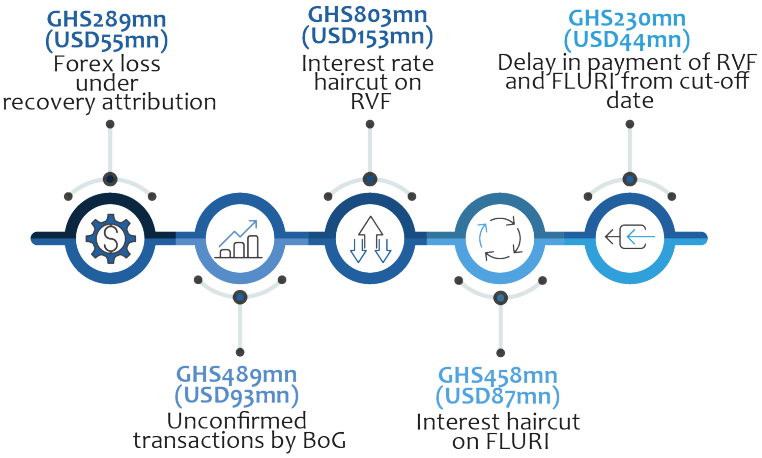
Table 2: Validated RVF and FLURI Claims by EY
*Note: * is estimated. GHS/USD=5.037 (BoG selling rate at 31st May 2019)*

10 The BDC legacy debts comprises 2011-2015 Forex Loss Under Recoveries (FLUR), 2011-March 2018 Real Value Factor (RVF) and Forex Loss Under Recovery Interest (FLURI)

2.3.2 Haircut

The haircut negotiated by Government on the RVF and FLURI amounted to GHS1.26bn (USD240mn). This brings the total haircut negotiated by the Government of Ghana to GHS2.27bn (USD432mn) since the commencement of negotiations over the BDC sector debts in 2013.

The haircut negotiated by Government on the RVF and FLURI amounted to GHS1.26bn (USD240mn). This brings the total haircut granted by BDCs to GHS2.27bn (USD432mn)



2.3.3 Payment of Validated Claims

In June 2019, Government, through the Ministry of Finance (MoF) issued a Ten-year ESLA bond of GHS648.93mn to fully settle the validated RVF claims and partially settle the FLURI claims. Government's outstanding indebtedness to BDCs after this payment is shown in

Table 3 below:

Liability	USD Amount	GHS Amount
FLURI	85,393,670	449,307,334
RVF	87,713,497	461,513,336
Total	173,107,167	910,820,670
Less Payments:		
FLURI (ESLA 2029 Bonds)	*(35,619,493)*	*(187,415,525)*
RVF (ESLA 2029 Bonds)	*(87,713,497)*	*(461,513,336)*
Balance Due	49,774,177	261,891,809

Table 3: Gov't Liability Summary
Note: GHS/USD=5.2616 (BoG selling rate at 28th June 2019)

Petroleum Product Subsidies

Government accrued price subsidies[11] of GHS194.37mn (USD42.34mn) on premix and residual fuel oil in 2018 which remain price regulated and subsidised by government. This was about 3% higher than the 2017 position of GHS188.79mn (USD43.36mn). This brings the total subsidies incurred by government on these products post-deregulation, July 2015 to December 2018, to GHS488.26mn (USD113.11mn).

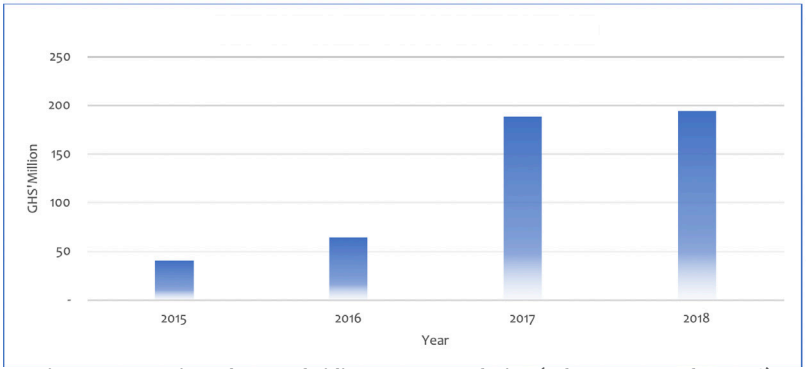


Figure 20: Premix and RFO Subsidies Post Deregulation (July 2015-December 2018)

The NPA, however, accrued GHS498.93mn (USD129.90mn) in over recoveries charged on the sale of ATK and gasoil mines for the period July 2015 to February 2017. The pricing of these products was not deregulated as part of the price deregulation policy implemented in 2015. They are, nonetheless, not subsidised. The over-recovery income generated from these products was partly used to pay subsidies accrued. Effective March 2017 to date, the NPA removed all over-recovery charges on their sale and, hence, ceased generating over-recovery income on these products.

The Price Stabilisation and Recovery Levy, as established under the ESLA (Act899), is, among other things, to be used to fund price under-recoveries accrued from premix and RFO subsidies.

According to the ESLA report, issued by the Ministry of Finance, GHS311.24mn out of the total PSRA collections of GHS826.24mn was spent between 2016 and 2018 on Premix and RFO subsidies.

The subsidies incurred in 2018 brings total subsidies incurred by government to USD3.11bn since 2008. This comprises FLUR, FLURI, PUR and RVF for the period 2008 to 2018.

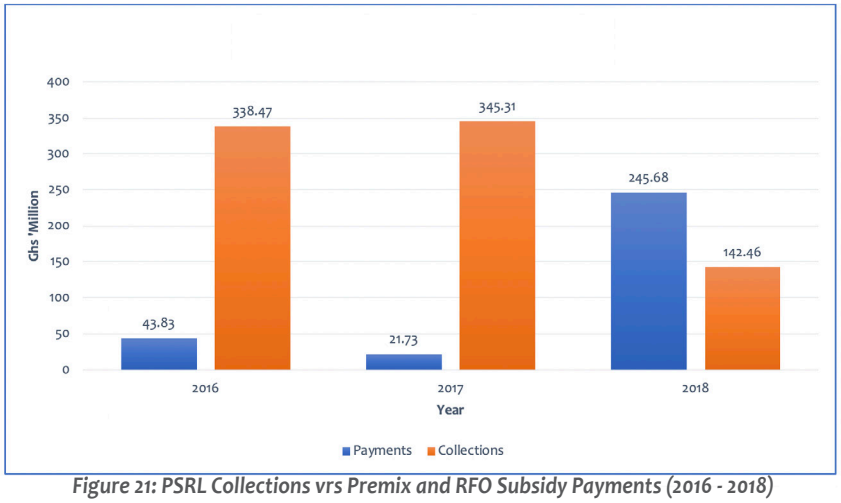


Figure 21: PSRL Collections vrs Premix and RFO Subsidy Payments (2016 - 2018)

11 *This refers to price under-recoveries only.*

Year	FLUR	FLURI	PUR	RVF	Total
	USD	USD	USD	USD	USD
2008	-	-	186,271,017	-	186,271,017
2009-2010	-	-	41,659,328	-	41,659,328
2011	(1,419,522)	(15,282)	432,987,992	459,695	432,012,883
2012	112,672,118	3,406,835	968,101,245	3,916,166	1,088,096,364
2013	33,662,908	3,923,198	225,989,703	12,789,609	276,365,418
2014	446,606,609	16,142,755	105,957,319	13,749,705	582,456,388
2015	214,723,851	24,251,054	21,242,199	11,496,660	271,713,764
2016	-	24,280,286	33,609,272	10,196,487	68,086,045
2017		11,987,311	63,859,366	12,592,410	88,439,087
2018	-	1,417,513	51,173,924	22,512,765	75,104,202
	806,245,964	85,393,670	2,130,851,365	87,713,497	3,110,204,496

Table 4: Petroleum Subsidies (2008-2018)

The subsidies incurred in 2018 brings total subsidies incurred by government to USD3.11bn since 2008.

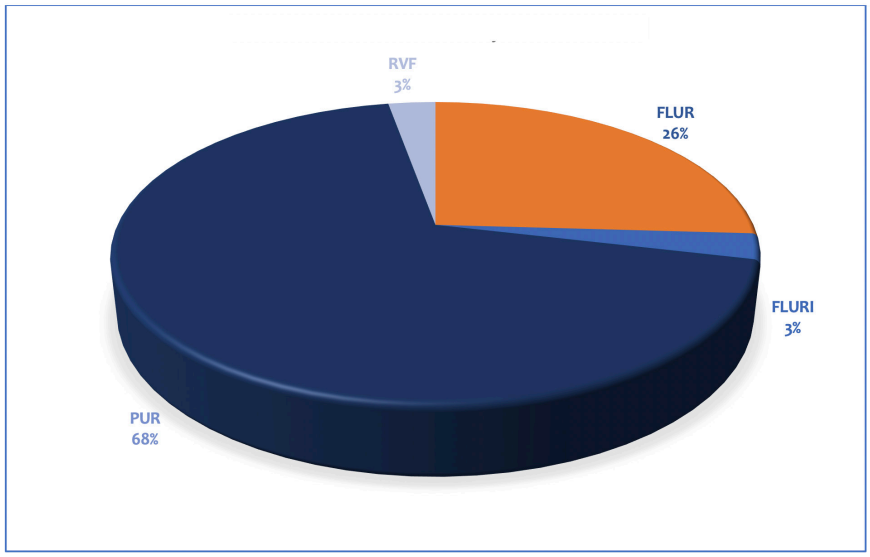


Figure 22: Petroleum Subsidies incurred by GoG (2008-2018)

Price under-recoveries accounted for 68% of the total subsidies incured by GoG in 2008 - 2018.

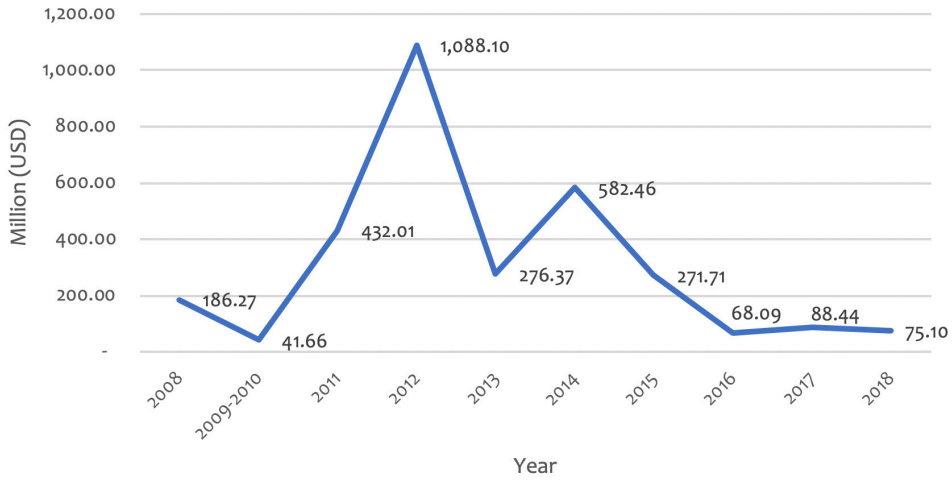


Figure 23: Petroleum Subsidies Incurred by Government per annum (2008-2018)

Petroleum subsidies were highest in 2012 at $1.088bn, marking 35% of all petroleum subsidies between 2008 and 2018.

This refers to the historical indebtedness of BDCs to traders and banks as a result of unpaid government debt, trading losses and other liquidity seepages from transactions. This debt burden continues to erode BDC capital and reduces funding confidence.

LEGACY DEBT RISK

This refers to the excessive competition which leads to frequent acts of under-pricing. BDCs margins averaged $66/mt as against the CBOD breakeven margin of $80/mt and the NPA benchmark of $112.17/mt.

CORE PRICING RISK

This involves the cost of trade credit defaults by OMCs which tends to erode BDC margins and capital. About GHS20mn in financial costs is lost monthly by BDCs. An initiative by the Ghana Chamber of Bulk Oil Distributors (CBOD) dubbed CREPT is expected to help address this risk. CREPT is a mechanism to streamline trade credit through the establishment of trade credit standards and ratings of Petroleum Service Providers (PSPs) and users.

TRADE CREDIT RISK

This stems from the inadequate FX hedging tools on the Ghanaian market which compels most BDCs to adopt an in-house FX estimation tools to manage open FX positions. As these estimators fail or are forced by competition to estimate lower, the industry exposure to FX losses increase. The phenomenon threatens the capital and the sustainability of repayments. Over $800mn was lost in FX Losses between 2011 and 2015.

FOREX RISK

2.4 TRADE FINANCE WITHIN THE DOWNSTREAM SECTOR

The major challenge faced by banks has been the opacity and insufficient information in the funding flow of BDC trades.

The bullish position of the banking sector in providing trade financing to BDCs prior to 2014 saw a gradual resurgence as Government continued to settle its indebtedness to BDCs through the Legacy Bonds structure. The banking sector, nonetheless, maintained a high-risk view of the sector despite increasing its support to the sector from a trade share of 31% in 2017 to 42% in 2018. The trade financing gap was covered by International Oil Traders (IOTCs) who traded with BDCs on open account basis.

The major challenge faced by banks has been the opacity and insufficient information in the funding flow of BDC trades. This makes the historical precedence of teeming and lading a present possibility.

The funding cycle of BDC trades within the sector is shown in Figure 24

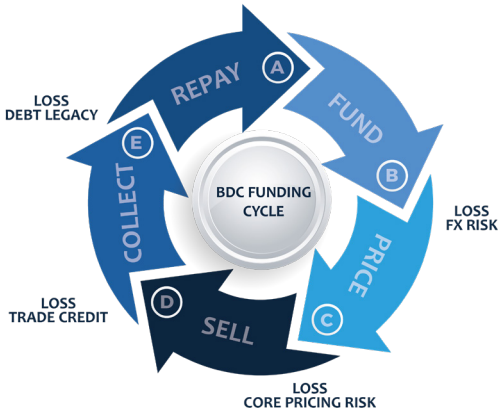


Figure 24: The BDC Funding Cycle

In the open account arrangement, a credit line is availed to a BDC by an International Oil Trading Company (IOTC) with payments made to the supplier

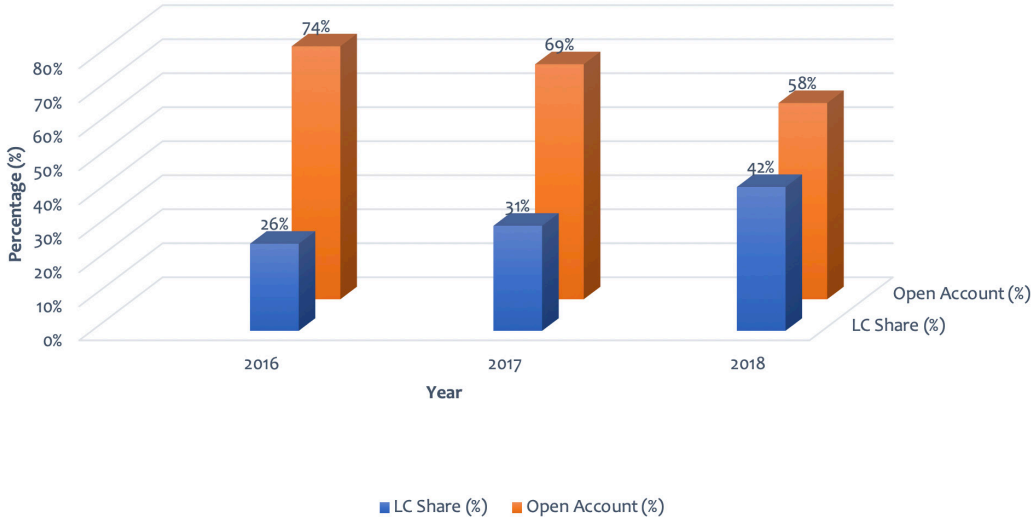


Figure 25: Bank Finance (LC) vs Open Account

	Suppliers Credit	Bank Financing
Credit tenor	Usually between 45 to 60 days	Usually between 60 to 90 days
Credit preferences	Under the open account funding arrangement, the supplier usually dictates the terms of the BDC sales (e.g. the companies the BDC may sell to). This places a limitation on the BDC with regards to selling to customers outside the suppliers' preferred list.	Typically, there are no limitations with regards to sales preferences. Restrictions can nonetheless be employed.
Cost of credit	BDC typically bears an inherent credit default risk insurance cover ranging from USD1.50/mt to USD3.00/mt	Issuance and Confirmation fees usually ranges from 1.00 % to 1.25% of the product value. • Facility fees applicable are set at about 0.5%per annum for charged on the facility amount • At the 2018 weighted average CIF prices and an assumption of 10,000mt per month import and NPA minimum trade of USD60mn, the cost of credit to a BDC ranges between USD9.32/mt and USD11.03/mt.

Table 5: Comparison between Suppliers Credit and Bank Credit

after cargoes are sold. Payments are to be made between 45 to 60 days on receipt of the cargo. Total trade funded through open account grew by 8% in 2018 to reach USD1,489.39mn as against USD1,376.82mn in 2017. The open account share of total trades, however, continued to decline from 74% in 2016 and 69% in 2017 to 58% in 2018. This suggest that traders are peaking their risk exposure on Ghana.

2.5 STOCK ACCOUNTING IN THE SECTOR

2.5.1 National Stock Reconciliation

Product stocks of the country comprise of Fuel oil, Gas oil, Unified/Naphtha, Kerosene, LPG, Premium, Premix and ATK. These are either imported as finished products or produced by the local refineries. Taxes on the sale of these products account for over 12.3% of total national tax revenue. This underscores the strategic importance of stock movement monitoring or accounting in the country to ensure the optimisation of the national tax policy.

Taxes on the sale of petroleum products accounted for 12.3% of total national tax revenue in 2018.

In view of this, the CBOD undertook an exercise to reconcile the national stock position of gasoil and gasoline (premium), which forms the main product base for petroleum taxes, to determine the accuracy of reported sales by analysing various elements using official records of the NPA. The elements include: Opening Stock positions, Stock Inflows (Imports and Production), Closing Stock, Domestic Reported sales and Exports. The analysis developed an expectation of sales in line with stock accounting

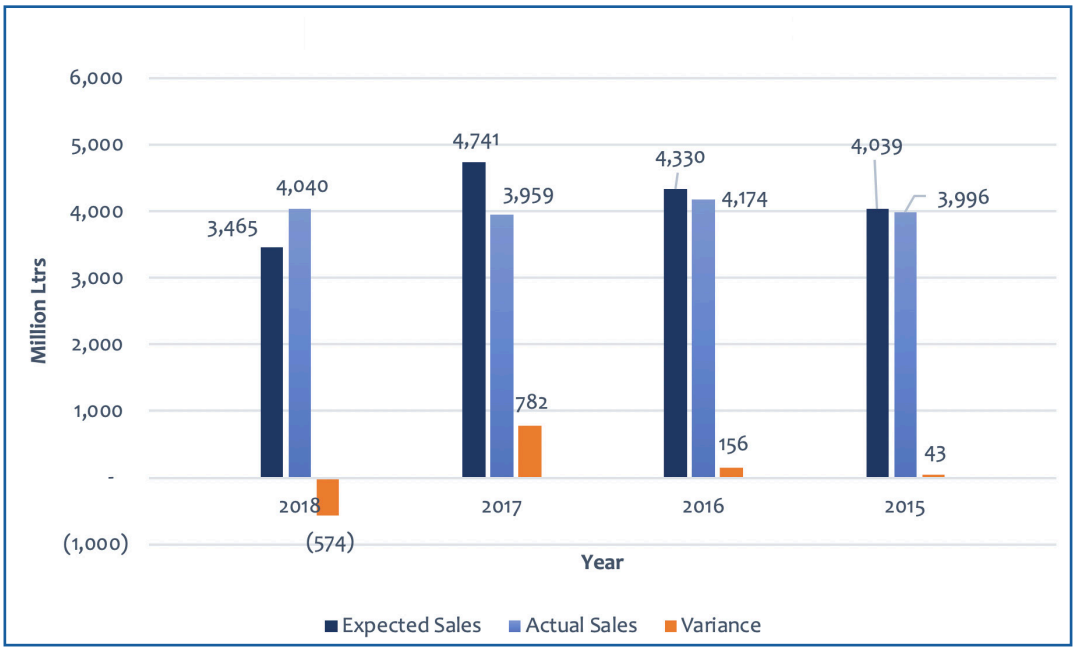


Figure 26: Expected vs Actual Sales and Variances

GHS952.42mn was saved in the fight against the illicit trade in 2018.

principles after adjusting for operating losses, where applicable, and compared it with officially reported sales (domestic and exports) for 2015 to 2018. The results of the exercise are as follows:

a) For the years 2015 and 2016, the expected sales exceeded reported sales by 43.29mn and 156.23mn litres, respectively. This indicates that, sales for these volumes are unaccounted for or undeclared and, hence, circumvented the payment of taxes, levies and regulatory margins. The evaded taxes and regulatory margins associated with these volumes are estimated at GHS320.36mn.

b) This situation worsened in 2017 with expected sales exceeding reported sales by 781.63mn litres, culminating in an estimated petroleum tax revenue evasion of GHS1,301.90mn.

c) However, in 2018, the reported sales were in excess of expected sales by 574.25mn litres. This implies that more products were discharged or produced in the country and not declared. It further indicates that products illegally delivered into the depots may have been 'trapped' by the successes of the NPA's regulatory interventions to curb the illicit trade and forced to trade with the visibility of the NPA. This saved the nation GHS797.49mn in taxes and GHS154.93mn in regulatory margins, yielding a total savings of GHS952.42mn.

2.5.2 BOST Stock Losses

These relate to Bulk Oil Distribution Companies' (BDCs') product losses arising from storage transactions with Bulk Oil Storage and Transportation Company Limited (BOST). The product losses involved stocks of gasoline, gasoil and fuel oil and relate to the period January 2009 to July 2014.

In 2018, eight (8) affected BDCs, through the CBOD, filed a total claim for22.7mn litres of gasoline, 1.2mn litres of gasoil and 0.14mn litres of fuel oil with BOST, after series of engagements between the CBOD (representing the affected BDCs) and BOST.

BOST, however, disputed the claims filed by the BDCs after undertaking an internal review of the claims.

The review revised the claim as follows:

The validated stock losses have been valued at the time of loss (January 2014) plus interest at the Government accepted interest rate of 5.25% for its BDC debts. As a result, the financial obligation on BOST has been estimated at about USD23.81mn.

BDCs with huge differences in claims are

Product	Claim filed by BDCS (Ltrs)	Volume as per BOST internal review (Ltrs)	Difference (Ltrs)
Gasoline	22,736,375.46	8,918,639.00	13,817,736.46
Gasoil	1,212,165.00	2,290,148.00	(1,077,983.00)*
Fuel Oil	142,542.64	-	142,542.64

Table 6: BOST Stock Loss Claims by BDCs
*(*Overdrawn litres being claimed by BOST)*

The validated stock losses have been valued at the time of loss (January 2014) plus interest at the Government accepted interest rate of 5.25% for its BDC debts.

undergoing a second review with BOST officials to finalize their positions.

2.6 PETROLEUM TAXES

Petroleum taxes are charged on the sale of petrol, kerosene, diesel, and fuel oil. Initially called 'petroleum excise and levies', this tax type used to comprise the Cross-Subsidy Levy, the Energy Levy, the Hydrocarbon Exploration Levy, the Road Levy, the Specific Levy, and the Tema Oil Refinery (TOR) Debt Recovery Levy, as well as Petroleum Excise.

In 2014 the Special Petroleum Tax (SPT) was introduced as at ad-valorem rate of 17.5% on the ex-depot price of petroleum products.

In 2016, Government merged the levies into five charges, and the following year it abolished Petroleum Excise as part of efforts to reduce the tax burden. In 2017, the SPT rate was reduced to 15%, and in February 2018, the rate was again reduced from 15% to 13% and, eventually, converted from an ad-valorem tax to a specific tax. The change was expected to increase compliance and eliminate occurrences of transfer pricing as reported in the CBOD 2017 industry reported.

Levy	Item	Rate	Purpose
Energy Debt Recovery Levy	Petrol, Diesel	GH¢ 0.41 per litre	Facilitate the debt recovery of the Tema Oil Refinery, pay downstream petroleum sector foreign exchange under recoveries, and boost power generation and investments in power infrastructure
	Marine Gas Oil (MGO)	GH¢ 0.03 per litre	
	Fuel Oil	GH¢ 0.04 per litre	
	Liquefied Petroleum Gas	GH¢ 0.37 per kg	
Energy Fund Levy	Petrol, Kerosene, Diesel, Fuel Oil	GH¢ 0.01 per litre	Support the activities of the Energy Commission
Price Stabilisation and Recovery Levy	Petrol	GH¢ 0.12 per litre	Used as a buffer for under recoveries, or subsidies to stabilise petroleum prices for the consumer
	Diesel	GH¢ 0.10 per litre	
	Liquefied petroleum gas	GH¢ 0.10 per kg	
Road Fund Levy	Petrol, diesel	GH¢ 0.4 per litre	Support road maintenance
	Petrol	GH¢ 0.46 per litre	
	Diesel	GH¢ 0.46 per litre	
Special Petroleum Tax	Kerosene	GH¢ 0.39 per litre	
	Liquefied petroleum gas	GH¢ 0.48 per kg	
	Natural petroleum gas	GH¢ 0.35 per kg	

Table 7: Petroleum Taxes and Levies Rates (2018) [Source: Energy Sector Levies Act, 2015 (Act 899); Energy Sector Levies (Amendment) Act, 2017 (Act 946)]

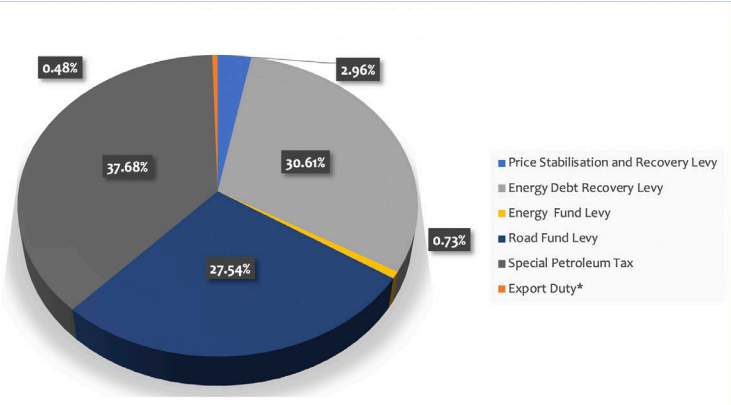


Figure 27: Composition of Petroleum Taxes (2018)
Source: Ministry of Finance

Of the five remaining levies, only three – the Energy Fund Levy, the Road Fund Levy, the Special Petroleum Tax are included in 'petroleum taxes'. This is a product of the way the levies are classified in Ghana's central government revenue accounts.

In 2018, collections from petroleum taxes amounted to GHS4,809.25m, according to reports by the Ministry of Finance and the GRA.

Collections from the SPT, Energy Fund Levy and the Road Fund Levy are classified as tax revenue and are deposited in the 'Consolidated Fund'. Collections from the Energy Debt Recovery Levy and the Price Stabilisation and Recovery Levy are classified as other revenue, and the revenue is earmarked for specific accounts that are separate from the Consolidated Fund. A description of the purpose of these levies, and their rates, is provided in Table 7.

For the purposes of this report, all taxes and levies charged on pump prices are considered petroleum taxes.

However, for the purposes of this report, all taxes and levies charged on pump prices are considered petroleum taxes.

In 2018, collections from petroleum taxes amounted to GHS4,809.25million, according to reports by the Ministry of Finance and the GRA. Over 38% of collections came from the Special Petroleum Taxes, while the Energy Debt Recovery Levy and Road Fund Levy constituted 31% and 28% respectively. In real terms, revenue from petroleum taxes increased by 8.4% between 2017 and 2018. Collections from the Energy Fund Levy increased by 15% while collections from Price Stabilisation and Recovery Levy decreased by 59% compared with 2017.

2.6.1 Revenue Under-Reporting

The reported tax receipts are at variance with the CBOD expected tax receipts which are computed based on official NPA volumes and adjusted by GRA reported exemptions and MoF approved variations (see appendix 10 to 12). A total variance of GHS1,168.33mn between 2016 and 2018 is observed and remains unexplained by the GRA.

The recurrence of the under-reporting of tax receipts is of utmost concern and evidences the fact that some aspects of the illegal trade continues unabated and is supported by a well networked group of public officials. These observations are based on traceable official data and hence culprits of this highly corrupt and criminal acts can be significantly tracked. It is imperative that Government takes radical steps to pursue every lost revenue and prosecute every culprit. The report shares recommendations in section 6 of Chapter 6. The variances are reported in Table 8, 9 and 10.

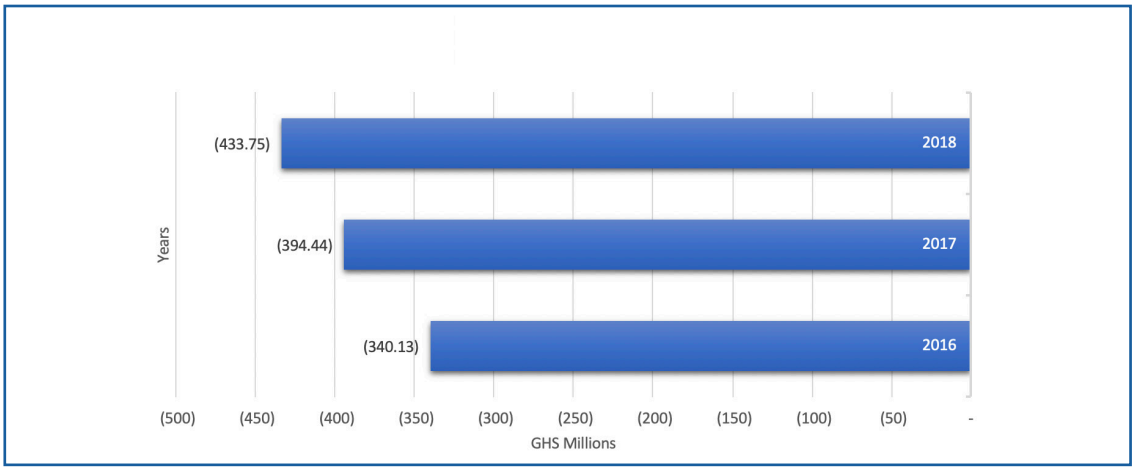


Figure 28: Petroleum Tax Revenue Under-Reporting

Excise duty and Export Duty were computed using NPA's 2017 OMC Performance Statistics. Government actuals not available at the time of publication.

Taxes (2018)	Actual Collections	Expected Receipts	Under reporting
	GHS mn	GHS mn	GHS mn
ESLA	2,973.98	3,267.05	(293.07)
o/w Price Stabilisation and Recovery Levy	*142.46*	*225.33*	*(82.87)*
o/w Energy Debt Recovery Levy	*1,471.96*	*1,480.13*	*(8.17)*
o/w Energy Fund Levy	*35.27*	*39.52*	*(4.25)*
o/w Road Fund Levy	*1,324.29*	*1,522.08*	*(197.78)*
Special Petroleum Tax	1,812.01	1,952.69	(140.68)
Export Duty*	23.26	23.26	-
Total	4,809.25	5,243.00	(433.75)

Table 8: Government's 2018 Petroleum Tax Collections vs Expected Receipts

The reported tax receipts are at variance with the CBOD expected tax receipts which are computed based on official NPA volumes and adjusted by GRA reported exemptions and MoF approved variations.

Taxes (2017)	Actual Collections	Expected Receipts	Under reporting
	GHSmn	GHSmn	GHSmn
ESLA	2,820.95	3,066.49	(245.54)
o/w Price Stabilisation and Recovery Levy	*345.31*	*392.32*	*(47.01)*
o/w Energy Debt Recovery Levy	*1,293.03*	*1,295.09*	*(2.06)*
o/w Energy Fund Levy	*30.65*	*34.97*	*(4.32)*
o/w Road Fund Levy	*1,151.96*	*1,344.11*	*(192.15)*
Special Petroleum Tax	1,582.12	1,731.02	(148.90)
Export Duty*	18.19	18.19	-
Excise Duty*	15.26	15.26	-
Total	4,436.52	4,830.97	(394.44)

Table 9: Government's 2017 Petroleum Tax Collections vs Expected Receipts

These observations are based on traceable official data and hence culprits of this highly corrupt and criminal acts can be significantly tracked.

Taxes (2016)	Actual Collections	Expected Receipts	Under reporting
	GHSmn	GHSmn	GHSmn
ESLA	2,853.67	3,193.80	(340.13)
o/w Price Stabilisation and Recovery Levy	*338.47*	*403.29*	*(64.82)*
o/w Energy Debt Recovery Levy	*1,281.18*	*1,370.29*	*(89.11)*
o/w Energy Fund Levy	*29.84*	*34.86*	*(5.02)*
o/w Road Fund Levy	*1,204.18*	*1,385.36*	*(181.18)*
Special Petroleum Tax	1,607.42	1,607.42	-
Excise Duty*	14.44	14.44	-
Total	4,475.53	4,815.66	(340.13)

Table 10: Government's 2016 Petroleum Tax Collections vs Expected Receipts

The Road Fund Levy was the largest under-reported tax or levy from 2016 to 2018.

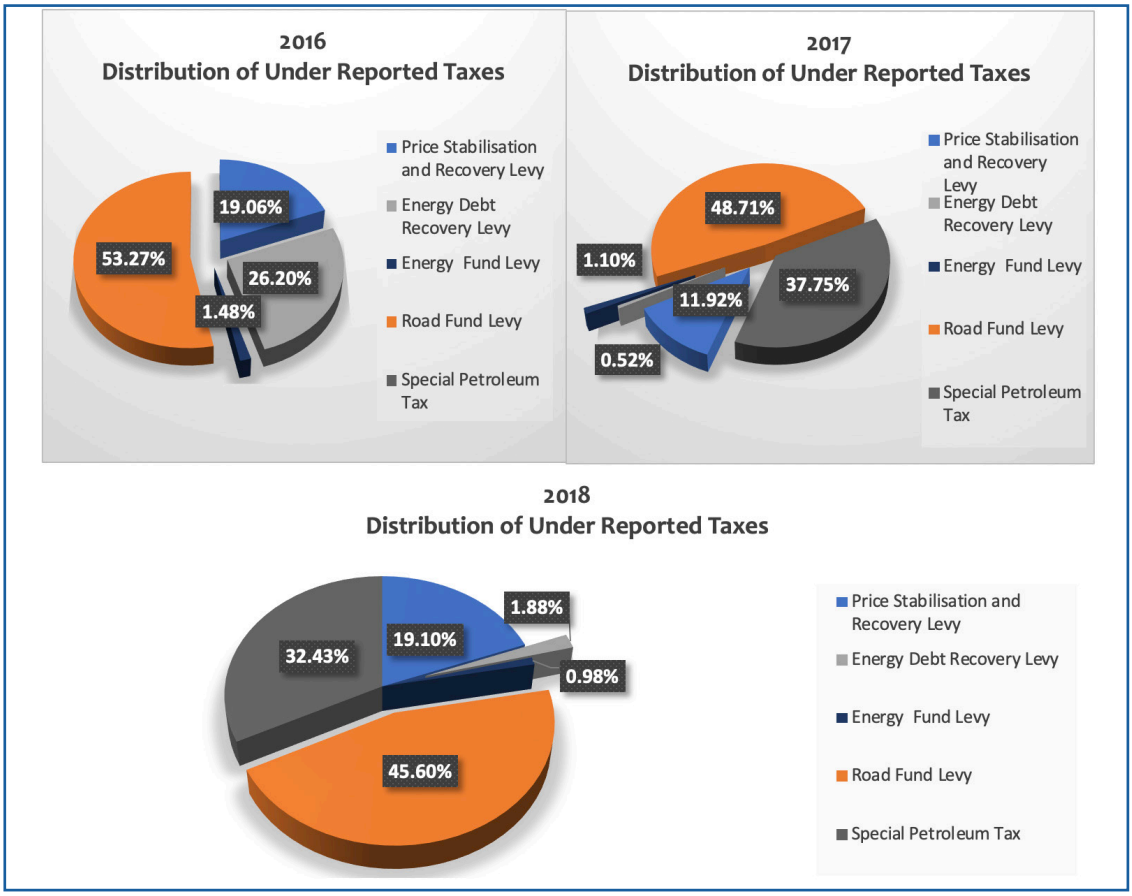


Figure 29: Distribution of Under-Reported Taxes (2016 - 2019)

2.6.2 Petroleum Tax Revenue Shortfall Movement

The unexplained under-reporting of petroleum taxes persisted in 2018. The under-reported taxes increased by GHS 54.31mn in 2017, compared to 2016, marking a 16% increase. The year-on-year variance, however, narrowed in 2018 with an increase of 10% compared with 2017. The Road Fund Levy was the largest under-reported tax or levy for 2016 to 2018.

The unexplained under-reporting of petroleum taxes persisted in 2018.

2.6.3 Energy Sector Levies

The Minister of Finance reported to Parliament that an amount of GHS2,973.98mn was realised in ESLA receipts for 2018. This excludes Public Lighting Levy and National Electrification Scheme Levy which are tax components of ESLA chargeable on power consumption and not petroleum products. This position is at variance with computed ESLA receipts earned, based on NPA-confirmed 2018 OMC performance data, less exemptions and downward variations, which indicate that GHS3,267.05mn should have been collected.

An analysis of the variance shows a shortfall in Government's reported ESLA receipt by GHS245.54mn for 2017 and GHS293.07mn for 2018 after adjusting for exemptions (see Table 8). Please note that the 2017 industry report did not adjust for exemptions, hence, the above position is lower in this report when compared to the 2017 report.

An analysis of the ESLA receipts shows that the under-reported taxes for the EDRL when compared to the expected receipts saw a sharp fall from 6.5% in 2016 to 0.16% and 0.55% in 2017 and 2018 respectively. This situation is dissimilar to the observations for the PSRL and the Road Fund Levy. This observation is explicable by the fact that the commencement of the ESLA Plc Bond programme in 2017 injected increased accountability into the EDRL, unlike the other components of the ESLA Levies. About GHS4.5mn of the under-reported

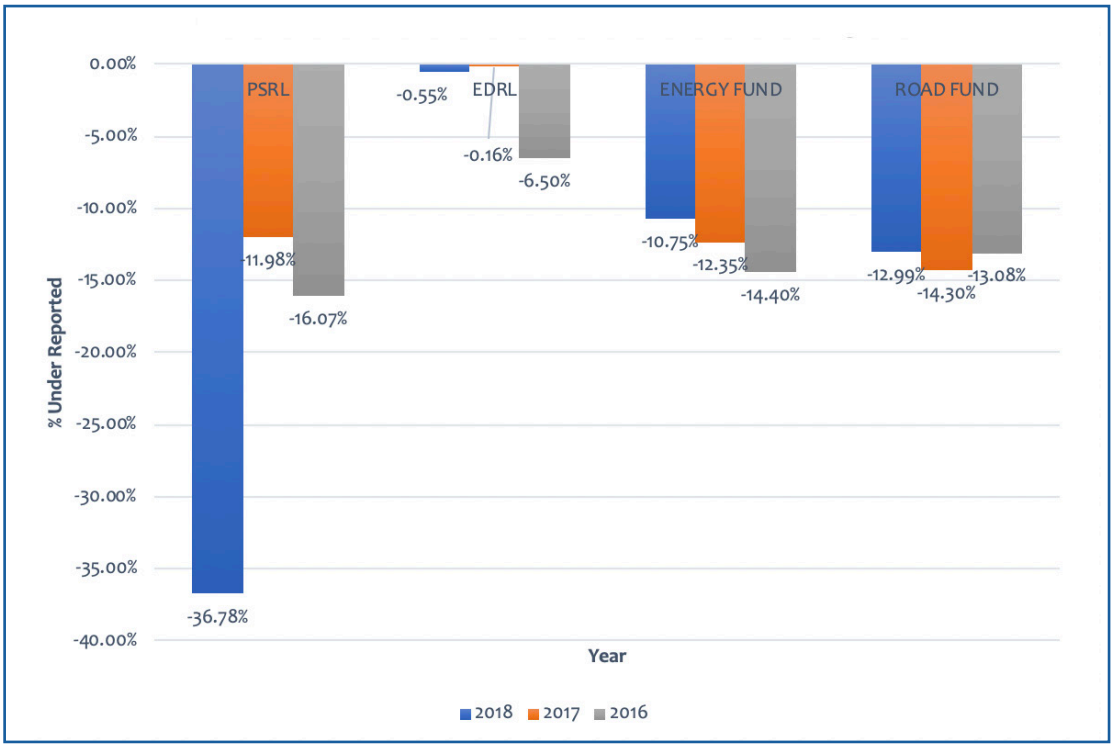


Figure 30: Under-Reported ESLA as a Percentage of Expected Receipt by Tax Category (2016 - 2108)

GHS8.17mn ERDL in 2018 is attributable to the differences in the tax rates (Ghp41) advised by the NPA for MGO-Foreign and that which is configured in the GCNet or GRA system (Ghp3).

Despite the existence of opportunities to increase collections to support the ESLA Plc Bond programme, it is fair to assert that the managers of ESLA Plc have established adequate systems to effectively monitor and minimise leakages of the ERDL, a situation which must be considered a confidence booster for the ESLA Plc bond programme.

It is also obvious that any acts of tax evasion relative to the ESLA levies have been aimed mainly on the road fund and the PSRL which account for over 50% of the ESLA levies, but are not subject to the scrutiny of the ESLA Plc administrators.

The variance analysis is reported in Table 6 to 8. Kindly refer to appendix 10 to 12 for the detailed computation of the CBOD position.

2.6.6 Special Petroleum Tax

In 2018, collections totalled GHS 1,812.01 mn, representing an increase of 14.53% compared to 2017, or 4.27% on an inflation-adjusted basis. SPT revenue exceeded the GRA's target by 2.83% (GHS 49.90 mn) in 2018; collections totalled GHS 1,812.01 mn, compared to a target of GHS¢ 1,762.11 mn. SPT contributed 38% of the total petroleum tax revenue in 2018.

The reported SPT collections above is also at variance with the expected SPT value recomputed by the CBOD by GHS140.68mn. The under-reported SPT is captured in tables 8, 9 and 10 above.

2.6.7 Revenue Loss from Illegal Trading

The revenue lost to the nation from the illegal trading can be classified as either official or unofficial. The official lost revenue has the tax base (volume of petroleum products) traceable. This is reflected in the disparity between the tax due from the official sales recorded by the NPA and the reported collections/ receipts reported by the GRA. It is also reflected in the tax associated with volumes of stock that cannot be accounted for in the reconciliations of the official recorded stock movements in the country.

The unofficial losses refer to the lost tax revenue from export dumping, premix dumping and smuggling whose sales or stock movements are not officially

...acts of tax evasion relative to the ESLA levies have been aimed mainly on the road fund and the PSRL which account for over 50% of the ESLA levies but are not subject to the scrutiny of the ESLA Plc administrators.

The managers of ESLA Plc have established adequate systems to effectively monitor and minimise leakages of the ERDL, a situation which must be considered a confidence booster for the ESLA Plc bond programme.

captured as taxable.

These cannot be traced from official stock data reports.

The revenue lost are also not just in taxes, but also in regulatory margins which currently (1st Sept. 2019) stands at Ghp32.5/ltr for AGO and Ghp32.5/ltr for Gasoline.

Year	Official Tax Loss Unaccounted Stocks	Official Tax Loss Accounted Sales	Total
	GHSmn	GHSmn	GHSmn
2015*	65.16	-	65.16
2016	221.84	340.13	561.97
2017	1,103.73	394.44	1,498.17
2018	-	433.75	433.75
TOTAL	1,390.73	1,168.32	2,559.05

Table 11: Tax Revenue Loss on Official Volumes

**Official tax loss on accounted sales for 2015 not computed since there was no ESLA in 2015.*

Year	Loss on Official Sales	Loss on Official Unaccounted Stocks
	GHSmn	GHSmn
2015	Not Available	8.36
2016	Not Available	25.00
2017	Not Available	198.18
Total	Not Available	231.53

Table 12: Regulatory Margin Lost on Official Volumes. See detailed computation in appendix 13 and 14

While intelligence and observations indicate the continuous existence of unofficial tax losses, this report does not estimate the related volumes and sums evaded.

While intelligence and observations indicate the continuous existence of unofficial tax losses, this report does not estimate the related volumes and sums evaded.

Downstream Petroleum and National Taxation

In 2018, the Ghana Revenue Authority (GRA) collected GHS 37,630.54 million in tax revenue, which amounts to 13.16% of non-oil gross domestic product (GDP)[12][13]. Compared to 2017, collections increased by 16.39% in nominal terms, or 5.96% on an inflation-adjusted basis. To put this into context, between 2013 and 2017, total tax revenue grew by 25.28% a year on average, or 8.38% on an inflation-adjusted basis.

Based on 2018 tax revenue projections, the GRA was expected to collect GHS 39,802.27 million, meaning actual collections were GHS 2,171.73 million (5.46%) below target.[14]

Table 13 provides a detailed breakdown of actual and target collections in 2018 by tax type. Of the 19 tax types shown, six exceed the GRA's revenue target,: PAYE, Corporate tax, NFSL, Domestic GETFund Levy, SPT and the Energy Debt Recovery Levy (EDRL). Corporate tax collections were particularly strong. Actual collections surpassed target by GHS 1,332.13 million (18.89%), an amount that exceeds total collections for most tax types. NFSL also performed well, exceeding the target by 31.10% (GHS 74.53 million).

Import VAT and import duties and levies performed especially badly, with shortfalls of GH¢ 980.51 million and GHS 1,764.81 million, respectively. As a share of the target, other direct taxes, – which include rent tax, management and technical service fees, and stamp duty, experienced the biggest shortfall: actual collections were 46.17% lower than expected. Excise Tax also performed poorly, with a shortfall of 30.95%.

12 *The tax revenue figure excludes all receipts from upstream domestic oil production (including royalties and corporate tax) and Energy Sector Levies.*

13 *In September 2018, Ghana Statistical Service rebased its estimates of the country's GDP, which impacted its tax-to-GDP ratio.*

14 *This report uses the GRA's revenue targets, which differ slightly from the estimates published in the 'Budget Statement and Economic Policy' and those reported in the 'Mid-year Fiscal Policy Review of the Budget Statement and Economic Policy'.*

Tax Type	Actual (GHS mn)	Target (GHS mn)	Dev (GHS mn)	Dev (%)
Direct Taxes	16,638.97	15,496.03	1,142.94	7.38
Personal Income Tax (PAYE)	6,134.15	5,983.73	150.41	2.51
Personal Income Tax (Self-employed)	365.72	443.58	(77.86)	(17.55)
Corporate Tax	8,384.07	7,051.94	1,332.13	18.89
Mineral Royalties	705.47	766.37	(60.90)	(7.95)
Airport Tax	461.82	502.61	(40.79)	(8.12)
National Fiscal Stabilisation Levy	314.22	239.69	74.53	31.10
Other direct taxes	273.52	508.10	(234.59)	(46.17)
Domestic Indirect Taxes	7,799.78	8,092.38	(292.60)	(3.62)
Domestic Value Added Tax	4,258.07	4,364.28	(106.21)	(2.43)
Domestic National Health Insurance Levy	737.04	767.73	(30.69)	(4.00)
Domestic Ghana Education Trust Fund Levy	293.84	291.94	1.91	0.65
Domestic Excise Tax	343.27	497.16	(153.90)	(30.95)
Communication Services Tax	355.55	409.16	(53.61)	(13.10)
Special Petroleum Tax	1,812.01	1,762.11	49.90	2.83
Customs Taxes	13,191.79	16,213.86	(3,022.07)	(18.64)
Import Duties and Levies	5,990.00	7,117.55	(1,127.55)	(15.84)
Import Value Added Tax	4,698.96	5,679.47	(980.51)	(17.26)
Import National Health Insurance Levy	816.98	1,645.94	(828.96)	(50.36)
Import Ghana Education Trust Fund Levy	288.60	371.42	(82.82)	(22.30)
Petroleum Taxes	1,397.25	1,399.48	(2.23)	(0.16)
Total tax revenue	**37,630.54**	**39,802.27**	**(2,171.73)**	**(5.46)**
Energy Debt Recovery Levy	1,478.78	1,358.05	120.73	8.89
Grand total *	**39,109.33**	**41,160.32**	**(2,050.99)**	**(4.98)**

Table 13: Actual and Target Collections in 2018 by Tax Type
*Note: * Total Tax Revenue + Energy Debt Recovery Levy.*
Source: Ghana Revenue Authority (2019).

The Ghana Revenue Authority (GRA) collected GHS 37,630.54 million in tax revenue, which amounts to 13.16% of non-oil gross domestic product (GDP).

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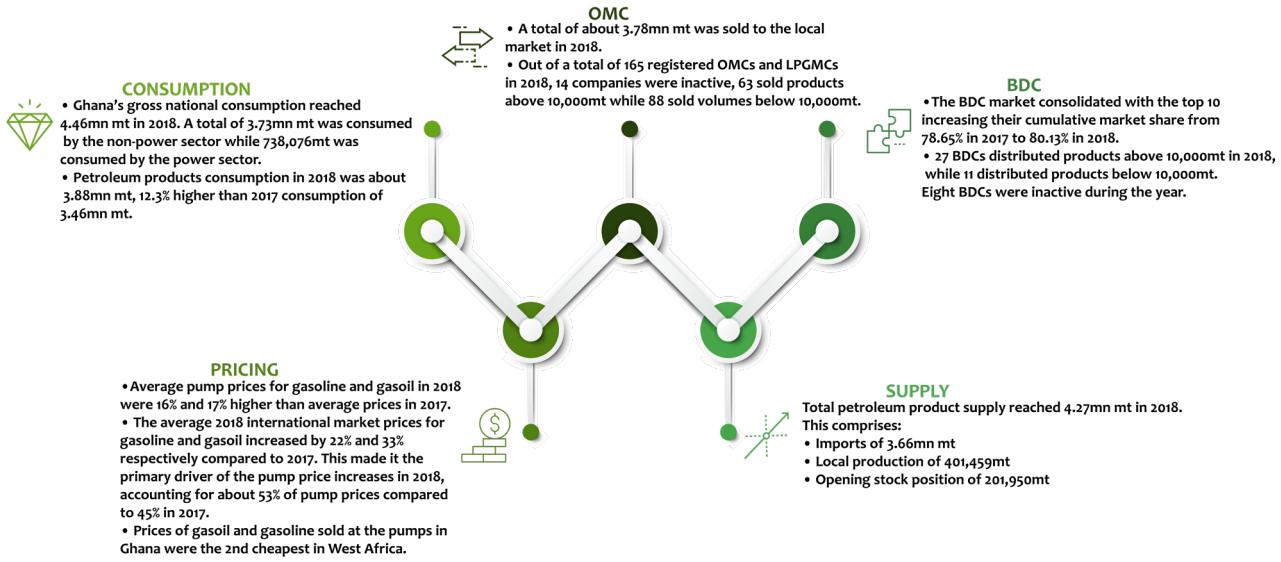
3

MARKET REVIEW



3.1 NATIONAL CONSUMPTION

Ghana's gross national consumption reached 4.46 mn mt in 2018[15]. A total of 3.73mn mt was consumed by the non-power sector representing 83% of gross consumption while 738,076mt (17%) was consumed by the power sector (fuel oil for power plants, crude for power and propane).

Petroleum products consumption in 2018 was about 3.88mn mt, 12.3% higher than 2017 consumption of 3.46mn mt. This rode on the back of increases in official demand for gasoline, gasoil and LPG. The volume of consumption is the highest observed to date.

Growth in gasoil and gasoline demand has also been spurred by the growth in the number of registered vehicles in the country. According to the Drivers and Vehicle Licensing Authority (DVLA), the total number of registered vehicles increased by 72.52% from 101,498 in 2008 to 175,103 in 2018. An analysis of the correlation between the number of registered vehicles and the petroleum products (gasoline, gasoil and LPG) consumed showed a moderate positive correlation of 0.54.

15 *Gross National Consumption includes petroleum and petroleum products for power and non-power sectors.*

A total of 3.73mn mt was consumed by the non-power sector representing 83% of gross consumption while 738,076 mt(17%) was consumed by the power sector.

Figure 31: 2018 Gross National Consumption (Petroleum and Petroleum Products)

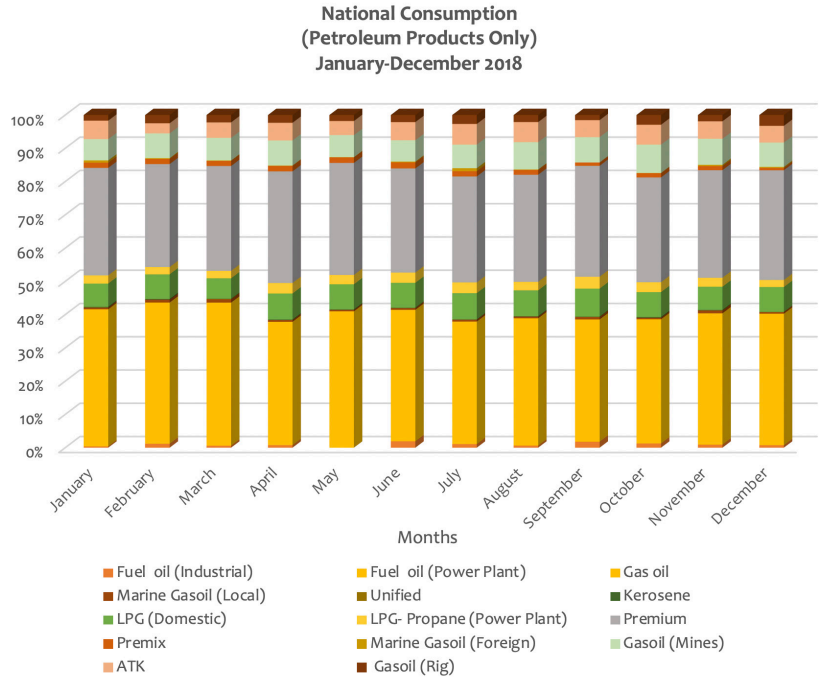


Figure 32: National Consumption (Petroleum Products Only)

Growth in gasoil and gasoline demand has also been spurred by the growth in the number of registered vehicles in the country.

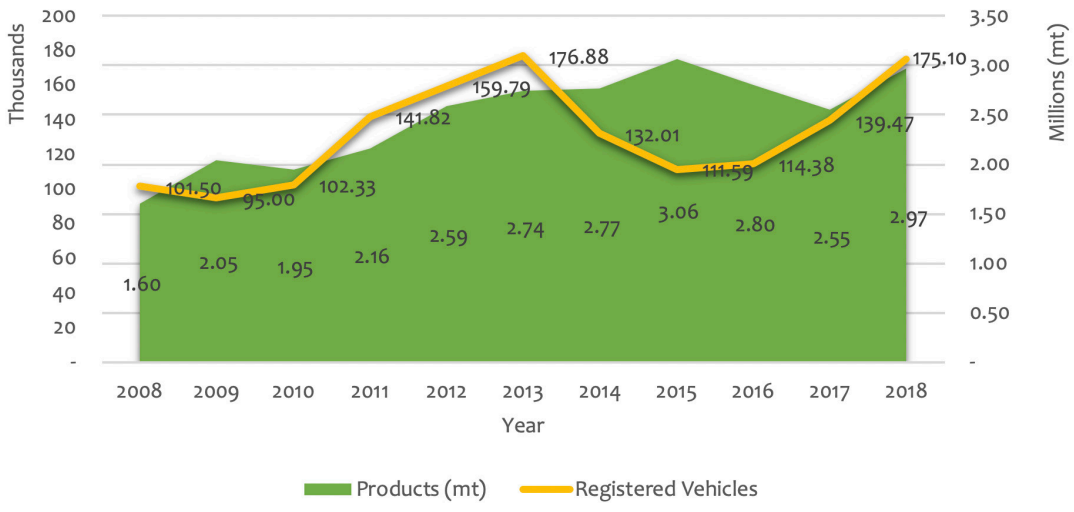
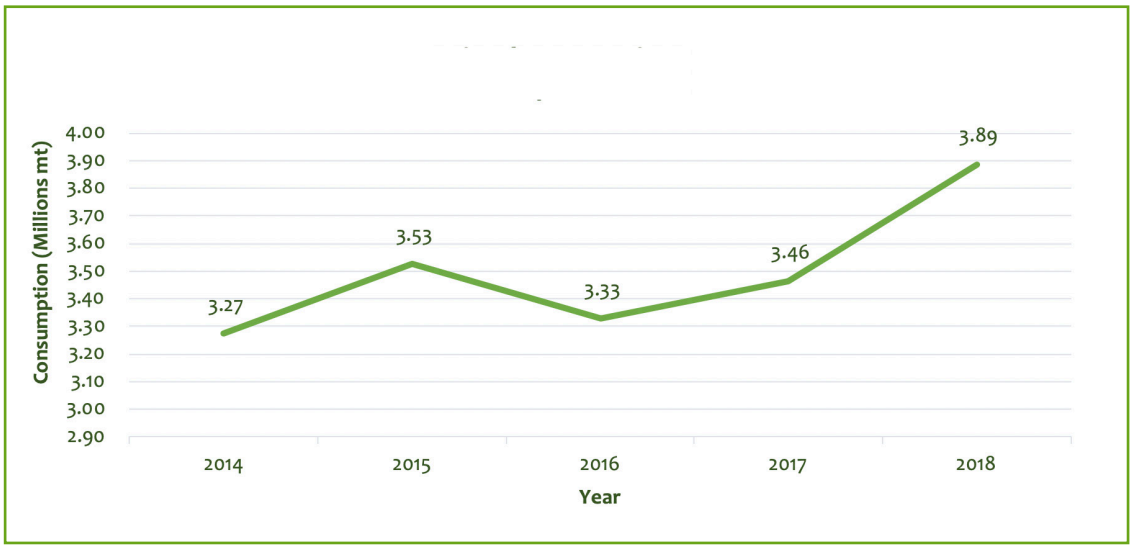


Figure 33: Regular Gasoil, Gasoline & LPG Consumption vs Registered Vehicles



Petroleum products consumption in 2018 was about 3.88mn mt, 12.3% higher than 2017 consumption of 3.46mn mt.

Figure 34: National Consumption of Petroleum Products (2014-2018)

GASOIL

Gasoil remained the largest product consumed in the country. Its consumption increased by 10% in 2018 from 1.66mn mt in 2017 to 1.83mn mt in 2018. The increase was spurred by increases in the consumption of gasoil regular by 19%, gasoil mines and gasoil rigs by 8% and 16%, respectively.

The sharp increase in the year-on-year demand growth for regular gasoil from negative 17% in 2017 to positive 19% in 2018 is mainly attributable to the gains made in the fight against the illicit trade (export dumping and smuggling) which has forced records of official volumes to increase. Consumption of marine gasoil (MGO Foreign and MGO Local), however, reduced by 71.86% in 2018 from 121,936.42mt in 2017 to 34,318.52mt in 2018.

The decrease in the consumption of MGO is due to the success of the Government's interventions to combat the diversion of MGO products unto the retail AGO market. The government, through the NPA, introduced new and strict guidelines to streamline the operations of MGO. They also introduced taxes on MGO Foreign on 16th January 2018 to disincentivize the diversion of MGO Foreign onto the local retail market.

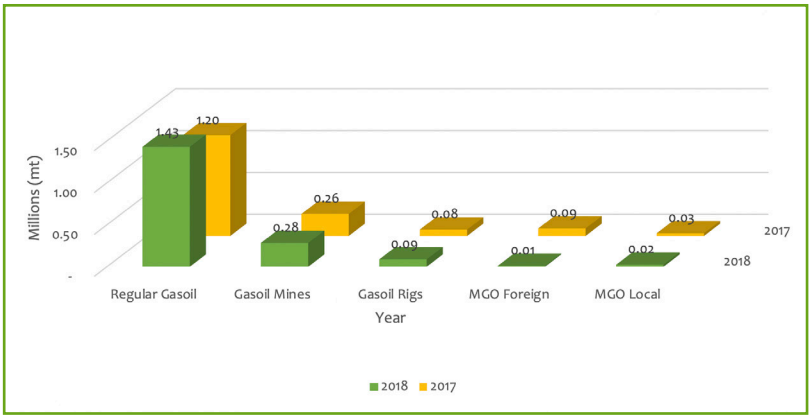


Figure 35: 2017 and 2018 Gasoil Market Share

GASOLINE

Gasoline consumption also increased by 17% from 1.07 mn mt in 2017 to 1.25 mn mt in 2018 and by 0.32% in 2017 from 1.069 mn mt in 2016 to 1.072 mn mt in 2017.

Like gasoil, the sharp increase in the year-on-year demand growth for gasoline from 0.32% in 2017 to 17.02% in 2018 is mainly attributable to the gains made in the fight against the illicit trade (export dumping and smuggling) which has forced records of official volumes to increase.

The sharp increase in the year-on-year demand growth for regular gasoil and gasoline is mainly attributable to the gains made in the fight against the illicit trade which has forced records of official volumes to increase.

KEROSENE

The consumption of kerosene has decreased consistently over the years. A trend of consumption of kerosene in the last 10 years (2008-2018) shows a peak in

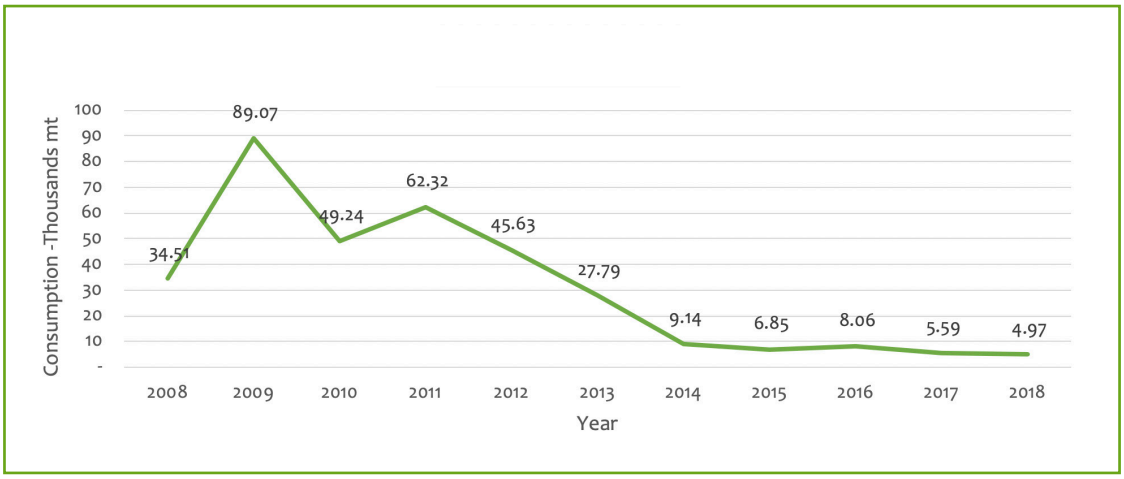


Figure 36: Kerosene Consumption (2008-2018)

The fall in kerosene consumption between 2009 and 2014 is largely attributable to the removal of government subsidies in 2015 to curb the adulteration of gasoil with kerosene.

demand in 2009 at 89,068 mt after which there has been a relatively consistent fall in demand to 4,966 mt in 2018 marking a 94% drop from its 2009 peak. The fall in kerosene consumption between 2009 and 2014 is largely attributable to the removal of government subsidies in 2015 to curb the adulteration of gasoil with kerosene. Also, the switch to the use of LPG for cooking, as well as the use of electricity for lighting contributed to the decline in the consumption of kerosene.

LPG

The Ministry of Energy is targeting a 50% penetration rate by 2030 through the implementation of the LPG Promotion Policy

The consumption of LPG increased by 10% from 358,930.99 mt in 2017 to 394,353 mt in 2018. This increase rode on the back of an increase in the consumption of Propane for power by 31% from 82,228 mt to 106,024 mt and the growing demand for LPG as cooking fuels in homes and as transport fuel. LPG for domestic consumption increased by 4% in 2018. According to the Energy Commission (2018 Energy Outlook), LPG penetration rate increased from 6% in 2000 to 18% in 2010 and 22.3% in 2014, according to the Ghana Living Standards Survey 6 (2014). The Ministry of Energy is targeting a 50% penetration rate by 2030 through the implementation of the LPG Promotion Policy (using the Cylinder Recirculation Model) which has been reviewed in Chapter 1.

PREMIX

Consumption of Premix fell by about 19% from 68,754.82mt in 2017 to 55,335.22mt in 2018, as a result of supply challenges. Delays in premix subsidies, which ended the year with an amount of GHS 61.37 mn significantly hampered suppliers' ability to sustain distribution to market. The outstanding subsidy amount was, however, cleared in January 2019.

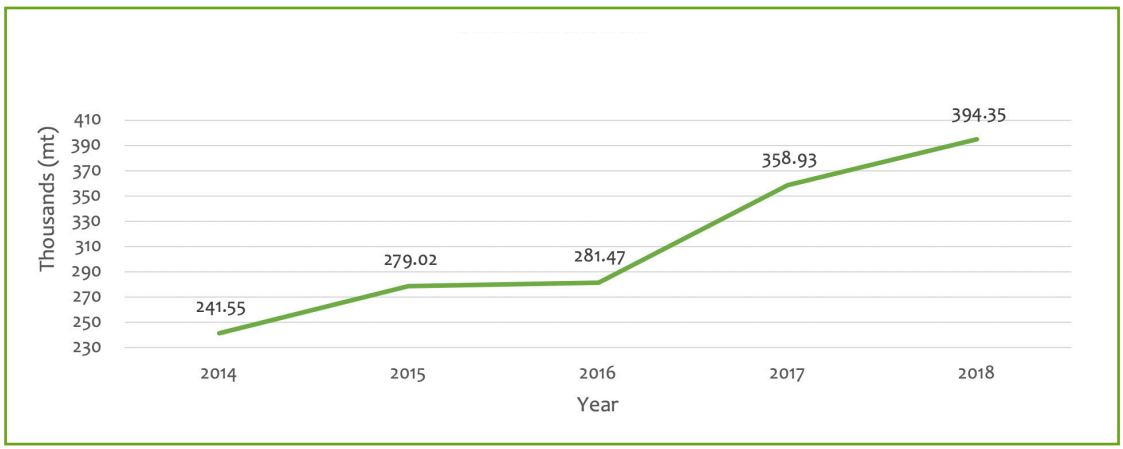


Figure 37: LPG Consumption (2014-2018)

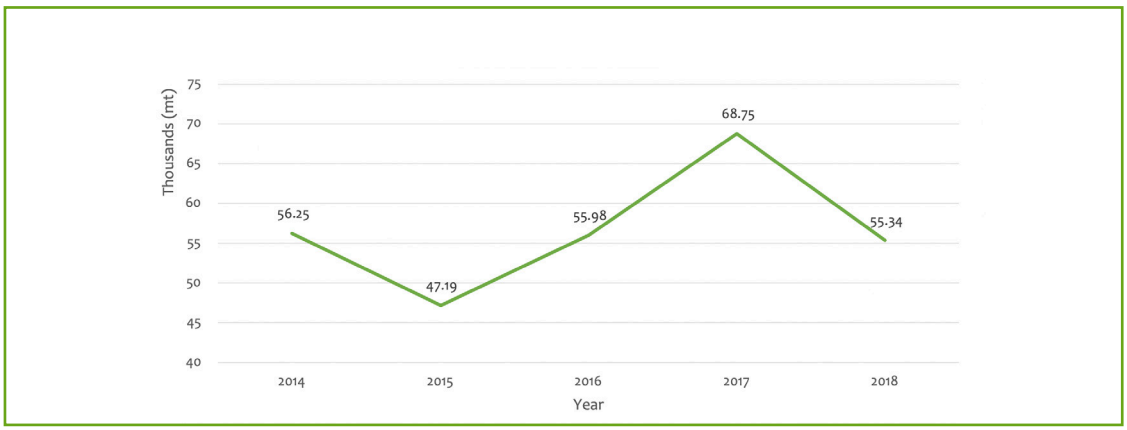


Figure 38: Premix Consumption (2014-2018)

The volume of gasoline consumed within the Accra Tema Plain Zone as share of total national consumption increased from 54% in 2014 to 57% in 2018.

FUEL OIL

2018 recorded a consumption of 103,345 mt. This marked a 13% fall from its 2017 position (118,184mt). The drop in the consumption of fuel oil for power can be attributed to the availability of gas as a cheaper fuel source for power production.

3.1.1 Zonal Consumption

Ghana's geographical area has been recategorized into 4 zonal areas for the distribution of petroleum products. These comprise Buipe Zone, Kumasi Zone, Takoradi Zone and the Accra and Tema Plains zone.

Figure 39: Map of Zonal Distribution of Products

GASOLINE

A total of 1.26mn mt of gasoline was distributed in 2018. The Accra and Tema Plains zone witnessed the highest volume of product distribution and consumption in 2018. It accounted for 57% of the total products supplied to the various zones. This was followed by the Kumasi zone with 314,256mt, representing 25% and the Buipe and Takoradi zones accounting for 10% and 8% of total gasoline supply in 2018, respectively. The Accra and Tema Plains zone has consistently witnessed the highest consumption over the years. The volume of gasoline consumed within the zone, as a share of total consumption, increased from 598,530 mt (54%) in 2014 to 720,372mt (57%) in 2018. Consumption in the Accra and Tema Plains zone witnessed a year-on-year increase of about 14%. The Kumasi zone also witnessed a growth in

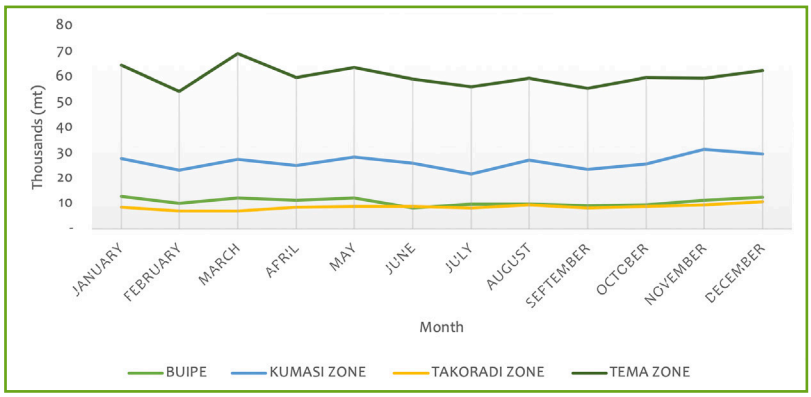


Figure 40: Gasoline Zonal Consumption (2018)

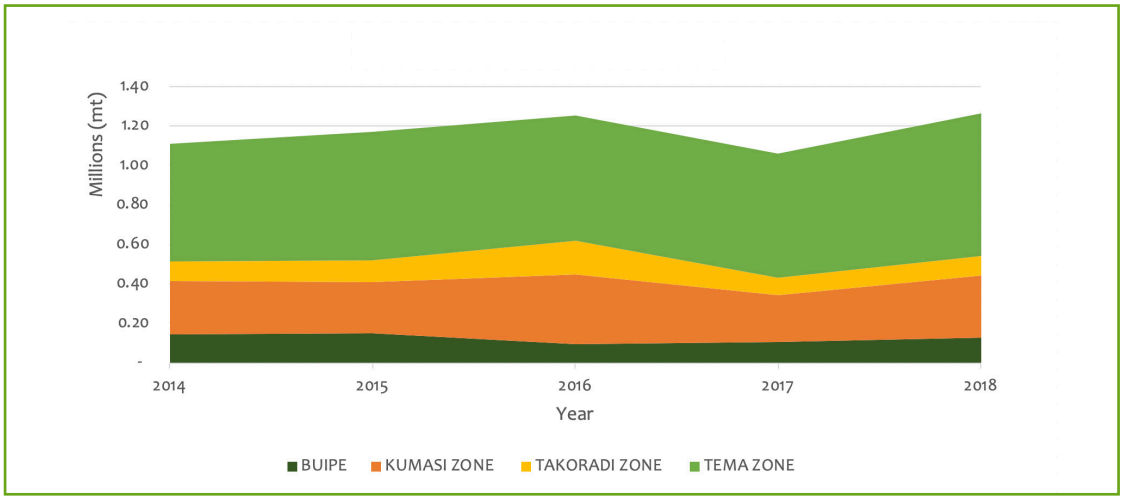


Figure 41: Gasoline Zonal Consumption (2013-2018)

The volume of gasoil regular consumed within the Accra Tema Plain Zone as share of total national consumption increased from 46% in 2014 to 50% in 2018.

product consumption from 237,153mt in 2017 to 314,257mt in 2018 representing 33% growth in consumption year-on-year. Its share of total gasoline consumption for 2018 stood at 25%. The Buipe zone witnessed the lowest gasoline consumption, with a share of 10% of total consumption. It, however, witnessed a 20% growth in consumption between 2017 and 2018 from 105,041mt in 2017 to 126,597 mt in 2018.

GASOIL REGULAR

In the year under review, a total of 1.4mn mt was distributed. This comprises a 50% distribution to the Accra and Tema Plains zone, 30% to the Kumasi zone, 12% and 8% to the Takoradi and Buipe zones, respectively.

The Accra and Tema Plains zone has consistently witnessed the highest consumption over the years. The volumes of gasoil regular consumed within the zone as share of total national consumption increased from 645,475 mt (46%) in 2014 to 711,902 mt (50%) in 2018. Consumption in the Accra and Tema Plains zone witnessed a year-on-year increase between 2017 and 2018 of about 16%. The Kumasi Zone also witnessed growth in gasoil consumption from 347,814mt in 2017 to 429,249mt in 2018, representing 23% growth in consumption year-on-year. Its share of total gasoil consumption for 2018 stood at 30%, relative to 29% in 2017. The Buipe Zone witnessed the lowest consumption, with a share of 8% of total gasoil consumption. It, however, witnessed a 19% growth in consumption between 2017 and 2018 from 91,257mt in 2017 to 109,029mt in 2018.

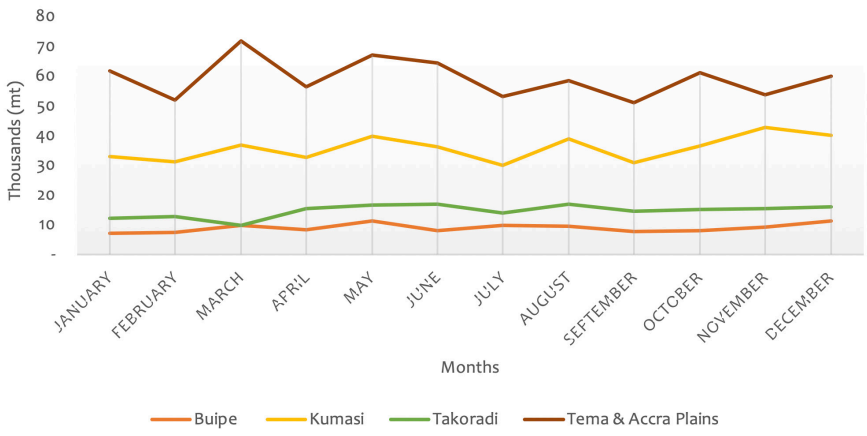


Figure 42: 2018 Gasoil Zonal Consumption

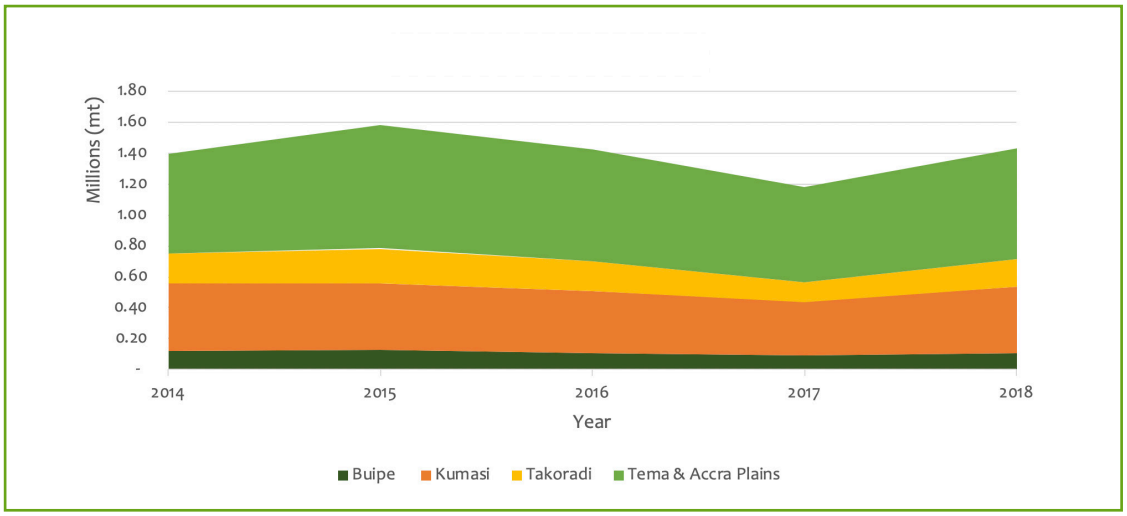


Figure 43: Gasoil Zonal Consumption (2014-2018)

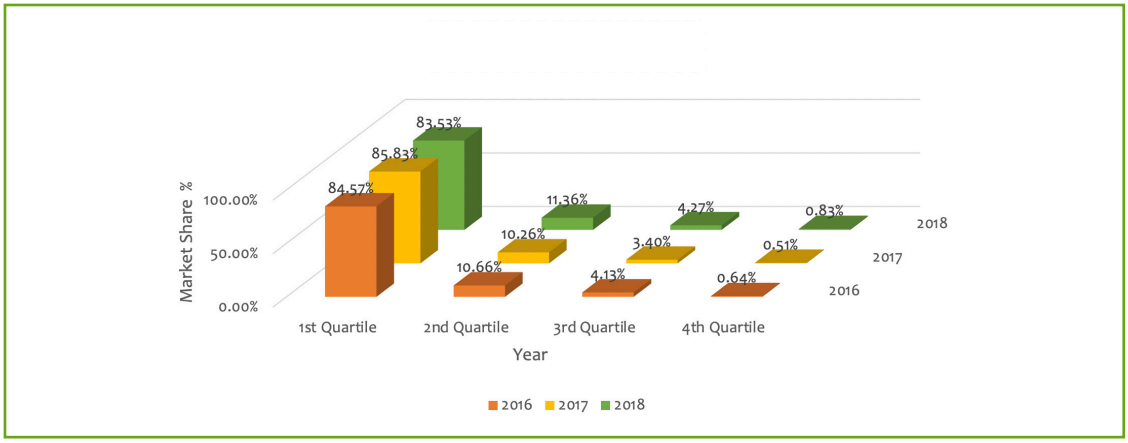


Figure 44: OMC Market Share Quartiles (2016-2018)

The top 25% LPGMCs/OMCs accounted for about 83.53% of the total market share in 2018.

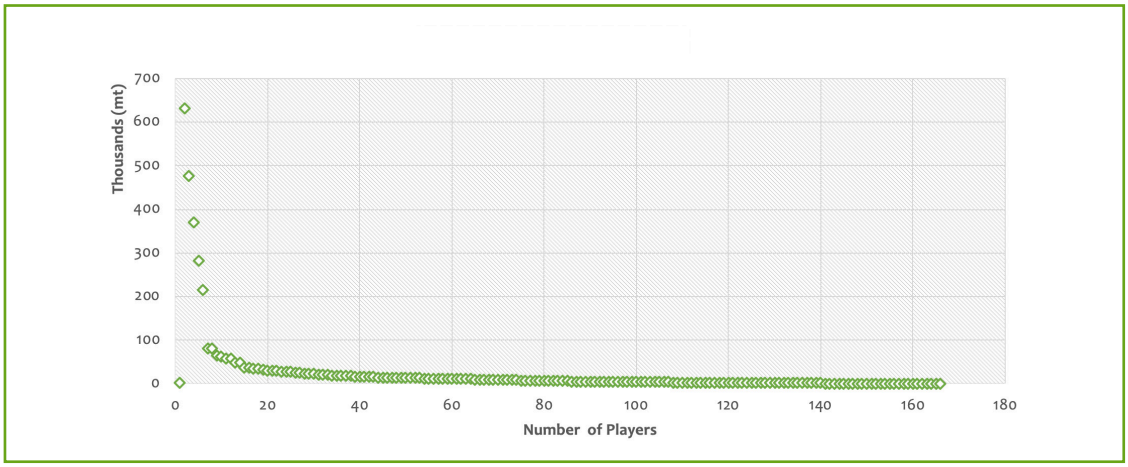


Figure 45: 2018 OMC Market Dispersion

3.2 OMC/LPGMCS PERFORMANCE

A total of about 3.78mn mt was sold to the local market in 2018. This was 11.81% higher than volumes sold in 2017. The surge in sales was driven by increases in the sale of gasoline, gasoil and ATK by 17%, 19% and 20% respectively.

Out of a total of 165 registered OMCs and LPGMCs in 2018, 14 companies were inactive, 63 sold products above 10,000mt while 88 sold volumes below 10,000mt.

The top 25% (first quartile) LPGMCs/ OMCs accounted for about 83.53% of the total market share, the second quartile accounted for 11.36%, while the 3rd and

4th quartile accounted for 4.27% and 0.83%, respectively.

Figure 45 shows that majority of the players in the market sold below 10,000mt. Only GOIL sold above 600,000mt in 2018. Four companies sold between 200,000mt-500,000mt, while the rest sold below 100,000mt in the year. This is an indication of the vast dispersion of the market and a market with many sellers, but dominated by a few large players.

Four companies sold between 200,000mt-500,000mt while the rest sold below 100,000mt in the year. This is an indication of the vast dispersion of the market and a market with many sellers but dominated by a few large players.

The top 10 OMCs sold volumes of up to about 2.3mn mt, representing 61.36% of total sales. GOIL maintained its position as the largest Oil Marketing Company in 2018, a position it has held for the past 4 years after replacing Vivo Energy (Shell) in 2014. It sold 630,590mt of petroleum products, representing a 16.68% share of the market. This was, however, lower than its 2017 performance in which it sold 618,795mt and commanded an 18.3% share of the market.

The 2018 gasoil (mines) market remained an oligopolistic market with 3 main players (Zen Petroleum 67.41%, Total Petroleum Ghana Ltd 14.09% and Vivo Energy 12.17%) dominating the market at a cumulative 93.68% market share. The share of the market, dominated by local players, increased from 70.64% in 2017 to 73.7% in 2018, following the entry of six new local players, adding to two players in 2017.

Zen Petroleum's gasoil mines market share fell from 69.09% in 2017 to 67.41% in 2018. This drop resulted from the growth realised by Total Petroleum Ghana Ltd, whose share increased from 12.73% in 2017 to 14.09% in 2018. Zen has consistently had the largest market share in the sale of gasoil to the mines since 2014, after replacing Total Petroleum Ghana Ltd. as the largest marketer of gasoil to the mines.

With the advent of the Ghanaian Content and Participation Policy which rules

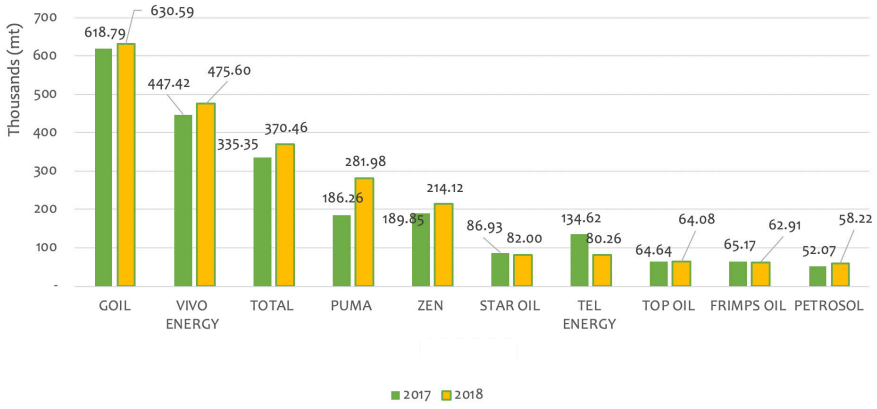


Figure 46: Top 10 OMCs (2018)

The GCGP policy is more likely to stiffen competition for Zen as local market dinosaurs (GOIL/GoEnergy, Cirrus/Tel Energy etc.) begin to consider the gasoil mines as more lucrative and open.

3.2.1 Market Trends

While majority of the top 10 OMCs sold large volumes of regular gasoline and regular gasoil as their main products, Tel Energy and Zen Petroleum respectively had gasoil (rigs) and gasoil (mines) as their lead products. Gasoil rigs accounted for 55% of Tel Energy's total sales, while Zen's gasoil sale to the mines accounted for 89% of its total sales.

Total Petroleum Ghana Ltd. and Vivo Energy out of the gasoil mines market, it may be assumed that Zen Petroleum's dominance on the market will continue. This may, however, not be the case as Total has strategically passed on its relationships and competencies to local companies like Gaso, whose strategic relationship with Fueltrade may prove to be a worthy competitor to Zen. The

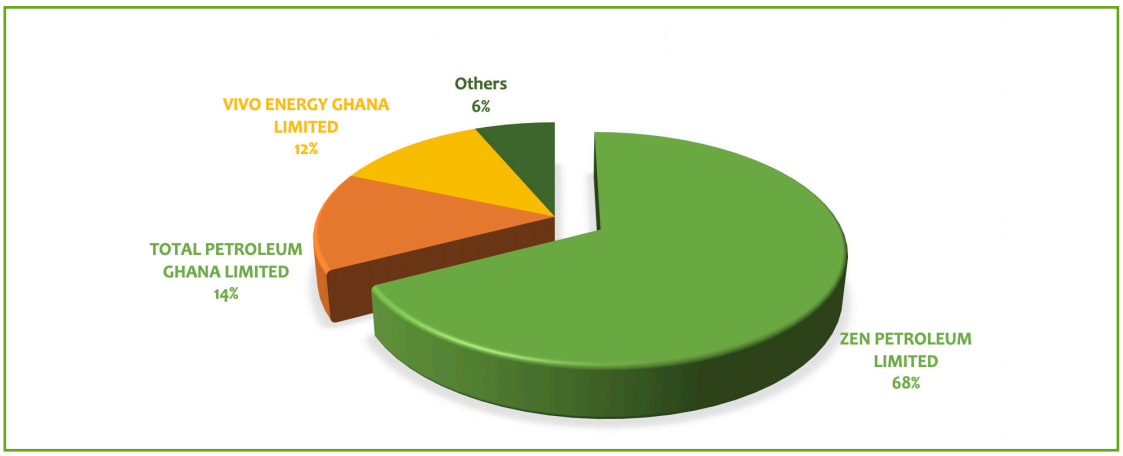


Figure 47: Gasoil Market Share Distribution (2018)

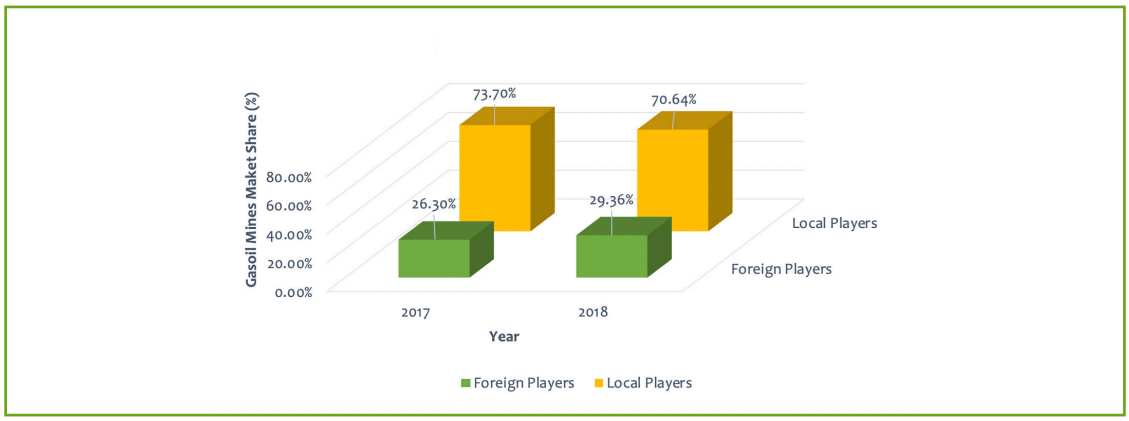


Figure 48: Gasoil Mines Market Share between Local and Foreign-owned OMCs (2017 vs 2018)

Ghanaian content and participation policy is more likely to stiffen competition for Zen as local market dinosaurs (GOIL/ GoEnergy, Cirrus/Tel Energy, etc.) begin to consider the gasoil mines as more lucrative and open.

3.3 BDC MARKET

The BDC market consolidated with the top 10 increasing their cumulative market share from 78.65% in 2017 to 80.13% in 2018. In a similar trend, the top 5 also increased their grip on the market from 56.94% in 2017 to 59.63% in 2018. 27 BDCs

The BDC market consolidated with the top 10 increasing their cumulative market share from 78.65% in 2017 to 80.13% in 2018.

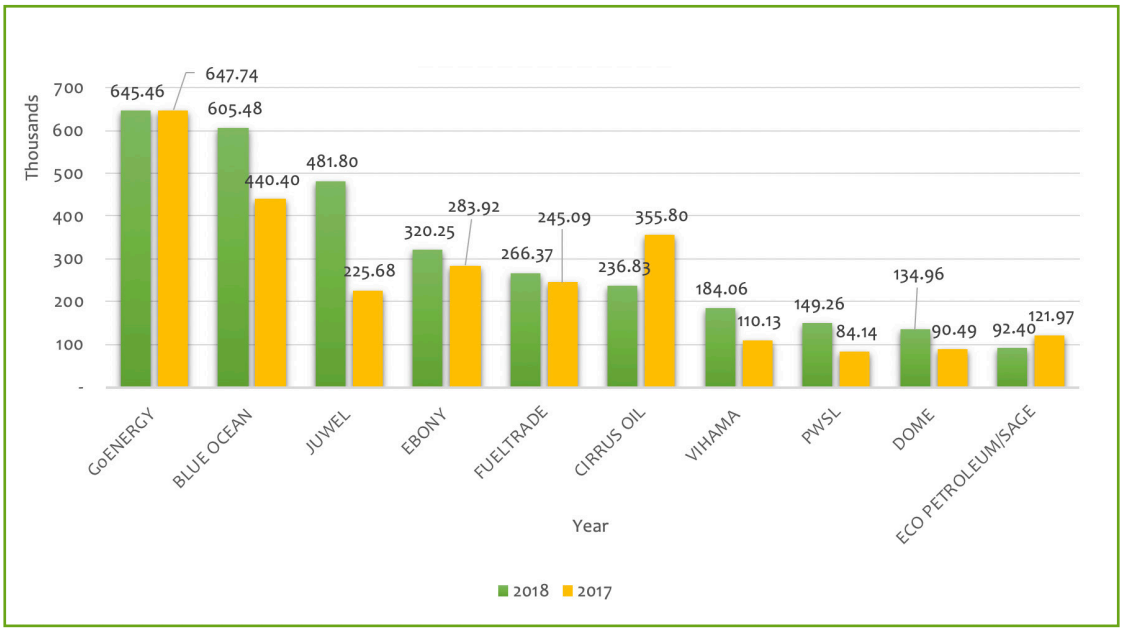


Figure 49: Top 10 BDCs (2018)

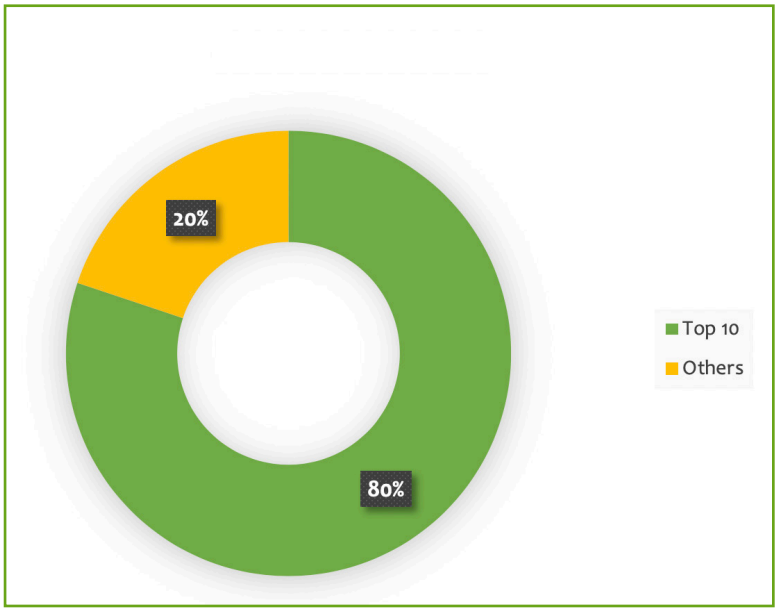


Figure 50: BDC Market Share - Top 10 vs Others (2018)

distributed products above 10,000mt in 2018, while 11 distributed products below 10,000mt. Eight BDCs were inactive during the year. Three BDCs (Chase Petroleum, Mysil Energy Company Ltd. and LHS Ghana Ltd.) lost their position in the top 10 largest distributors in 2018. The new entrants were Vihama Energy, PWSL Ltd. and Dome Energy Resources with 4.73%,3.84% and 3.47%, respectively.

The fall in the market share of GoEnergy was accompanied by a 37% increase in the distribution performance of Blue Ocean from 440,400.12 mt in 2017 to 605,481.55 mt in 2018.

The latter's entrance into the top 10 rode on the back of being the only distributor of LPG (Propane) for power in 2018.

The BDC market was controlled by a few big players. In 2018, only two players sold product above 600,000mt, 7 players sold products between 100,000 and 500,000mt, while the rest sold products below 100,000mt.

GoEnergy maintained its 4-year (2014-2017) run as the largest distributor of products with a 16.59% market share in 2018. Its distribution, however, fell from 647,744mt in 2017 to 645,461mt in 2018, to continue a trend of losing market share. Its share dropped from 22.14% in 2016 to 18.69% in 2017 and further downwards to 16.59% in 2018.

The fall in GoEnergy's market share in 2018 was accounted for by a fall in its share of regular gasoil distribution from 25.34% in 2017 to 17.79% in 2018 and a fall in gasoline share from 25.21% in 2017 to 20.36% in 2018. This trend is of immense concern to market watchers and GOIL shareholders. It may be reflective of inherent operating inefficiencies which may have been clouded by indirect subsidies which GoEnergy used to benefit from in 2015 and 2016 as covered in the 2017 CBOD Industry Report.

The fall in the market share of GoEnergy was accompanied by a 37% increase in the distribution performance of Blue Ocean from 440,400.12mt in 2017 to 605,481.55mt in 2018. Blue Ocean, however, remained the second largest distributor of products in 2018 with a market share of 15.57%, compared to its 12.71% in 2017.

Juwel Energy, which ranked 6th in the distribution of products in 2017, saw a 113% growth in its performance from

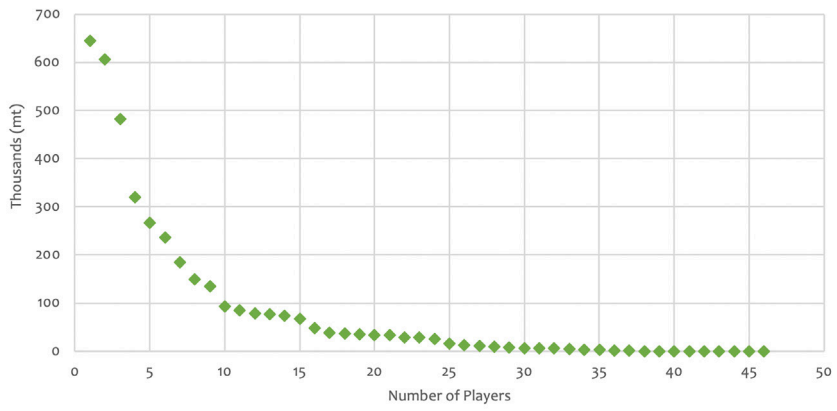


Figure 51: BDC Market Dispersion (2018)

225,679.56 mt in 2017 to 481,799.23 mt in 2018 to rank 3rd in 2018 with a 12.39% market share.

Blue Ocean and Juwel Energy have established themselves as key players in the BDC space.

Over the past five, years Blue Ocean has increased its market share from as low as 0.21% in 2014 to 15.57% in 2018, mainly from its penetration of the gasoil, gasoline, MGO foreign and ATK markets. Its growth has been spurred on by its vertical integration with Puma Energy as its OMC, as well as its logistical dominance in the ATK business.

In 2018, for example, Blue Ocean led the market in the distribution of Fuel Oil (81%) and ATK (48.12%). Blue Ocean has a 10,000m^3 storage facility, located at the Kotoka International Airport, solely dedicated to the import and sale of Aviation fuel. This gives it a competitive advantage over other market players.

Juwel Energy has also seen its market share increase from as low as low 1.8% in 2014 to 12.4% in 2018, moving significant volumes of gasoline, gasoil and ATK in 2018. Its strategic relationship with Vivo Energy and dynamic management have been key to its performance.

GASOIL

A total of 1.83mn litres of gasoil was distributed for the period under review. This was 10.49% higher than gasoil volumes sold in 2017. This included regular gasoil (1.43mt), gasoil rigs (88,171 mt), gasoil mines (283,945mt), MGO Foreign (10,259mt) and MGO Local (24,060mt). The top five regular gasoil distributors in 2018 (GoEnergy, Blue Ocean, Juwel Energy, Ebony Oil and Gas and Cirrus Oil) sold a total of 870,560, representing 60.87% of the total market share. 13 players participated in the sale of gasoil to the mines.

The top five regular gasoil distributors in 2018 (GoEnergy, Blue Ocean, Juwel Energy, Ebony Oil and Gas and Cirrus Oil) sold a total of 870,560, representing 60.87% of the total market share.

Fueltrade, riding on its co-owned Ghanstock depot in Takoradi, maintained its position as the largest distributor of gasoil to the mines in 2018, with a total of 124,4111mt, representing 44% of the total gasoil mines distribution. Only three players (Cirrus Oil, GoEnergy and Blue Ocean) were active in the sale of gasoil rigs in 2018, as compared to four in 2017.

Cirrus Oil replaced GoEnergy as the largest distributor of gasoil rigs in 2017, increasing its volumes sold from 21,153 mt in 2017 to 43,874 mt in 2018. A total of 21 and 11 companies distributed MGO Local and MGO Foreign, respectively, in 2018, compared to the 17 companies which distributed MGO Local and 20 which distributed MGO Foreign in 2017. For the MGO Local space, GoEnergy remained the largest distributor with total volumes of 4,067mt, representing 16.90% of the total market share. Blue

Blue Ocean has increased its market share from as low as 0.21% in 2014 to 15.57% in 2018, while Juwel Energy has also seen its market share increase from as low as low 1.8% in 2014 to 12.4% in 2018 to be the second and third largest BDCs.

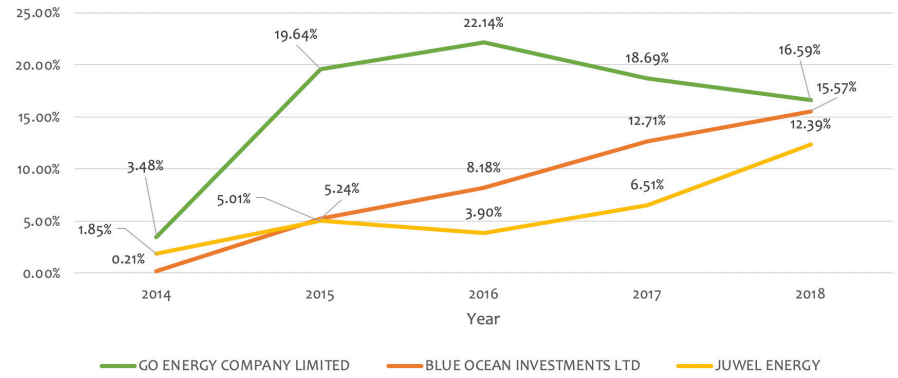


Figure 52: GoEnergy vs Blue Ocean vs Juwel Energy (2014-2018)

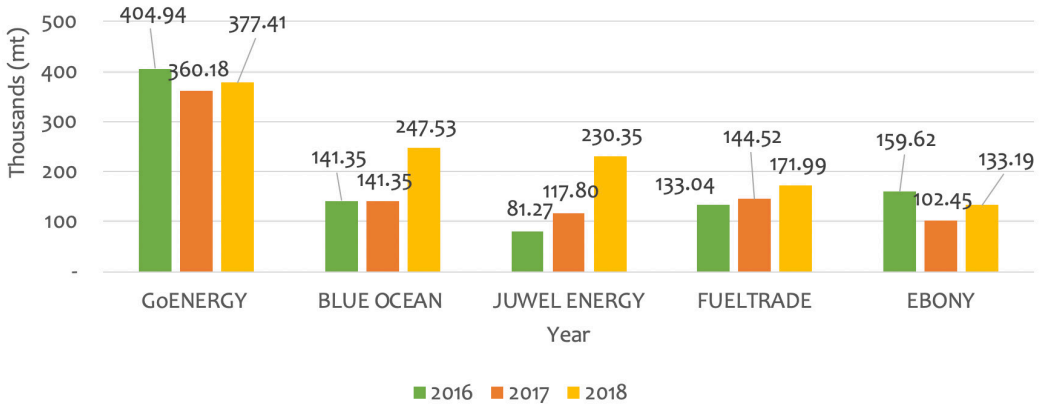


Figure 53: Top 5 Gasoil Distributors (2016 - 2018)

Ocean, however, replaced GoEnergy as the largest distributor of MGO Foreign in 2018 increasing its market share from 13.02% in 2017 to 31.84% in 2018.

GASOLINE

288,329mt, representing 73% of LPG distribution, was for domestic consumption, while 108,482 was distributed to the power sector.

A total of 1.255mn mt of gasoline was distributed in 2018, 17% higher than in 2017. The top five distributors of gasoline comprise GoEnergy (20.36%), Juwel Energy (16.21%), Blue Ocean (11.8%) Ebony (11.41%) and Cirrus Oil (6.42%). Together, they distributed a total of 830,845mt, representing 66% of the total market share.

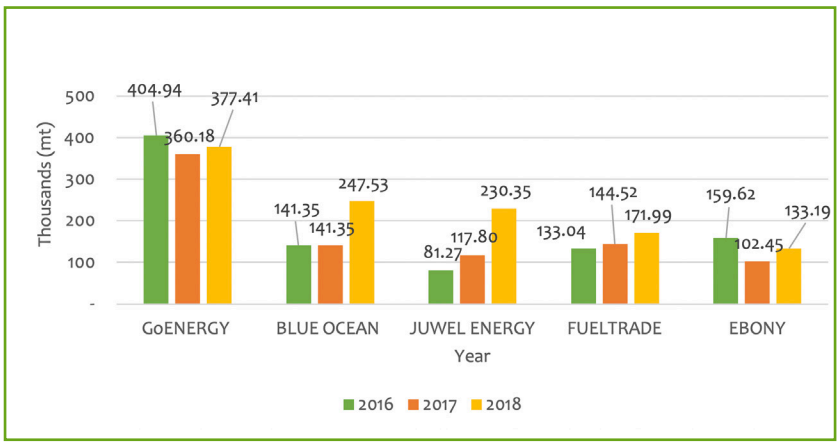


Figure 54: Top 5 Gasoline Distributors (2016 - 2018)

LPG

A total of twelve (12) BDCs distributed LPG in 2018, as compared to nine in 2017. Out of the total 396,811mt of LPG distributed, 288,329mt, representing 73% of LPG distribution was domestic consumption, while 108,482 was distributed to the power sector. The largest distributor of LPG in 2917, Eco Petroleum, lost its position to Dome Energy in 2018. This was as a result of Dome Energy's complete dominance in the distribution of LPG to the power sector. Dome Energy distributed 100% of LPG to the power sector, totalling 108,482 mt.

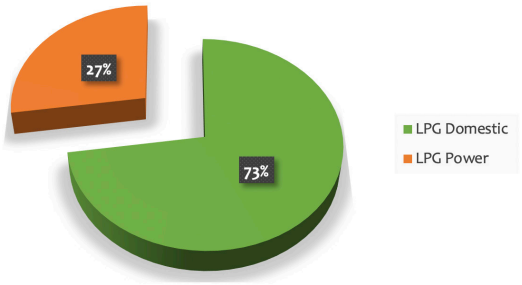


Figure 55: LPG Domestic vs LPG Power (2018)

KEROSENE

Only three companies (Ebony, Fueltrade and Juwel Energy Ltd.) distributed

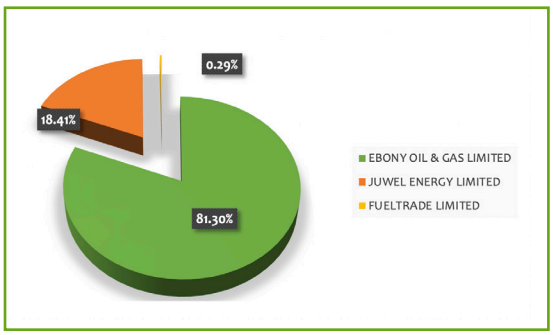


Figure 56: Kerosene Distributors (2018)

kerosene in 2018 totalling 4,966mt. There was an 11% drop in the distribution of Kerosene from 5,586mt in 2017 to 4,966mt in 2018 . This was as a result of low demand for the product which is being replaced by an increase in the demand for LPG as cooking fuel in homes and electricity for lighting.

PREMIX

There were only three distributors of Premix in 2018; Vihama, MED Petroleum and Richelle Energy. Vihama maintained its position as the leader in premix distribution, selling about 75% of the premix in the country. MED Petroleum and Richelle distributed parcels below 10,000mt, representing 23% and 1.42%, respectively.

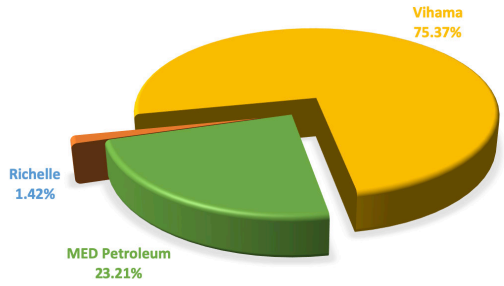


Figure 57: Premix Distributors (2018)

3.4 TOTAL SUPPLY

Total petroleum product supply reached 4.27mn mt in 2018. This comprises imports of 3.66mn mt, local production of 401,459mt and an opening stock position of 201,950mt. The 2018 supply was 8% higher than 2017 which had a total supply position of 3.92mn mt.

3.4.1 PRODUCTION

Refinery production, which accounted for 9% of total supply, was sourced from Ghana's local refineries, Tema Oil Refinery, Akwaaba Refinery, Platon Gas Oil Ghana Ltd and the Ghana National Gas Company (GNGC). Products refined from TOR totalled 273,658.48 mt representing 68% of total refinery production while Akwaaba and Platon's output were 32,488mt and 11,114mt, respectively, representing 8% and 3% of total production respectively. GNGC's output (LPG only) was 84,198mt, representing 21% of total refinery output.

Local refinery production accounted for 9% of total petroleum product supply in 2018.

Ghana's refinery output for 2018 was a major improvement compared to 2017. Refinery output in 2017 was 140,061mt compared to 401,459mt of output in 2018, marking a 187% increase in output. Refinery output for 2018 was however lower when compared to 2016's 761,154mt.

Ghana's refinery operation was the least across West and Central Africa (WCA).

For the year under review, Ghana's refinery operation was the least across West and Central Africa (WCA). Ghana's annual average refinery output was about 8000bbls/d. With a total of

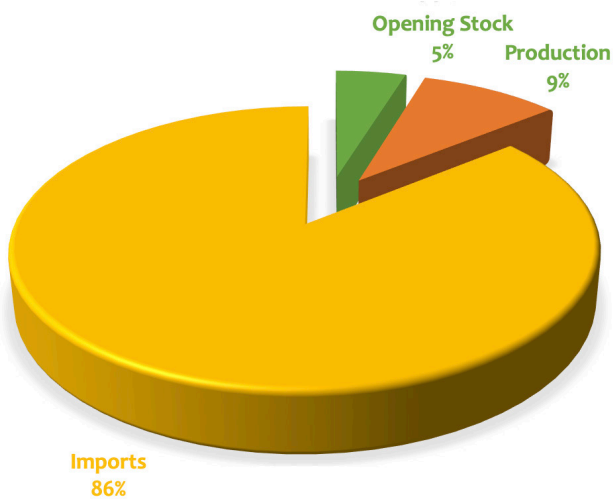


Figure 58: Total Product Supply (2018)

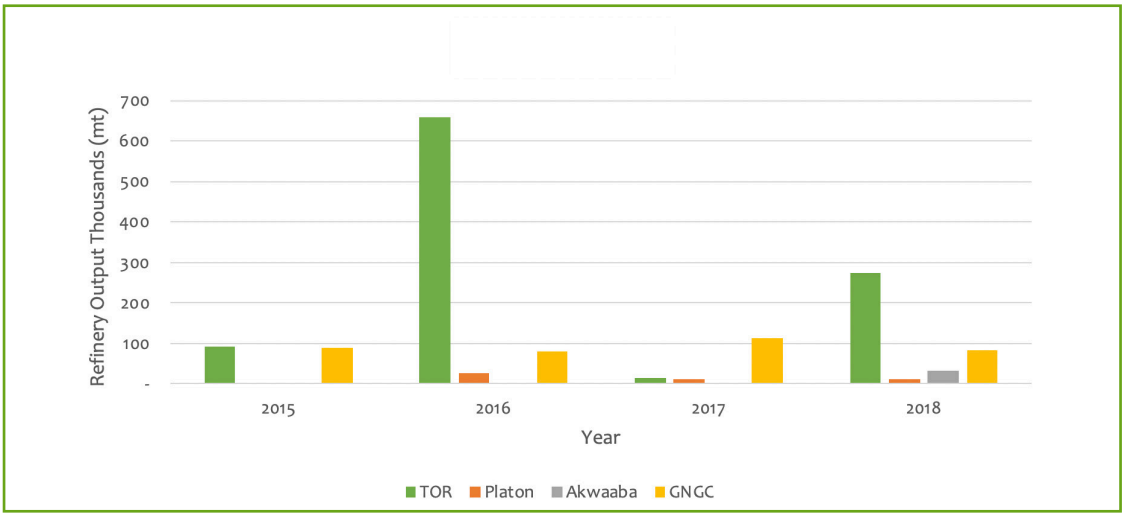


Figure 59: Total Refinery Output (2015-2018)

Cote D'Ivioire's Société Ivoirienne de Raffinage (SIR) recorded the highest refinery output for the year in the WCA region at 50,600bbls/day representing 20% of total refinery output across the WCA region.

255,300 bbls/day of refinery output in the WCA, compared to data in the CITAC January 2019 report, Ghana's share of total WCA refinery output is estimated at 3%. Countries like Angola, Nigeria and Senegal refined products of 47,400bbls/day, 35,200bbls/day and 23,200bbls/day respectively. La Cote d'Ivioire's Société Ivoirienne de Raffinage (SIR) recorded the highest refinery output for the year in the WCA region at 50,600bbls/day, representing 20% of total refinery output across the WCA region.

Ghana's low production output is a result of its low production utilization capacity which for 2018 stood at 13%.

Ghana's low production output is a result of its low production utilization capacity which for 2018 stood at 13%. TOR, Ghana's largest refinery operated at an average 5,500bbls/per day, despite being designed to operate at 45,000bbls/per day.

The challenges have been both technical and financial. TOR's inability to invest in the upgrading and repair of key components required for it to fully operate its Residual Fluid Catalytic Cracker (RFCC) and Crude Distillation Unit (CDU) have hampered its ability to optimize its installed capacity over the years. The financial challenges have been in respect of trading lines for crude imports and capex funding for its upgrade.

Akwaaba and Platon, whose business model, seems to thrive on access to small and highly competitive parcels of crude have had challenges with stable and competitive crude supplies, a situation that hampers their productivity.

The table below shows petroleum products produced from local refineries in 2018.

Products	TOR	Platon	GNGC	Akwaaba
LPG	✓	✗	✓	✗
Gasoline	✓	✗	✗	✗
Gasoil	✓	✓	✗	✓
Aviation Turbine Kerosene (ATK)	✓	✗	✗	✗
Residual Fuel Oil	✓	✓	✗	✓
Naphtha	✗	✓	✗	✗
Condensates	✗	✗	✓	✗

Table 14: Refinery Outputs of Local Refineries (2018)

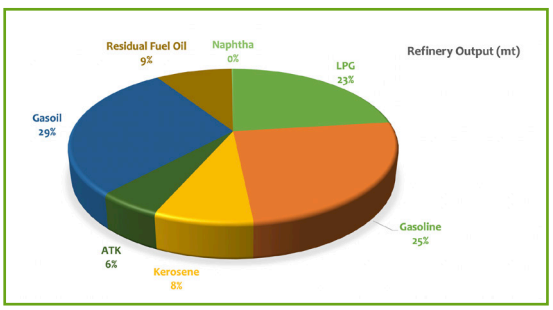


Figure 60: Refinery Output (2018)

Petroleum products produced for the year under review comprise LPG, gasoline, gasoil, Aviation Turbine Kerosene (ATK), Residual Fuel Oil (RFO) and Naphtha. The configuration of each refinery differs and determines the refinery output. While the complex Tema Oil Refinery is able to process crude into

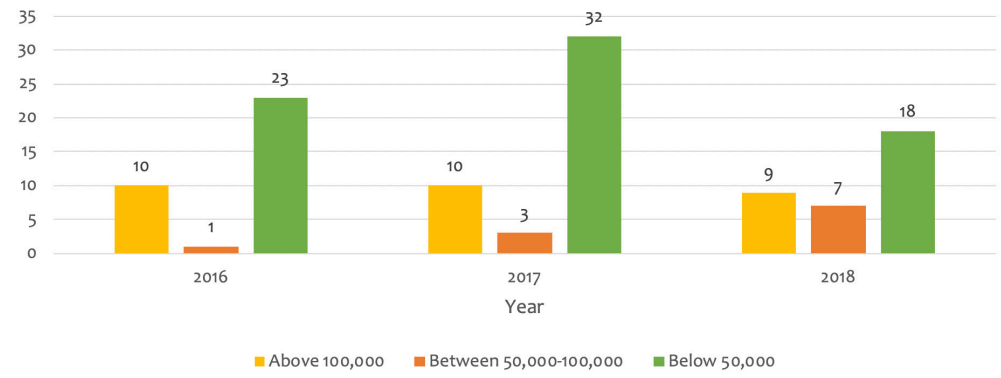


Figure 61: Importers Activity (2016-2018)

Petroleum products imports went down by 3.54% in 2018 relative to 2017 volumes.

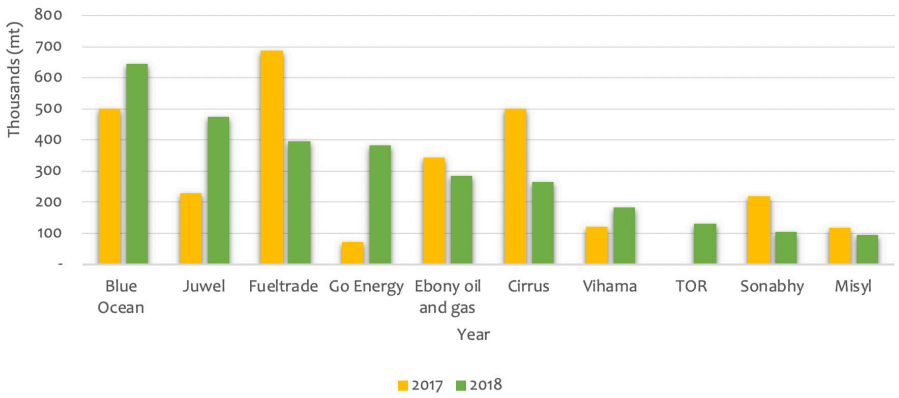


Figure 62: Top 10 Importers (2018)

18 companies accounting for 7.51% of total imports, brought in cargoes below 50,000mt.

a variety of products, including LPG, gasoline, gasoil, RFO, Naphtha and ATK, other simple refineries like Platon, can produce gasoil, naphtha and RFO.

Gasoil was the largest output obtained from refinery operations in 2018, with its share of refinery output at 115,860mt (29%) of total production. This was followed by gasoline with total refinery output of 101,603mt, representing 25% of total production. Other products realised from the refinery process included ATK, RFO, and Naphtha.

3.4.2 Gross Imports

Imports of petroleum (crude oil) and petroleum products decreased in 2018 relative to 2017. Total imports of crude and petroleum products reached 3.66mn mt in 2018. Petroleum products imports went down by 3.54% in 2018 relative to 2017 volumes, decreasing from 3.65mn mt in 2017 to 3.52mn mt in 2018. This included a decrease in the imports of fuel oil, LPG, gasoline and gasoil.

A total 34 companies imported products in 2018; 9 companies imported products above 100,000mt, accounting for 78.21% of total imports relative to 10 companies in both 2016 and 2017. Seven companies imported products above 50,000mt,

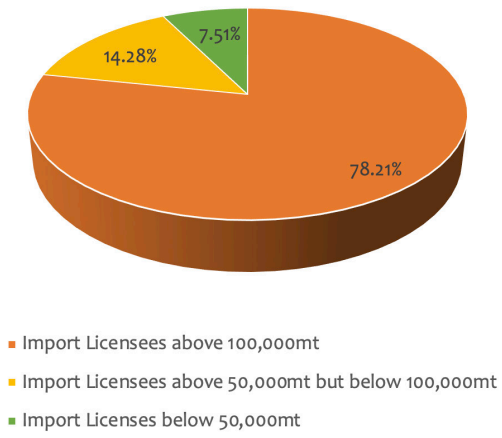


Figure 63: Import Licensees Activity (2018)

but below 100,000mt to account for 14.3% of imports. This was a significant improvement from the three companies and one company which imported products between 100,000mt and 50,000mt in 2017 and 2016, respectively. 18 companies accounting for 7.51% of total imports, brought in cargoes below 50,000mt.

There was, however, an improvement in the number of importers who brought in products equivalent to the standard single cargo size of 30kt when compared to 2017. In 2018, nineteen (19) companies imported products above 30kt as compared to 15 in 2017.

2016's largest importer BOST, bedeviled by financial challenges, dropped from the list of the top 10 importers.

The top 10 accounted for 80.83% of total imports last year. Blue Ocean replaced Fueltrade as the largest importer in 2018, bringing in products of up to 643,612.65mt accounting for 17.58% of total imports. Fueltrade dropped to 3rd after a fall in imports from 688,658mt in 2017 to 395,053.01mt in 2018.

Naphtha was the largest product exported, a total of 63,193 mt representing 40% of total exports in 2018.

2016's largest importer BOST, bedeviled by financial challenges, dropped from the list of the top 10 importers. Its annual import volumes fell from 1.93mn mt in 2016 to 366,086mt in 2017 and further down to 38,844mt in 2018. Major importers included Blue Ocean (17.58%), Juwel (12.98%), Cirrus (9.73%), Fueltrade (10.79%) and GoEnergy (10.42%).

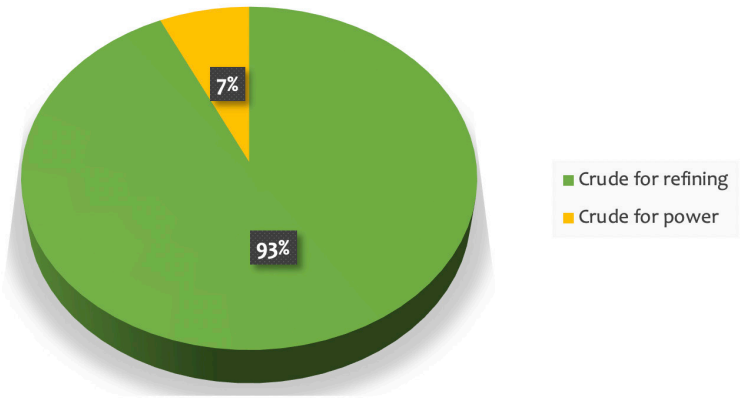


Figure 64: Crude Import - Power vs Refinery (2018)

3.4.2 Crude Oil Imports

A total of 139,141.20mt of crude equivalent to 1.019mn bbls was imported in 2018. About 7% (9,744mt) of this was committed to the power sector and 93% (129,396.59mt) to refining. Importers of crude oil in 2018 included TOR and Adinkra.

3.4.3 Product Suppliers

Data received from import access facilities indicate that BP was the major supplier of products of the two largely consumed products (gasoil and gasoline) in the country.

It is estimated that BP accounted for about 61% of imports into the country. BP's major receivers include Juwel, Vihama, GoEnergy and Fueltrade. Blue Ocean's supplier, Trafigura, supplied gasoline and gasoil up to about 13% of the 2018 imports followed by Vitol (11%). Other suppliers included Glencore, Totsa, Shell and BB Energy.

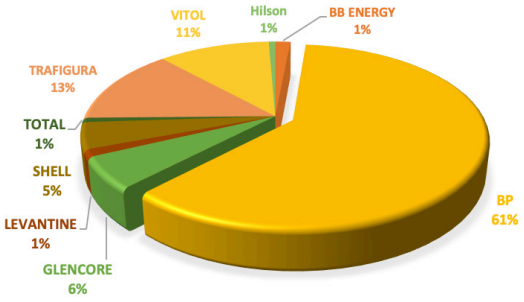


Figure 65: Suppliers Market Share (2018)

3.5 EXPORTS

Ghana's export activity comprises re-exports[16], refinery[17] exports and transit[18]. Total export volumes in 2018 (223,709mt) were significantly lower than volumes exported in 2017 and 2016.

The 2018 export performance marked a

16 *Re-export volumes refers to volumes of petroleum products imported into the country and exported.*
17 *Refinery export volumes refers to volumes produced locally and exported.*
18 *Transit volumes refers to volumes imported through a port country for onward exportation to a destination country (importer)*

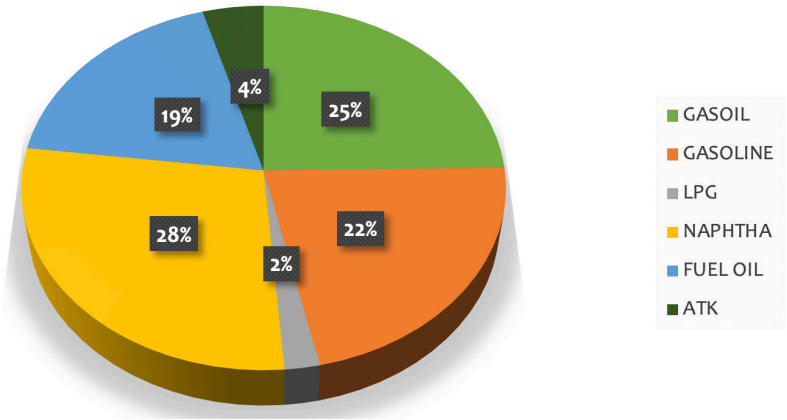


Figure 66: Export Volume Composition by Products (2018)

Total re-export volumes for gasoil fell by 93% in 2018 from 117,598 mt in 2017 to 7,649mt in 2018.

51% drop on the 2017 volume and a 58% drop when compared to 2016 volumes (532,803mt). Six main products were exported in 2018. These comprise gasoil, gasoline, LPG, Naphtha, Fuel Oil and ATK. For the year under review, Naphtha was the largest product exported. A total of 63,193mt, representing 40% of total exports in 2018. Exports of Naphtha shot up by as much as 62,999mt, compared to 194mt exported in 2017.

Total gasoil volumes exported stood at 55,351.46mt (25% of total exports). Exports volumes for the other white products were below 10,000mt for the year. Gasoline saw a drop of about 72% in 2018 from a total of 173,030.31mt in 2017 to 48,894.44mt in 2018. LPG also saw a drop from 40,331.96mt in 2017 to 4,809.36 mt in 2018 marking an 88% drop in export volumes. The significant drop in gasoil, gasoline and LPG exports accounted for the overall fall in export volumes for the year under review.

Total export volumes comprise re-export, transit and refinery export. Out of the total 48,894mt exported for gasoline, re-export volumes were 4,952mt representing 10% of total gasoline exports; transit volumes accounted for 43,941mt, representing 90%. Gasoline re-export volumes marked a 95% (109,210mt in 2017) and a 96% (129,108mt) drop, as compared to 2017 and 2016, respectively.

Out of the total 55,351mt of gasoil exports in 2018, re-export volumes accounted for 14% of total gasoil exports, transit accounted for 52%, while exports accounted for 34%. Total re-export

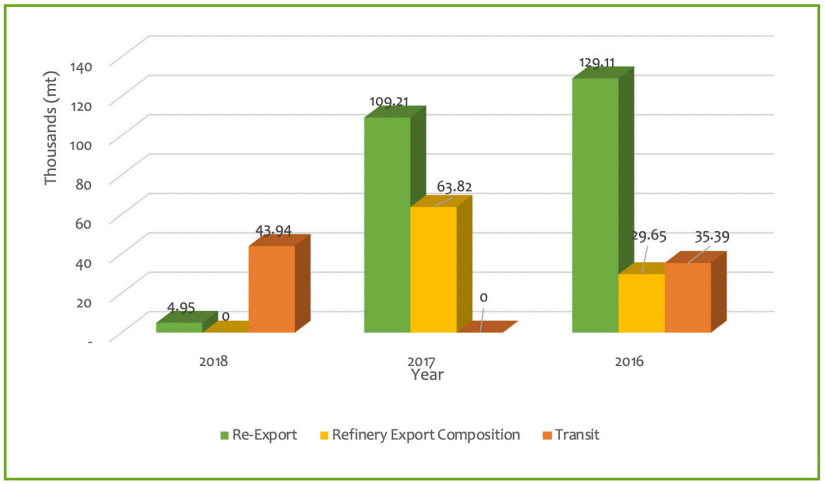


Figure 67: Gasoline Export Composition (2016-2018)

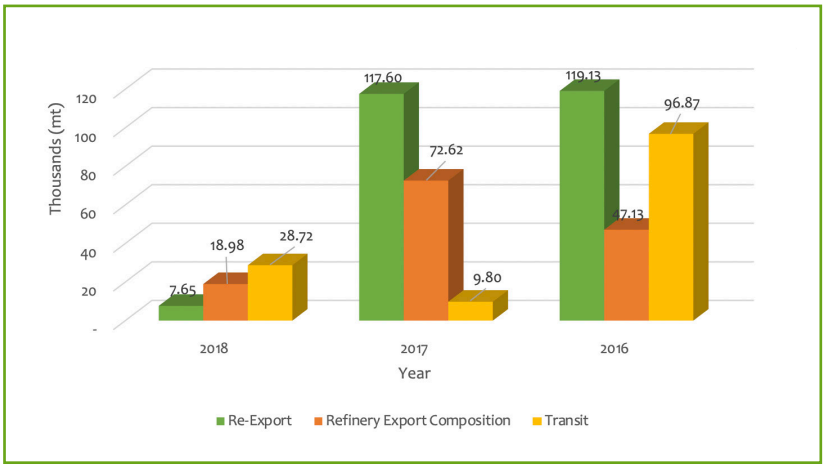


Figure 68: Gasoil Export Composition (2016-2018)

volumes for gasoil fell by 93% in 2018 from 117,598mt in 2017 to 7,649mt in 2018. Transit products also saw 193% increase between 2017 and 2018 from 9,800mt in 2017 to 28,720mt in 2018.

The 2018 average price was 16% and 17% higher than the 2017 average for gasoline and gasoil regular, respectively. This increase was 6.53 percentage points above the 2018 national inflation rate of 9.84%.

3.6 PRICING REVIEW

3.6.1 Pump Prices

Pump prices for Ghana's main consumer fuels, gasoline and gasoil regular, averaged GHS4.78/ltr, respectively, for both products for the period under review. This was 16% and 17% higher than the 2017 average of GHS4.11/ltr and GHS4.08/ltr for gasoline and gasoil regular, respectively.

This increase is 6.53 percentage points above the national inflation rate of 9.84% and implies that fuel prices placed an upward pressure on the consumer price index and must have negatively impacted consumers in their ability to optimise their spending or savings.

price of gasoline and gasoil were mainly driven by a 36.51% and 42% increase respectively in the Ghana Cedis CIF value which changed averagely from GHS1.85/ltr and GHS1.93/ltr in 2017 to a GHS2.53/ltr and GHS2.73/ltr in 2018 in gasoline and gasoil respectively.

A further analysis show that the Ghana CIF value was driven by a major surge in the average FOB price in the International market and slightly exacerbated by an 6% depreciation in the GHS against the USD in 2018.

The average Taxes and Regulatory Margins on the other hand exercised a downward pressure on pump prices as it fell by 6.77% and 5.65% for gasoline and gasoil, respectively, following a downward tax revision by Government. The key pump price determinants (IMP, FX Rate and taxes & Regulatory Margins) are further discussed in section 3.6.2,3.7 and 3.8.

The average Taxes and Regulatory Margins exercised a downward pressure on pump prices as it fell by 6.77% and 5.65% for gasoline and gasoil-regular, respectively, following a downward tax revision by Government.

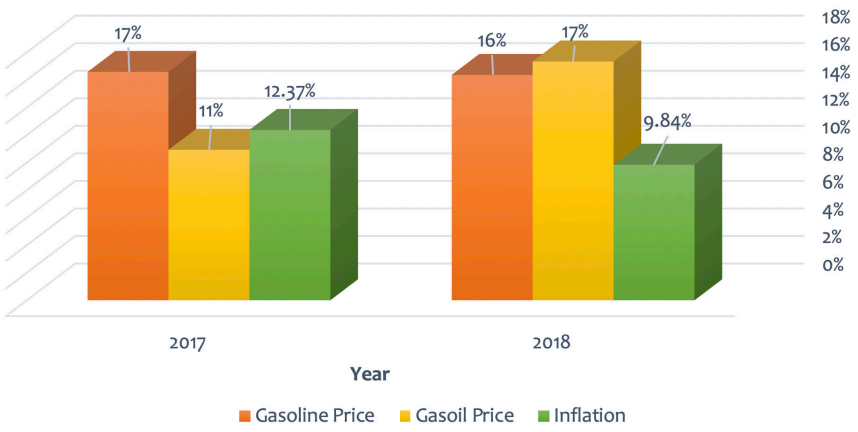


Figure 69: Changes in Gasoline and Gasoil Prices vs Inflation

The observation of fuel price changes in 2018 outstripping inflation is similar to observations in average gasoline prices in 2017 when compared to 2016. This was however different for gasoil which saw inflation outstripping its average price by 1.44% when compared to 2016 as can be observed in Figure 69.

The 16% and 17% increase in the average

As can be observed in Figures 70 and 71, the Ghana Cedi CIF value continued its dominance over the pump price structure by increasing its share of pump price from 45% and 47% in 2017 to 53% and 57% in 2018 for gasoline to gasoil, respectively. Taxes and regulatory margins fell in their share of pump prices, despite been the dominant factor in 2016.

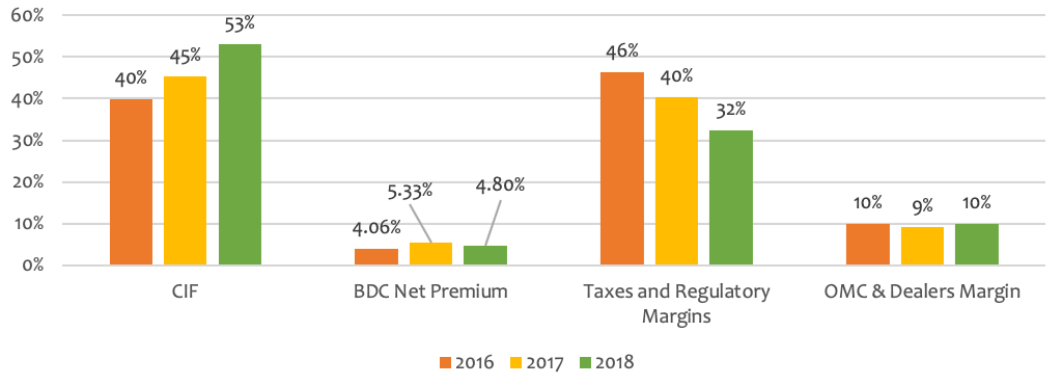


Figure 70: Composition of Average Gasoline Pump Price (2016-2018)

The BDC net premium (BDC gross premium less freight and international suppliers' margin) fell from 5.33% of pump price in 2017 to 4.8% in 2018, but remained above the 4.08% observed in 2016.

3.6.2 Taxes and Regulatory Margins (TRM)

Taxes and regulatory margins were Ghp154/ltr and Ghp 153/ltr for gasoline and gasoil, respectively for 2018. This was Ghp11.21/ltr and Ghp9.18/ltr lower

Government revised the PSRL in the second window of April until the second window of December downwards, to cushion the impact of the increases in the international market prices on local ex-pump prices.

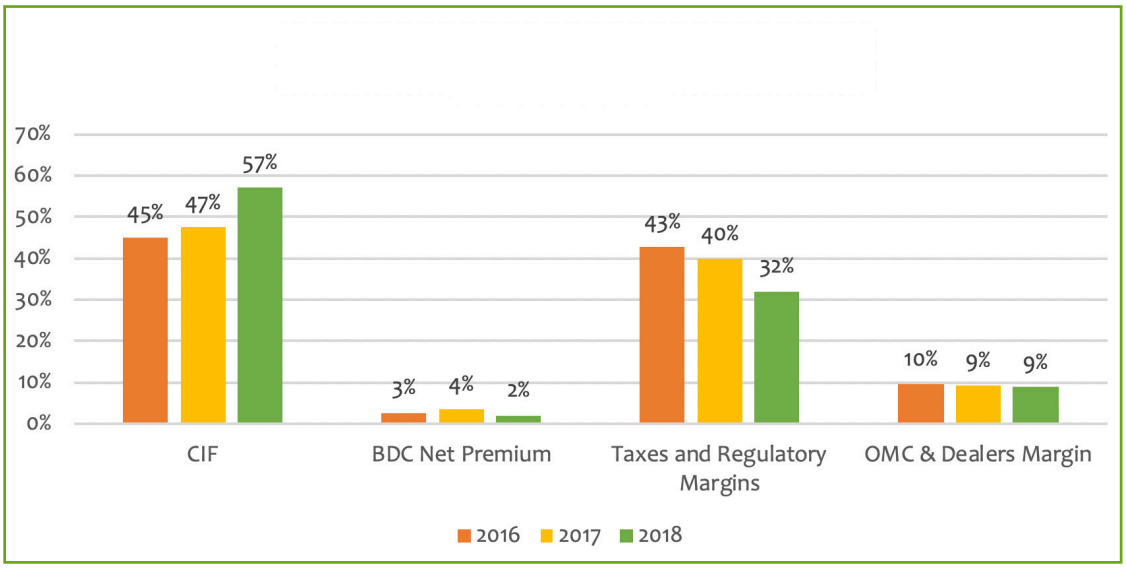


Figure 71: Composition of Average Gasoil Pump Price (2016 - 2018)

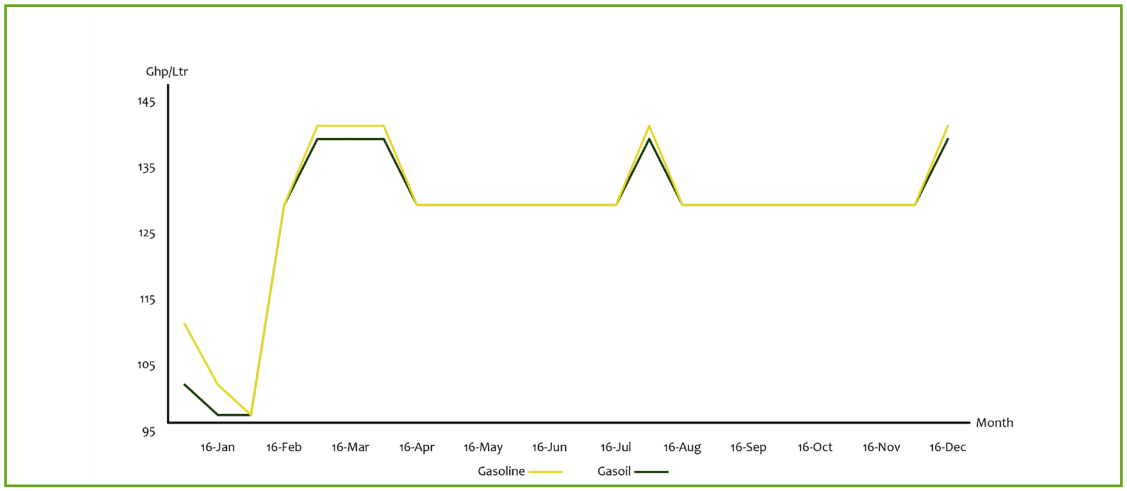


Figure 72: Gasoline and Gasoil Taxes (2018)

than taxes imposed in 2017.

The primary reason was the removal of the PSRL in the second window of April until the second window of December to cushion the impact of the increases in international market prices on local ex-pump prices. In 2018, however, the UPPF margin was revised upwards twice 2018. The margin was increased on 1st May 2018 from Ghp13.5/ltr to Ghp14.5/ltr and on 16th November 2018 from Ghp14.5/ltr to Ghp17/ltr.

Prices of gasoil and gasoline sold at the pumps in Ghana were the 2nd cheapest in West Africa.

Taxes for gasoline and gasoil for the year were Ghp 127.29/ltr and Ghp126.30/ltr. This represents 27% and 26% of pump price. Regulatory margins for gasoil and gasoline averaged Ghp26.98/ltr for both, representing 6% of pump price.

Ghana remains the only country in West Africa to have enforced price deregulation for its major products.

3.6.3 West African Pump Price Review

Within the West African sub-region, Ghana remains the only country to have enforced price deregulation for the major products in its market. Nigeria however has a dual pricing mechanism: on the one hand, its gasoil market is fully liberalized, while its gasoline market is regulated, and prices are subsidized periodically. The subsidy granted is computed as the difference between the Expected Open Market Price (EOMP) and the Approved Retail Price (ARP).

A trend of the prices sampled for gasoil and gasoline sold at the pumps in West Africa's major markets shows that prices of gasoline and gasoil sold in Ghana were competitive within the region. Prices displayed at the pump for the major West African countries (with the exception of Nigeria) were similar, falling within the range of 95 US cents/ltr and 140 US cents/ltr for both gasoil and gasoline according to CITAC.

CITAC's market report also indicates that gasoil and gasoline prices for the 2018 fiscal year averaged 103.67 US cents/ltr and 103.75 US cents/ltr, respectively. Prices of gasoil and gasoline sold at the pumps in Ghana were the 2nd cheapest in the sub-region at an average of 104 US cents/ltr. Although Ghana's market is deregulated, pump prices remain competitive within the sub-region, indicating that deregulation has been a good step and other countries can take a cue from it.

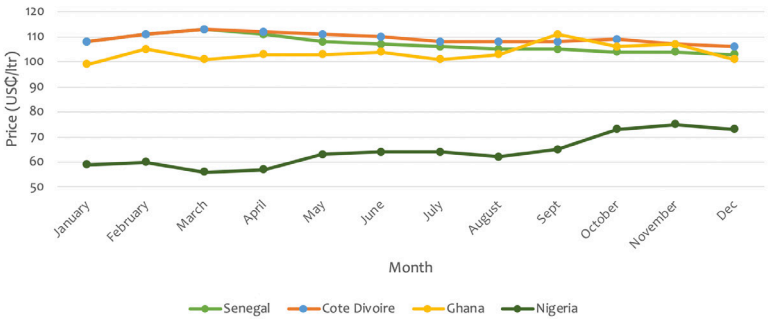


Figure 73: West Africa Gasoil Pump Prices (2018)

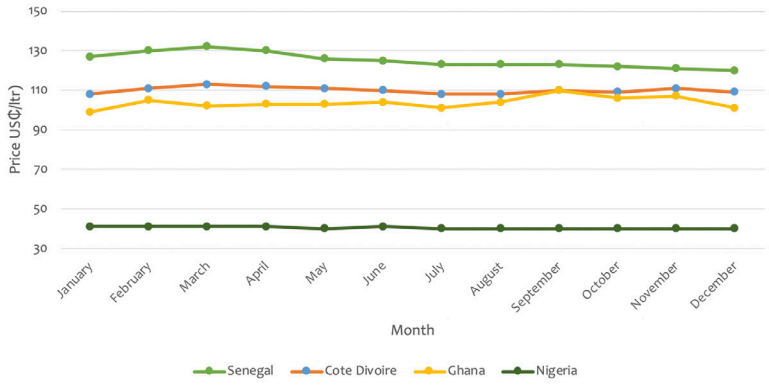


Figure 74: West Africa Gasoline Pump Prices (2018)

3.7 INTERNATIONAL MARKET PRICE REVIEW

Gasoline and gasoil prices started the year at USD600.11/mt and USD568.72/mt respectively. Gasoline prices peaked at USD753.60/mt in the first window of June. The primary cause for the spike during that period was the usual surge in gasoline demand during the summer in Europe and the Americas when increased road transportation activities by 'holidayers' are observed.

Prices fell markedly from the first window of November to the end of the year, riding on the back of the use of cheaper blend for gasoline during winter

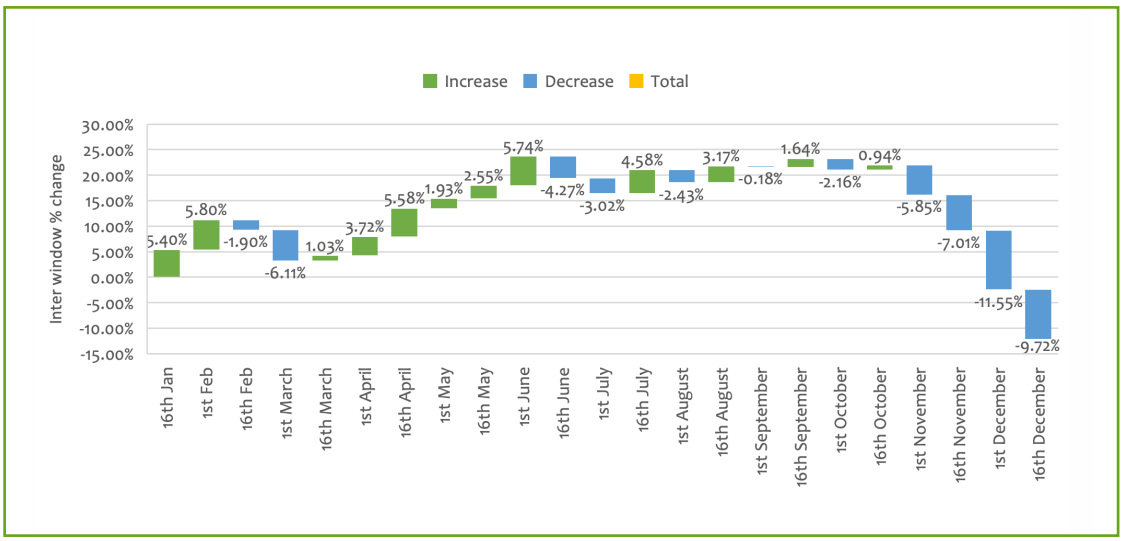


Figure 75: Inter-Window Average FOB Price Changes (2018)

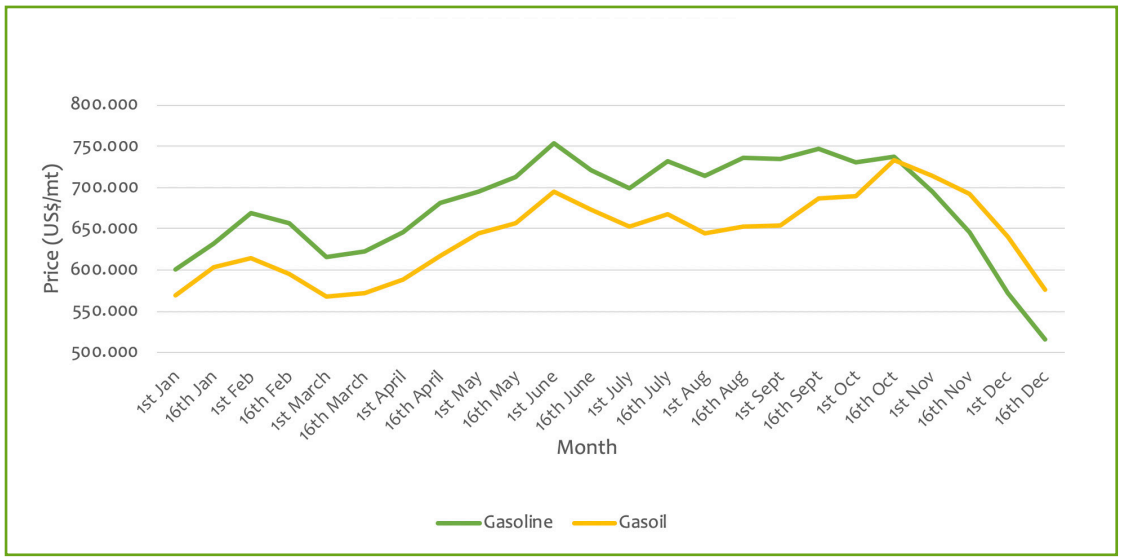


Figure 76: FOB Prices (2018)

The average 2018 International market prices for gasoline and gasoil increased by 22% and 33%, compared to 2017. This made it the primary driver of the pump price increases in 2018, accounting for about 53% of pump prices compared to 45% in 2017.

period, as well as an over-supply of gasoil and gasoline in the market. Stock build-up for gasoline topped more than 8mn bbls over the Christmas week; other distillates also exceeded 10mn bbls over the same period (oilprice.com, 2018).

International market prices for gasoline and gasoil averaged USD677/mt and USD641.51/t for 2018, representing a 22% and 33% year on year increase for both gasoline and gasoil, respectively. This made it the primary driver of the pump price increases in 2018, accounting for about 53% of pump prices compared to 45% in 2017.

Prices for 2018 have been the highest prices observed in the last 3 years. The average inter-window change for the year stood was -0.53% for gasoline and 0.16% for gasoil.

3.8 FOREIGN EXCHANGE

The average CBOD bank FX selling rate (FuFex) for 2018 stood at GHS4.6828/USD, marking a 6% depreciation from the average 2017 selling rate of GHS4.4088/

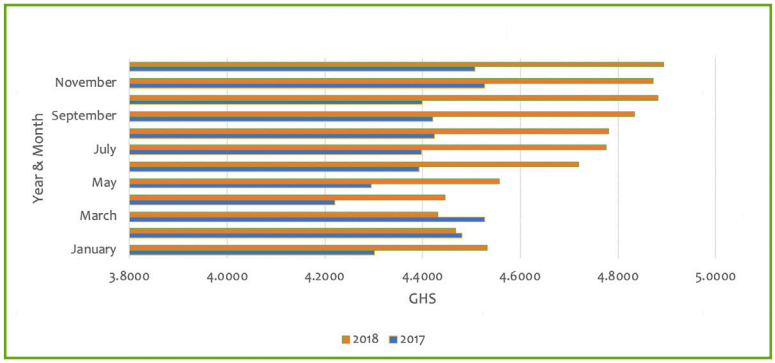


Figure 77: Average GHS/USD FX Rates (2017-2018)

The 2018 fiscal year witnessed a higher exchange rate volatility as compared to 2017 increasing traders' exposure to exchange rate risk with the year.

USD in the 2017 fiscal year. The FuFex for the year was about 900 pips higher than the average BOG interbank selling rate of GHS4.5924/USD. The FuFex for 2018 started the year at GHS4.5315/USD, representing a 5% increase year-on-year between January 2017 and January 2018. February witnessed the highest appreciation of the cedi against the dollar (1.43%) from GHS4.5315/USD in January to GHS4.4669/USD. June witnessed the highest month-on-month change with a 4% increase from the May average FX rate. The 2018 fiscal year witnessed a higher exchange rate volatility as compared to 2017 increasing traders' exposure to exchange rate risk with the year with a standard deviation of 0.18 as compared to 0.11 in 2017.

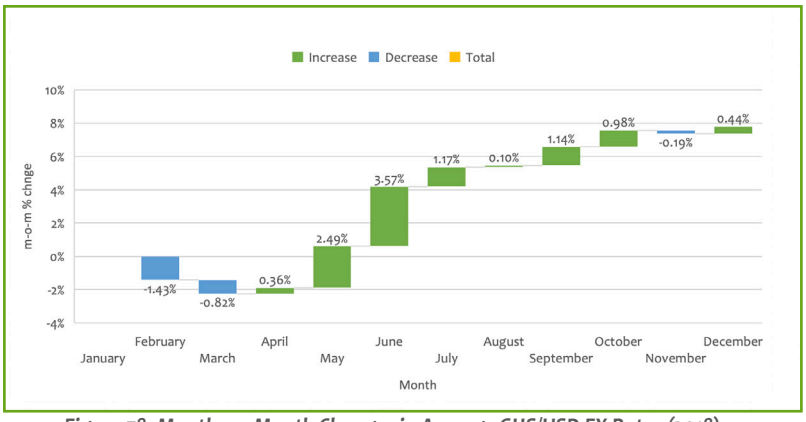


Figure 78: Month-on-Month Changes in Average GHS/USD FX Rates (2018)

3.7 COMPETITION IN THE BDC MARKET

In pursuit of the CBOD's mandate to coordinate and facilitate cooperation among BDCs, a study was commissioned to investigate the competition levels in the downstream petroleum sector and the various product markets for the period 2012-2018. The research methodology and key findings are reported below.

3.7.1 Methodology and Sources of Data

Data from 2012 to 2018 were obtained from the NPA. The data was explored for a deeper comprehension of competition among the BDCs in Ghana's downstream petroleum sector. The Herfindahl-Hirschman Index (HHI) is employed because of limited data and simplicity. It is also one of the most widely used concentration indices[19].

HHI is the sum of the squares of firm sizes measured in market shares. The HHI is of the form:

$$HHIn = \sum_{i=1}^{n} (Si)^2$$

Where, ***HHIn*** denotes the Herfindahl-Hirschman Index of the firms, S_i represents the (sales) market share of firm ***i***, the number of firms in the industry is denoted by ***n***.

The greater the concentration of output in a market of small number of firms (a high HHI), the more likely it is that, other things being equal, competition will be weak. Competition will tend to be vigorous or concentration is low when there are a large number of firms with small market shares in a market (a low HHI).

The HHI reaches a maximum value of 10,000 when a monopolist exists in the market where it controls 100% of the market (i.e. the HHI= (100)2 =10,000). Theoretically, the HHI approaches zero in a purely competitive market in which there are many firms with small market shares. For instance, assuming there are 100 BDCs in Ghana's downstream petroleum sector and at a particular year each BDC controls 1 percent (1%) of the total market shares then HHI will be 100.[20]

19 *Bikker J. A. and Haaf K. (2002). Measures of competition and concentration in the banking industry: A review of the literature.*

20 *Akomea S. Y. and Adusei M. (2013). Bank Recapitalization and Market concentration in Ghana's banking industry: A Herfindahl-Hirschman index analysis. Global Journal of Business Research 7(3)*

Hays H. F. and Ward S. G. (2011). Understanding market concentration: internet-based applications from the banking industry. Journal of Instructional Pedagogies.

Korsah K. B., Nyarko E. K., and Tagoe N. A. (2001). Impact of financial sector liberalization on competition and efficiency

The US Justice Department and Federal Trade commission released their latest guideline for approval of a merger using the HHI. The HHI is employed to give an overview analysis of competition in Ghana's downstream petroleum sector and in the various product markets.

3.7.2 Key Findings

According to the guidelines of the US Justice Department and Federal Trade commission, it could be seen that the entire BDC market is competitive. Also, competition has been improving over time from the period 2012 to 2018. HHI was 1443 in 2012 and 905 in 2018.

The markets that were highly concentrated as at 2018 are Kerosene, Premix, Gasoil (mines), ATK, Unified, Gasoil (rig), Fuel Oil (Both Industrial and Power), and LPG (Propane) Power. The markets that were competitive are Gasoil, Marine Gasoil, and Premium. The market that was moderately concentrated is Marine (foreign) and LPG (Butane) Domestic. See Appendix 15 for HHI data for the period 2012 to 2018. Both the gasoil and gasoline markets have been competitive since 2012 and Marine Gasoil has been competitive since 2015. Premix market was monopolised by Vihama for the period 2014 to 2016. LPG (propane) power was monopolised by Dome Energy Resources in 2018. The naphtha market was monopolised by Platon for the period 2016 to 2017.

It is worth noting that the Kerosene (industrial) market was monopolized by Ebony Oil in 2015 but it moved out of the market in same year. No BDC has traded in the Kerosene (industrial) market since 2015.

This study serves as a basis of improving competition as it highlights the available and untapped opportunities in the downstream petroleum sector.

According to the guidelines of the US Justice Department and Federal Trade commission, it could be seen that the entire BDC market is competitive.

in the Ghanaian Banking Industry. Research Paper. International Labour Organization 2001. ISBN92-2-112737-0. ISSN 1609-8382.

Photos from the 2019 Ghana International Petroleum Conference (GhipCon)

4

INFRASTRUCTURE REVIEW

STORAGE
- National Storage capacity increased to 2.18mn m³ in 2018 from 2.093m³ in 2017.
- Government controlled entities remained the largest storage providers of both petroleum and petroleum products.
- Tema Tank Farm Ltd. maintained its position as the largest private sector storage provider with a capacity of 192,000m³

UTILIZATION OF DEPOTS
- The national average tank-turn for all products (including crude) stood at 0.17 times per month for 2018.

THREATS TO PRODUCT SUPPLY
- Over-concentration of storage facilities in the Tema enclave poses a security challenge to the a viability of products across the country.
- The CBM remains the country's major facility for receiving petroleum products.

PROJECTS
- The Woodsfield project is set to be completed in quarter 4 of 2019.
- Quantum's LPG project has faced some delays due to technical challenges.

4.1 STORAGE

The country's storage capacity was augmented by the addition of Quantum Terminals' 69,059m³ storage facility and GOIL's 13,500m³ Marine Gasoil Facility at the Takoradi Habour. This increased the country's storage capacity to 2.18mn m³ in 2018 from 2.093m³ in 2017. Out of this, 1.44mn m³ (66.3%) was dedicated to refined products.

The Quantum Terminals facility includes a 33,503m³ storage capacity for AGO and a 33,557m³ for gasoline. The facility known as the Tema Oil facility has begun operations and is connected via an 18-inch pipeline to the Conventional Buoy Mooring (CBM) at Tema.

The country's gasoil storage capacity remained the highest at about 651,631m³ from 616,129m³ in 2017. Gasoil storage capacity represented 30% of total storage and 45% of total petroleum products storage. The completion of Quantum's Tema Oil Facility shored up gasoline capacity to 620,184.53m³. This puts the storage capacity of gasoline in 2018 at 29% of total storage as against 28.03% in 2017.

Government controlled entities remained the largest storage providers of both petroleum and petroleum products storage accounting for 66% (1.2mn m³) of national storage.

This marks a 4% drop from its 2017 share of

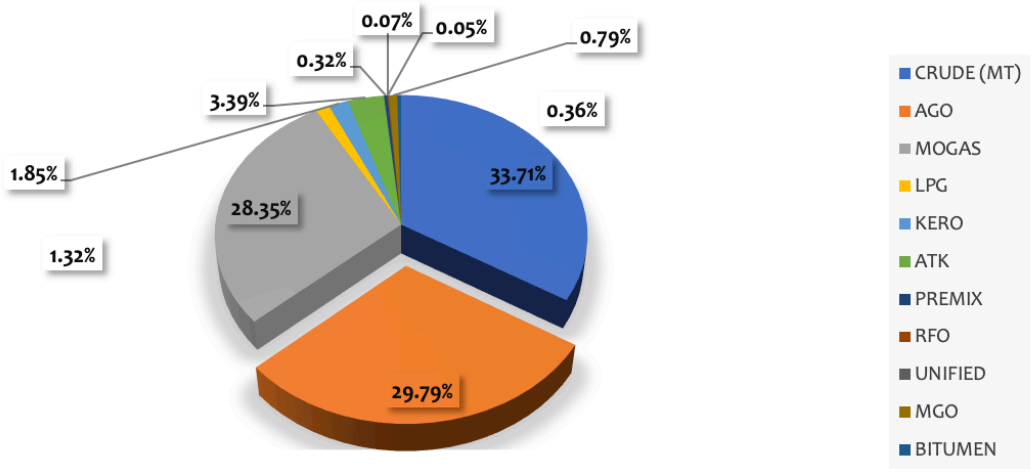


Figure 79: Storage Capacity by Products (2018)

The top 5 storage providers accounted for 83% of the national storage capacity.

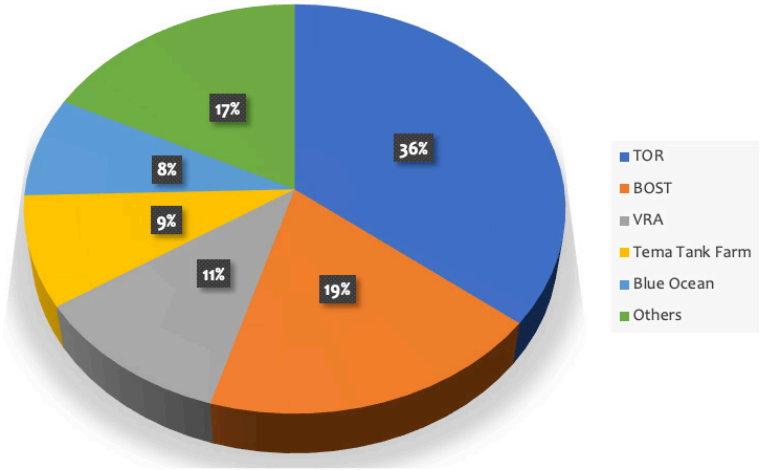


Figure 80: Top 5 National Storage Providers vs Others

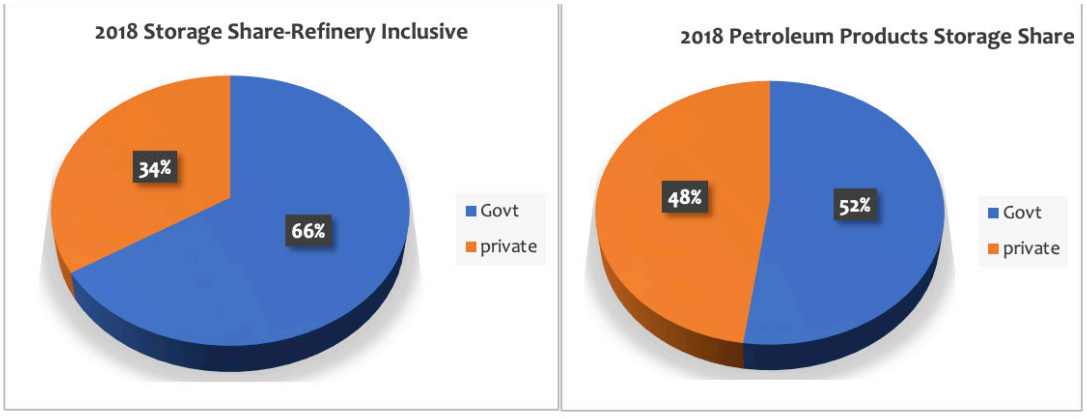


Figure 81: Storage Share by Ownership - Government vs Private Sector (2018)

storage. Their continuous dominance is driven by the crude oil capacity held by Tema Oil Refinery and Volta River Authority (VRA). Both entities provide 626,375 m^3 for crude oil which accounts for 28.64% of the national storage and 84.95% of crude oil storage.

The private sector grew their share of petroleum products storage capacity by 3% reaching 34% in 2018 as against 31% in 2017 (from 648,295 m^3 in 2017 to 742,546m^3 in 2018). This maintained the private sector's hold of the market as the largest petroleum products storage

NATIONAL PRODUCT STORAGE CAPACITY 2018

DEPOTS/ PRODUCTS	STATE-OWNED						PRIVATELY-OWNED											TOTAL STORAGE (M3)
	VRA	BOST	TOR	GHANA GAS	SAHARA	ASOGLI	CIRRUS	CHASE	FUELTRADE-TFC	PLATON	BLUE OCEAN	GHANSTOCK	JUHI	QUANTUM	VIVO	TOTAL	GOIL	
CRUDE (MT)	242,400	-	383,976		-	39,000	-	72,000	-	-	-		-					737,376
AGO	2,000	219,691	117,085		28,166		34,000	70,000	47,337	1,150	72,700	24,000	-	35,502				651,631
MOGAS		169,375	201,760		15,201		29,000	50,000	53,691	-	67,600	-	-	33,557				620,185
LPG		-	8,913	6,400	-		-	-	4,000	-	8,000	-	-	1,500				28,813
KERO		24,796	15,565		-		-	-	-	-	-		-					40,361
ATK		-	44,608		-		3,000	-	-	-	25,000		1,500					74,108
PREMIX		-	7,016		-		-	-	-	-	-		-					7,016
RFO		-	1,127		-		-	-	-	300			-					1,427
UNIFIED		-	-		-		-	-	-	1,150	-		-					1,150
MGO																	17,350	17,350
BITUMEN															3,651	4,191		7,842
TOTAL	244,400	413,863	780,050	6,400	43,367	39,000	66,000	192,000	105,028	2,600	173,300	24,000	1,500	70,559	3,651	4,191	17,350	2,187,260

Table 15: National Product Storage (2018)

provider at 52%. The growth is a result of the operationalization of the Quantum Terminals Facility.

Tema Tank Farm Ltd. maintained its position as the largest private sector storage provider

Tema Tank Farm Ltd. maintained its position as the largest private sector storage provider with a capacity of 192,000m³ representing 25.9% of the total private storage, followed by Blue Ocean which provided 23.3% of the private storage capacity.

4.2 INFRASTRUCTURE

4.2.1 Kpone Booster Pump

The Kpone booster pump station boosts product transfer to the various depots. The normal product transfer pressure from the vessel is about 7.5 bar, pumping about 700liters per minute. Once the booster is triggered, pumping capacity moves to over 1,200 liters per minute. Petroleum products such as diesel, petrol and crude are pumped through the station to facilities such as the BOST Accra Plains Depot (APD), TOR, Fuel Trade, Blue Ocean, Tema Tank Farm and others.

The ABB in Tema/ Kpone general area accounted for 74% of total of all imports in 2018 with a total volume of 2.71mn mt as a compared to 2.73mn (70%) in 2017.

The booster station consists of four product pumps and a 1000m³ water tank. A 36inch pipeline transports crude from the ABB whiles an 18-inch pipeline transports AGO and PMS through the booster station using the "pig-in"[21] system.

4.2.2 Genser LPG Discharge Facility

Genser Energy operates two (2) pipelines at the Takoradi GPHA jetty, one 8inches and the other, 4inches. The company has the infrastructure to discharge LPG from vessels into BRVs at the port, with a maximum of four BRVs at a time. The maximum discharge rate at the facility is 120mt per hour (which is 30mt per BRV for four BRVs), with a pump rate of 16-bar. Each BRV spends a maximum of 45mins to an hour per loading. The facility can also undertake reverse discharge from Oil Marine Jetty to the Old Bauxite Jetty and vice versa. The facility discharges both propane and butane.

4.2.3 Mooring and Jetty

The industry continued to operate with four main discharge/loading facilities: the All Buoy Berth (ABB), the Single Point Mooring (SPM), the Tema Oil Jetty and the Takoradi Oil Jetty. The ABB with its 50,000mt deadweight capacity remained Ghana's primary discharge access facility. The ABB which is linked by a network of pipelines to tank farms in Tema/Kpone general area accounted for 74% of total imports in 2018 with a total volume of 2.71mn mt as compared to 2.73mn (70%) in 2017.

4.2.4 Threats to Products supply

The over concentration of storage facilities in the Tema enclave poses a security challenge to the availability of products across the country. Any challenges with the delivery of product and receipt in and out of the enclave can pose major risk to the supply of products across the country. Key risk factors with respect to this include the CBM, the road network in and out of the enclave as well as safety protocols within the general enclave.

The CBM remains the country's major facility for receiving petroleum products. The situation exposes the country to supply risk in the event of damage to the facility. For example, on 1st April 2017, around 2am, a wooden craft caught fire 50meters away from a vessel that was discharging petroleum products. Vessels scheduled to discharge during the period were delayed in order to resolve the issue. Reports also indicate that fisher folks hook their anchor to the CBM when carrying out fishing activities. They release the anchor from the CBM when the approaching vessel is a few meters away. In the event of mistiming on the side of the fisher folks, a vessel may collide into the canoes causing damage and potential loss of lives.

Besides the risk of damage to the CBM unit itself, damages may also be done to pipelines and may directly affect the discharge of products via the CBM.

The overdependence on a 13-year old mooring facility, which is yet to undergo

21 *Pipeline pig is a maintenance tool used to clear pipelines to ensure lines run smoothly*

its overdue major refurbishment, to feed the country is the biggest infrastructure risk to the country's petroleum product supply. The implications are of national security significance. It is, therefore, imperative that steps are taken to develop an alternate facility competent enough to insulate the country from this risk.

4.2.5 Utilization of Depots

The national average tank-turn for petroleum and petroleum products stood at 0.17 times per month for 2018. The tank-turn for products storage facilities was 0.25 times per month, while tank-turn for crude storage stood at 0.05times per month. Compared to the global minimum tank-turn of 1 per month, Ghana's storage facilities are grossly underutilized. The poor crude tank-turn has been a result of the low operating level of Ghana's largest refinery, the Tema Oil Refinery, as well as the move from Light Crude Oil (LCO) as primary fuel for power to lean gas.

Storage facility for Residual Fuel Oil (RFO) had the highest turn around activity at 10.64 times per month. Unified (naphtha) tanks were also highly used within the year, with a tank turn of about 4.47 times per month. Storage facilities for gasoil and gasoline were underutilized, with tank-turns of 0.22 times per month each. The tank-turn for crude was the lowest for the year, at 0.05 times per month. Residual Fuel Oil and Unified (naphtha) were the only products with tank turns above the globally accepted minimum of 1 per month.

Based on extrapolated data, the Tema Tank Farm (TTF) was the most preferred storage depot, securing about 33% of imports. APD and TOR were the second and third preferred depots warehousing 25% and 14% of imports, respectively.

The Tema Tank Farm's competitive advantage is in its direct linkage to the CBM via the pipeline. Other facilities such as TFC, APD and the Cirrus Oil Terminal (COT) are not connected directly to the CBM. These facilities receive products from the CBM via a pipeline connected from TOR to their facilities. BDCs which lift product from TFC, COT and APD must pay a handling cost of $2000 whenever TOR opens its valve for products to flow.

In addition, to increase the pressure when pumping products from the CBM to APD and TFC, an extra cost of about $1/mt is incurred on the use of a booster which is payable by the depot and transferred to the end price of the BDC lifting the product. The running cost, therefore, at these facilities are higher relative to TTF. Quantum's new facility, Tema Oil Facility, is better placed and can gain some economic advantage. It is connected directly to the CBM, via an 18-inch pipeline. This eliminates the handling cost payable at the other depots. However, it has a longer pipeline connection to its facility as compared to that of TTF, which

The national average tank-turn for petroleum and petroleum products stood at 0.17 times per month for 2018.

Compared to the global minimum tank-turn of 1 per month, Ghana's storage facilities are grossly underutilized.

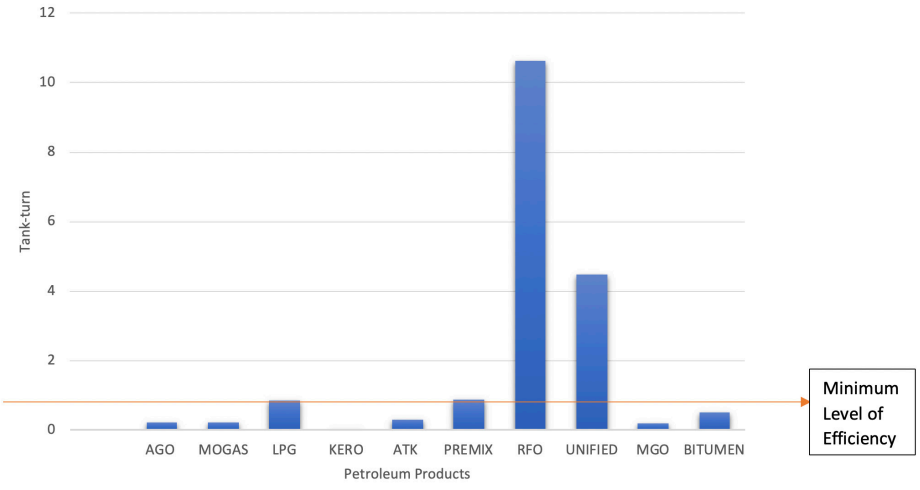


Figure 82: Tank-Turn Rate per Month (2018)

will require the services of a booster in pumping products, thus an extra cost may be incurred.

The commissioning of the projects will increase total national storage capacity (for petroleum and petroleum products) by 11.90% to 2.45 mn m³ from the existing 2.18mn m³.

4.3 PROJECTS

The Woodsfield project made up of 61,372m³ of gasoline and 63,400m³ of gasoil capacity is set to be completed in quarter 4 of 2019. Quantum's LPG project has faced some delays due to technical challenges. It is expected to have about 35,502m³ of storage capacity, broken down into a 31,600m³ dedicated to power generation and 1,200m³ to domestic consumption.

Another BDC is constructing a 100,000m³ Tank farm in the Kpone Industrial Area. The Tank farm is expected to have 50,000m³ storage capacity, each dedicated for the storage of gasoline and gasoil. The project, which commenced in February 2017 is expected to be completed in December 2019.

The commissioning of the projects will increase total national storage capacity (for petroleum and petroleum products) by 11.90% to 2.45 mn m³ from the existing 2.18mn m³.

THE GAS SECTOR: A PERSPECTIVE FROM THE AFRICA CENTRE FOR ENERGY POLICY (ACEP)

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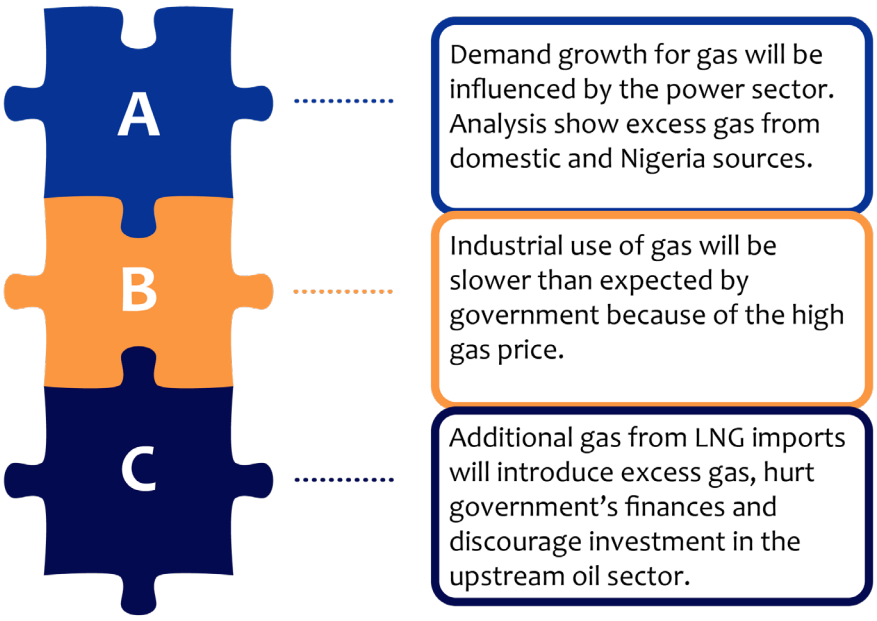

Smoothening the gas demand and supply scenario: The case for realistic planning to improve confidence in Ghana's gas market and reduce risks on public finances

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5.0 INTRODUCTION

The importance of natural gas to Ghana is established to be enormous; for power generation and in recent times, for industrial growth. In the electricity sector, more than 50% of demand rely on thermal plants which can use natural gas, the cheapest among the fuel options.

The Ghana Grid Company (GRIDCo) estimates that the growth in generation and demand on the grid will depend largely on thermal plants, estimated to reach about 2700MW by 2022.

The commitment of government therefore has been to increase the availability of natural gas to allow fuel switching from diesel, Residual Fuel Oil (RFO), Heavy Fuel Oil (HFO), light crude oil etc.

The industrial consumption largely remains aspirational. Today, only about 8mmscfd of gas is consumed by industry in Ghana. There are existing businesses that can switch to the use of gas, but they remain impacted by either access to transmission infrastructure or the economics of the fuel.

Ghana looks to two sources for supply of gas: imports and domestic production. The imports will come from Nigeria through the West Africa Gas Pipeline (WAGP) and Liquefied Natural Gas (LNG). The domestic sources are expected to come from producing oil and gas fields in the short to medium term, and the long term, from additional investments in the offshore basins of Ghana to discover more oil and gas resources.

There are existing businesses that can switch to the use of gas, but they remain impacted by either access to transmission infrastructure or the economics of the fuel.

In the past, the Nigeria gas was not reliable, mainly on account of pipeline attacks and debt from default in payments for gas supplied to VRA. This situation, coupled with high demand projections from the Energy Commission, brought to the fore policy decision to diversify the imports through LNG.

In recent times, supply has been fairly stable under a new arrangement to offtake gas through the issuance of letters of credit (LC). In addition, government is proceeding with two LNG projects which continue to send mix signals to the finances of government and the investors in the local gas market. This is fuelled by the po-tential of oversupply of gas which poses risk to the cash flows of the local suppliers.

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In 2017, ACEP released an advisory paper[22] on the LNG projects that were on the horizon against projected demand for electricity. Electricity demand at the time was, primarily, the most potent option for gas utilization. The Centre saw a big risk with long-term commitments to LNG supply which the country was considering. The potential cost to Ghana was estimated to be in excess of USD6.8 billion.

This paper is a follow up to re-examine the gas supply scenario for Ghana to account for new dynamics in the gas market and consolidate the perspectives of industry and relevant stakeholders in the gas market.

This study assesses the demand and supply scenarios for gas in Ghana.

5.1 OBJECTIVE OF THE STUDY

This study assesses the demand and supply scenarios for gas in Ghana and whether demand plans can meet the supply of gas.

Specifically, the study seeks to:

a) Provide a realistic view of the time of use of gas need of Ghana;

b) Provide an analysis of the costs, benefits and risks associated with limited as well as excess gas supply;

c) Analyse options available for Ghana in terms of gas usage and provide guidelines on the best option for Ghana;

d) Provide information for all stakeholders on the risks of both limited and excess supply of gas.

In preparation for the study, the Africa Centre for Energy Policy (ACEP) reviewed available public information on Ghana's gas industry. ACEP also met with government officials, regulators and industry participants, including producers and consumers, and potential gas users. While all these discussions remain confi-dential, the information and understanding gained from these discussions have provided useful background information for the study.

5.2 THE INTERNATIONAL GAS MARKET AND THE BASIS FOR GLOBAL GAS INDUSTRY DEVELOPMENT

For several decades, oil and natural gas have become the most important primary energy sources for most countries and continues to enjoy an important standing in the structure of global energy consumption. Oil consumption accounts for 34% of global primary energy consumption, with natural gas account-ing for 23%, and coal 28%[23]. The United States Geological Survey (USGS) provides a resource basis for further development of the global natural gas industry. Their assessment show that globally, technically

22 *Liquefied Natural Gas (LNG) Supply to Ghana: The Politics and the Reality. Availabe at http://bit.ly/cbodacep*

23 *BP Statistical Review of World Energy 2018*

recoverable resources of conventional oil (including natural gas liquids) are 255 billion tonnes, and globally, technically recoverable resources of conventional natural gas are 462 trillion cubic metres. For unconventional gas resources (coalbed gas, tight gas and shale gas) and the future of its exploration and development, the appraisals put the global remaining technically recoverable resources at 328 trillion cubic metres.[24] This implies that oil and natural gas will continue to dominate the structure of global primary energy consumption for the foreseeable future.

Several reasons can be adduced for the rapid development of the global gas market. The recent ability of the US to produce gas from unconventional sources using 'fracking' technologies has contributed immensely to the growth in the supply side and impacted on market prices of the global gas industry. Before that, the development of Liquefied Natural Gas (LNG) improved the tradability of natural gas beyond the limitations of conventional trade through pipelines. This allowed gas to be moved across oceans which was not possible in the early years of gas trade. Floating and Storage Units (FSUs) and Floating, Storage and Regasification Units (FRSUs) for LNG, which are available for leases, have also eliminated the need for large upfront investments in onshore regasification and storage facilities for gas importers. This has made the import and sale of Liquefied Natural Gas (LNG) on a cargo-by-cargo basis easier, in place of the previous predictable and long-term contracts between producers and buyers.

The use of gas will continue to rise to reduce the importance of oil, which is significantly used to fuel automobiles. Increasingly, natural gas has become versa-tile and pushing its adoption to greater limits. Gas resources are favoured for their environmental benefits of emitting significantly lower levels of carbon. In most countries today, gas has significantly replaced crude oil-fired generation turbines. In Asia and parts of South America, the use of gas for transportation is rising to reduce the consumption of petrol and diesel.[25] The growth in electric vehicles means more gas generated electricity will be required to charge the cars.

The use of gas will continue to rise to reduce the importance of oil, which is significantly used to fuel automobiles.

The impact of these and other developments in the industry have kept interna-tional prices of gas at a level that makes natural gas a competitive energy op-tion for most countries. Therefore, in many countries today, there is gas available on the market at competitive prices for various applications. Countries in temperate regions of the world demand gas for space and water heating, cooking, electricity generation and application for petrochemicals and industrial heating. Most African countries have very low or negligible demand for gas for these purposes. The primary demand for gas is for electricity production, though in recent times some countries such as Nigeria have started the produc-tion of fertilizers and other petrochemical products.

In sub-Saharan Africa, electricity supply is often unreliable and erratic, with a huge mass of the population without access to electricity. Indeed, the Africa Development Bank's *New Deal on Energy for Africa* reports that over 645 million Africans have no access to electricity. The continent also records the lowest power consumption per-capita with an estimated 181 kWh per annum, compared with 13,000 kWh and 6,500 kWh in US and Europe respectively[26]. Bridging this energy gap is expected to be influenced by the growing demand for cleaner sources of power: largely renewables and gas, which is the cleanest in the hydrocarbon family.

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The result of the electricity access problem is the fact that it undermines investments, economic growth and job creation. Jobs, lives and investments are lost from the unreliable supply of electricity. The impact of increased

24 *Chengzao, J., Yongfeng, Z., & Xia, Z. (2014). Prospects of and challenges to natural gas industry development in China. Natural Gas Industry B, 1(1), 1-13.*

25 *Shi (2018). Natural gas in East Asia's Energy transition*

26 *The New Deal on Energy for Africa, AfDB*

energy use and economic growth of an economy is an almost settled debate in literature. Bacon and Kojima (2016) [27]observe that generally, adequate supply of energy is an antecedent to economic development.

Several African countries like Mozambique, Egypt, Tanzania, Nigeria, and recently Ghana are significantly endowed with rich gas reserves, most of which are yet to be developed to their full potential.

Increased electricity access has been heavily linked to increases in income, consumption and employment.

Given the importance of reliable energy supply to economic growth, the development of a gas industry in Africa can be a major contributory factor to satisfying the primary energy needs of the continent. Several African countries like Mozambique, Egypt, Tanzania, Nigeria, and recently Ghana are significantly endowed with rich gas reserves, most of which are yet to be developed to their full potential. This presents the possibility for the development of domestic gas markets for cheap, flexible gas-fired electricity production in these countries, and for export.

5.3 OVERVIEW OF THE GAS INDUSTRY IN GHANA

Gas market development in Ghana is anchored on electricity generation to provide reliable, affordable and sustainable power to propel economic growth and development.

Like many other sub-Saharan African countries, Ghana's primary demand for natural gas is to produce electricity, with some generally low demand industrial application. With the increasing unreliability of the hydro plants due to changing rainfall patterns, it became imperative to look for other reliable, affordable and sustainable power generation sources. Consequently, the country focused on introducing thermal plants into its generation mix.

These plants were initially powered by liquid fuels (HFO, LCO) but were over time made to run on gas as a cheaper alternative. Thus, gas market development in Ghana is anchored on electricity generation to provide reliable, affordable and sustainable power to propel economic growth and development.

Ghana started using natural gas to boost its power generation in 2009 by importing natural gas from Nigeria through the West Africa Gas Pipeline (WAGP), an offshore gas pipeline connecting Takoradi and Tema in Ghana with Nigerian gas fields. This has however not been without challenges of unreliable supply of gas, which partly contributed to the long spell of power crises in the country from 2012 to 2015. Subsequently, Ghana began the commercialization of its own resources from discovered oil and gas fields in the Western Basin of the country.

Three large offshore oil and gas fields are in production in the Western Basin. One of the fields is the Jubilee field with associated gas reserves estimated at 490 Billion cubic feet (Bcf) out of which about 100Bcf has been consumed. This leaves about 100Bcf of remaining free Foundation Gas Volume from the field. The rest are Tweneboa-Enyenra-Ntomme (TEN) fields with associated gas re-serve of 363 Bcf and the Sankofa field with non-associated gas reserves of 1,107 Bcf. Other proven discoveries which are yet to be developed include the Mahogany and Teak discoveries with total reserves of 130 Bcf which will be devel-oped as part of the Greater Jubilee Full Field.

ENI Ghana as part of its Akoma exploration prospect, has recently announced the discovery of more gas and condensate in Cape Three Points Block 4, with pre-appraisal estimates of between 550 and 650 Bcf of gas[28]. The Pecan Field operated by Aker has gas fields estimated at an average of 669bcf (P50 estimate). At the time of developing Ghana's Gas Master Plan (GMP)[29] most of the domestic gas resources were under development. Therefore, the plan projected the need for LNG imports in the short term to augment gas supply. The dynamics are not the same today. Domestic sources are currently enough to meet demand for gas in the short to medium term.

There is also the potential for more gas

27 *Bacon and Kojima (2016)*

28 *ENI announces Akoma discovery in CTP-Block 4, offshore Ghana [Accessed here: https://bit.ly/2vZ4opk on 14/05/2019]*

29 *Gas Master Plan, 2016*

reserve discoveries as Ghana rolls out an aggressive programme to encourage exploration for both onshore and offshore fields. Six exploration blocks were put out for awards through an open contract-ing process; both competitive bidding and direct negotiation. This was to ensure that capable companies are awarded the blocks. The outcome of the process may not be as expected, as some of the prequalified super majors pulled out of the process. However, most of the companies who are going through the process are tested companies such as Tullow and ENI. Again, the super majors are still around negotiating for blocks. This could be important for the future gas supply outlook.

The three producing fields can together produce at least 315mmscfd: 180mmscfd from Sankofa, about 135mmscfd from the Jubilee and TEN fields. These domestic potentials have been suppressed to less than 100mmscfd through the early part of 2019, because of inadequate infrastructure to transmit the gas to demand centres. It is significant to note however, that the financial consequences of failing to consume all of the gas could not be suppressed.

The Sankofa gas is being paid for, though the full volume is not being consumed because of the "take or pay" commitment from the government (see ACEP paper on OCTP gas utilisation).[30] The companies who do not have the take or pay arrangement governing gas production are often told to suspend production or reinject their associated gas at no cost to the state because the economics of those projects hinge on oil production.

The situation is impacting negatively on investment attraction and the attractiveness of the gas market to existing investors. In the recently-submitted Plan of Development (PoD), submitted by Aker Energy, the company is proposing to reinject the associated gas to optimize oil production. Though justification was given for gas reinjection to optimise oil production, the fears of the company of the instability in the gas market cannot be discounted in analysing the attitudes of the investors; *Aker is quoted in the* PoD as saying: *"There is a situation with surplus of gas to the domestic market for the coming years. This market situation represents a challenge for stable and predictable offtake of the Pecan associated gas, as well as determining the gas sales price"*. Arguably, the investor sees the risk in contemplating gas export to the domestic market, which remains unstable and risky.

5.4 GAS DEMAND SCENARIOS IN GHANA

Currently, gas is mainly used for power generation. About 97 percent of gas supply is used for power-generation, while the remaining is for industrial utilisation. The industrial demand is, thus, currently very low with only a few ceramics producers taking the gas.

The Ghana Gas Master Plan identifies other potential industrial uses of gas, including the textile, cement, steel, paper and fertilizer industries, but there has been very little effort to stimulate demand from these industries. The plan carefully categorised the options of gas utilisation according to their risk levels of possible adoption in the country.

The power sector was noted to be the most urgent demand and economically attractive option for Ghana. Gas for cement and clinker production was rated the second most attractive option, if Ghana could economically build the needed gas infrastructure to link limestone deposits to gas sources.

The third option was for Ghana to consider supplies to industrial clusters that could implement cogenerations, i.e. the use of gas for electricity and the residual heat for other industrial processes. Compressed Natural Gas (CNG) was also proposed for large fleet of commercial buses and taxis.

There was also recommendation for the use of gas for capital intensive industries,

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The Ghana Gas Master Plan identifies other potential industrial uses of gas, including the textile, cement, steel, paper and fertilizer industries but there has been very little effort to stimulate demand from these industries.

30 *ACEP's Comments on the OCTP Utilization Challenges (2019). Available at http://bit.ly/cbodacep1*

such as urea, methanol and aluminium, which are a high-risk option due to their high capital investment requirements. The Plan, therefore, could not recommend them for implementation during the formative stages of the gas market. Certain global and local factors were identified as risks to the options for fertilizer in particular. These include the required low gas price, competition from fertilizer producers and subsidies provided by governments in those markets globally.

Aker Energy may not commercialise the Hess gas as anticipated in the GMP. Aker is proposing an oil optimisation strategy that applies the available gas for reinjection, which ACEP is largely convinced that it is as a result of poor market conditions.

The conclusions of the Gas Master Plan (GMP) remain largely relevant today. However, there are emerging realities that shape certain fundamental assumptions. For example, the assumptions for domestic supply anticipated a high case scenario of about 210mmscfd for Sankofa gas. This is currently about 300mmscfd with additional investment on the production infrastructure and 246mmscfd without further investment, as indicated by the company to government.

Also, Aker Energy may not commercialise the Hess gas as anticipated in the GMP. Aker is proposing an oil optimisation strategy that applies the available gas for reinjection, which ACEP is largely convinced that it is as a result of poor market conditions, as also confirmed by Aker in their PoD.

5.5 PROJECTIONS OF GAS DEMAND IN GHANA

5.5.1 Power demand

ACEP estimates that the average power demand by the end of 2019 will be approximately 2436MW.

Actual electricity demand for 2016 and 2017 were 2087MW and 2077MW respectively (Energy Commission, 2018).[31] The estimated demand for 2018 was about 2200MW, averaging statistics from the Ghana Wholesale Electricity Market Bulletins. Based on the daily demand statistics from the Ghana Grid Company (GRIDCo) and the Energy Commission, ACEP estimates that the average power demand by the end of 2019 will be approximately 2436MW.

Using these values, the thermal power projections were extended to the year 2030 using the exponential smoothing method. Exponential smoothing is a forecasting method that predicts future values based on a weighted linear combination of past observations, taking into consideration the seasonality and the trend of the data. In exponential smoothing, the older observations decay exponentially, resulting in lower weights, while more recent observations are given higher weights. This was used in order to smoothen distortions in planning and forecasting as have been observed with Energy Commissions' projections. In 2014, for example, Energy Commission projected a 10% annual growth rate in energy demand. This would have pushed current demand to about 3100MW in 2019, instead of the current situation of about 2400MW, which is 700MW, short of aspiration.

Table 10 presents projected demand for thermal energy from 2019 to 2030. Based on the results of the projections using the Exponential Smoothing Method, three scenarios are projected; the base case (or most likely), the lower case (the pessimistic) and the upper case (the optimistic) scenarios. The lower-case and upper-case scenarios were obtained from the lower and upper limits of the 95 percent confidence intervals for the estimation of the projected power demand.

For the purpose of this analysis, the lower-case scenario was ignored. As observed from the table, demand for total power (hydro and thermal) is expected to range between 3700MW and 3900MW by the end of 2030. On the assumption that hydro power-generation is to be constant for the period under review (an average of 1120MW), it is projected that average demand for thermal energy can increase up to between 2400MW and 2800MW, with the most likely scenario being approximately 2600MW.

Table 16 also presents the projected gas needs for thermal energy from 2019 to 2030. These values are based on the assumption that thermal plants run

31 *Energy outlook 2018*

solely on natural gas. For the base case, gas needs can rise up to 494mmscfd by 2030, all things being equal. Gas needs for thermal for the upper case scenarios can rise up to 534mmscfd.

It is important to note that these projections are rather conservative and have not taken into account two major factors that have the ability to suppress the growth of grid energy demand. Firstly, the potential for increased renewable energy penetration which is fuelled by reducing costs of renewable energy technologies and the increasing awareness of this reality.

In addition, self-generation is increasingly becoming an alternative for commercial users as a hedge against high end-user tariffs, which is expected to further increase with upward tariff adjustments. This concern, is even expressed by the Energy Commission of Ghana as they indicated that:

"The relatively high end-user tariff is likely to have contributed to the significant surge in the installation of alternative or captive or self-electricity back-up generation largely by the non-residential and industrial customers of the utilities.

The said customers, apparently, found the self-back-up generation more cost-competitive, compared to the grid as their cumulative electricity consumption units exceeded 300 units per month during the year and, thus, making it more attractive for the switch at that consumption level. If this trend continues, it could worsen the income and profitability of the existing electricity utility companies." (Energy Commission, 2018).

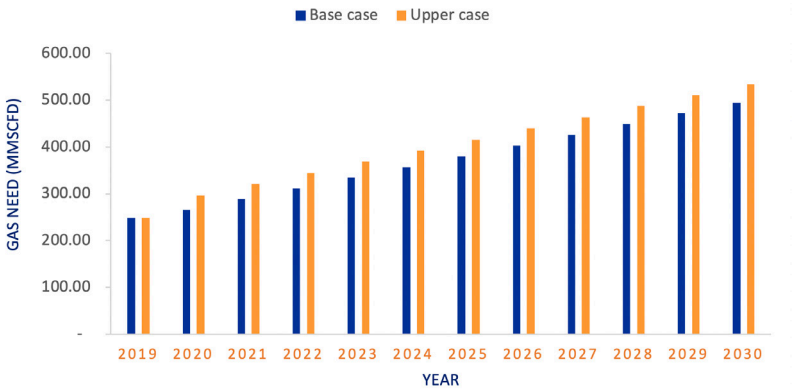


Figure 83: Projected Gas Demand for Power (2019-2030)

5.6 GAS SUPPLY STATISTICS

In 2018, total gas supply came from four major sources, namely, the Jubilee Fields, TEN Fields, the West African Gas Pipeline (WAGP) and the Sankofa Fields. Supply scenarios are presented in two forms: base-case scenario and upper-case scenario. Table 17 presents gas supply scenarios from 2019 to 2030.

Self-generation is increasingly becoming an alternative for commercial users as a hedge against high end user tariffs, which is expected to further increase with upward tariff adjustments.

Year	Total power demand (MW)		Projected thermal power demand (MW)		Gas demand for thermal power (Mmscfd)	
	Base case	Upper case	Base case	Upper case	Base case	Upper case
2019	2436	2436	1316	1316	248.69	248.69
2020	2525	2690	1405	1570	265.58	296.78
2021	2646	2817	1526	1697	288.47	320.64
2022	2768	2943	1648	1823	311.36	344.48
2023	2889	3069	1769	1949	334.25	368.3
2024	3010	3195	1890	2075	357.14	392.1
2025	3131	3321	2011	2201	380.03	415.89
2026	3252	3447	2132	2327	402.93	439.66
2027	3373	3572	2253	2452	425.82	463.41
2028	3494	3698	2374	2578	448.71	487.16
2029	3616	3823	2496	2703	471.6	510.89
2030	3737	3949	2617	2829	494.49	534.61

Table 16: Projected Energy Demand.
Conversion Factor: 1000MW of Power per Day = 188.88mmsfcd of Gas
Source: ACEP's Projections

Base case scenario

For the base case scenario, The Jubilee and TEN fields can cumulatively supply an average of 135mmscfd of gas which is limited by the capacity of the Atuabo Gas Processing Plant, while the WAGP can supply a downside average of approximately 60mmscfd.

Sankofa has the potential of providing up to 246mmscfd out of which 171mmscfd is the contracted take or pay volume and an additional volume of 75mmscfd. The extra 75mmscfd is available for smoothening supply constraints from other sources. With these assumptions in place, readily availa-ble supply of gas is about 441mmscfd from 2019.

Upper-Case Scenario

Recent Akoma discovery on the Block Four by ENI with pre-appraisal estimate between 500 and 650Bcf has the potential of producing 100mmscfd of gas. If the market conditions support the economics of the discovery, this could come on stream by 2023. Upon additional investments, further development of the Sankofa fields can also go up to 300mmscfd.

Further investment in the processing capacity of Atuabo gas processing plant can increase Jubilee and TEN supply to 225mmscfd by 2023.

In addition, the Tweneboa Non-Associated Gas (TNAG) development has proven non-associated gas reserves and can supply gas up to 60mmscfd by 2023 subject to increased demand and project economics. Depending on further developments in Nigeria, WAGP plans to do a low case average volume of 92mmscfd by the end of 2020 and plans to increase this to 120mmscfd by 2023.

Though subjective, these developments are set to increase the supply of gas to over 750mmscfd by 2023. The potential for domestic gas is even higher as activities increase in offshore basins and at the same time, onshore exploration

Further investment in the processing capacity of Atuabo gas processing plant can increase Jubilee and TEN supply to 225mmscfd by 2023.

	Base case				High case			
Year	WAGP	SGN	Jubilee/TEN	Base case total	WAGP	SGN / Akoma*	Jubilee/TEN	High case total
2019	60	246	135	441	60	246	135	441
2020	60	246	135	441	60	246	135	441
2021	60	246	135	441	90	246	135	471
2022	60	246	135	441	90	246	135	471
2023	60	246	135	441	120	346	285	751
2024	60	246	135	441	120	346	285	751
2025	60	246	135	441	120	346	285	751
2026	60	246	135	441	120	346	285	751
2027	60	246	135	441	120	346	285	751
2028	60	246	135	441	120	346	285	751
2029	60	246	135	441	120	346	285	751
2030	60	246	135	441	120	346	285	751
2031	60	246	135	441	120	346	285	751

Table 17: Gas Supply Projections (2019-2031)
**SGN and Akoma are both operated by ENI and Akoma is projected to be in operation from 2023*
Source: ACEP's Projections

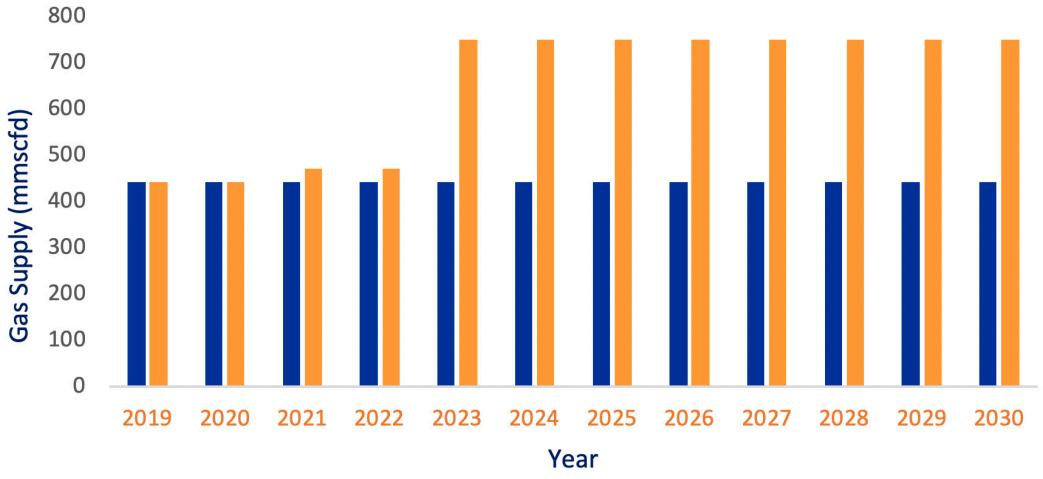


Figure 84: Gas Supply (2019-2030)

begins on the back of new data acquired by the GNPC.

The base case and high case scenarios are still conservative to account for inadequate data on the production profile of the various fields. Any downward deviation is, however, compensated for by other fields, such as Greater Jubilee, the Deepwater Tano and the South Deepwater Tano fields.

5.6.1 Excess Gas Projections

Figure 85 provides four different scenarios within which the context of excess gas can fall. The cases are described in terms of the scenarios of gas need and gas supply. The ensuing subsections present an analysis of each of the four scenarios in terms of excess gas supply.

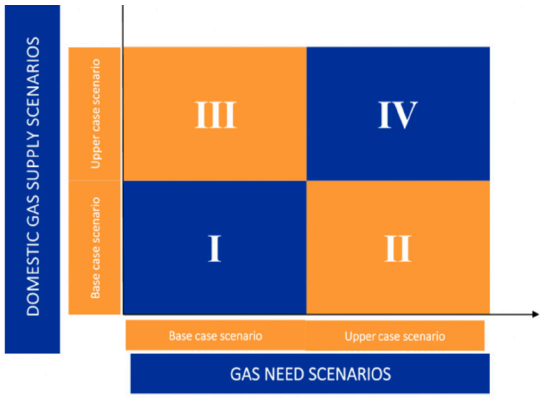


Figure 85: Gas Supply and Demand Scenarios

Case I

Case one provides a situation where the supply and gas needs are at the base case. In this scenario, we consider domestic gas supply at current levels without further increase in production. This scenario is, therefore, the most conservative scenario for gas supply and gas needs. Gas needs projections are based on projected power demands using the exponential smoothing technique. The volumes of excess gas decreases at a faster rate for this case. Ghana experiences excess supply of gas from 2019 till 2027. In 2028, Ghana will require about 7mmscfd of gas and this shall increase to about 53mmscfd in the year 2030.

This means, that current gas supply can meet baseline demand projections till 2027.

Case II

In case two, the gas need is projected to be at its maximum level (based on up-per limits of the confidence interval) and is linked with gas supply at the base level. Rates of decline for this scenario also shows a decreasing trend which oc-curs at a faster rate. Ghana can rely on current gas sources for this scenario up till the end of year 2026. From 2027, the country will require additional gas to augment its current supply. This will increase from 22mmscfd in 2027 to about 93mmscfd by the end of 2030.

Case III

Case three provides details of a situation where gas needs are given at the base period against an upper-case scenario of gas supply. For this situation, Ghana has enough supply capacity which can provide the amount of gas needed for power supply. Within the period under review, maximum excess gas occurs in 2023, giving an approximate amount of 400mmscfd of excess gas. In 2030,

Year	Excess Gas Cases (Mmscfd)			
	Case I	Case II	Case III	Case IV
2019	192.31	192.31	192.31	192.31
2020	175.42	144.22	175.42	144.22
2021	152.53	120.36	182.53	150.36
2022	129.64	96.52	159.64	126.52
2023	106.75	72.70	416.75	382.70
2024	83.86	48.90	393.86	358.90
2025	60.97	25.11	370.97	335.11
2026	38.07	1.34	348.07	311.34
2027	15.18	(22.41)	325.18	287.59
2028	(7.71)	(46.16)	302.29	263.84
2029	(30.60)	(69.89)	279.40	240.11
2030	(53.49)	(93.61)	256.51	216.39

Table 18: Excess Gas Supply (2019-2030)
Source: ACEP's Projections

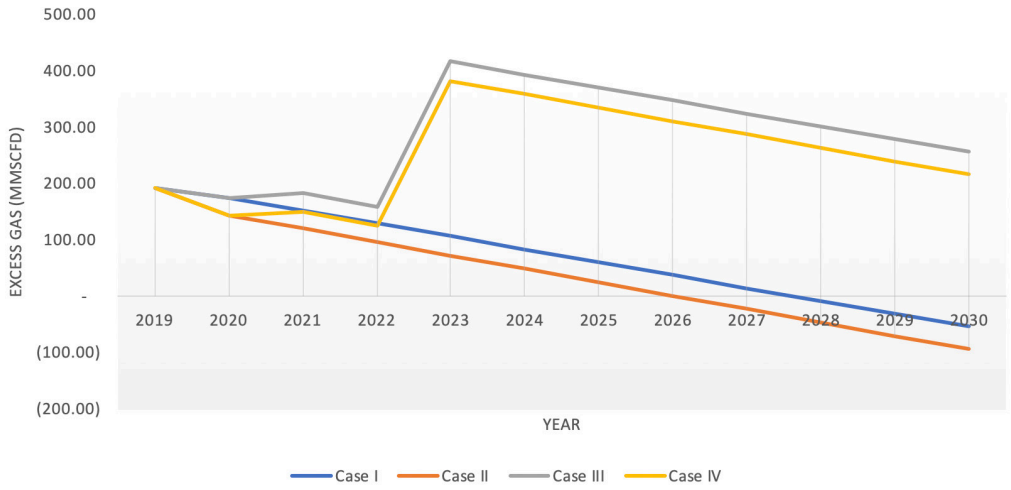


Figure 86: Projected Excess Gas (2019-2030)

which records the highest level of power demand for the period under review, excess gas stands at over 250mmscfd.

Case IV

In case four, both gas supply and gas needs are estimated at their high case scenarios. The distribution of excess gas supply for this scenario is similar to that of Case III, with the difference arising as a result of the volumes of excess gas. Maximum excess gas volumes also occur in 2023, with a volume of 382 mmscfd. Also, by 2030, the value of excess gas stands at over 216mmscfd.

The petrochemical industry is identified to be the industry that can readily absorb excess gas.

Industrial Gas Needed and Excess Gas Supply

Gas supply in excess of power sector demand will have to be absorbed by industry. Albeit, this is a possibility, the projections indicate that the amount of gas supplied in excess far outweigh the current industrial demand for gas,

Year	Gas need for Industry (MMscfd)	Excess Gas Supply (Mmscfd)			
		Case I	Case II	Case III	Case IV
2019	8.80	183.51	183.51	183.51	183.51
2020	9.68	165.74	134.54	165.74	134.54
2021	10.65	141.88	109.71	171.88	139.71
2022	11.71	117.93	84.81	147.93	114.81
2023	12.88	93.86	59.82	403.86	369.82
2024	14.17	69.68	34.73	379.68	344.73
2025	15.59	45.38	9.52	355.38	319.52
2026	17.15	20.92	-15.81	330.92	294.19
2027	18.86	-3.68	-41.28	306.32	268.72
2028	20.75	-28.46	-66.91	281.54	243.09

Table 19: Industrial Gas Need and Excess Gas Supply
Source: ACEP's Analysis

especially in Cases III and IV. Information from key stakeholders, including state-owned companies, pegged industrial demand for gas at 8mmscfd as of 2018. Industrial gas need is projected to 2030 at a 10% demand growth rate. Using these rates, Ghana will demand additional gas from 2027 in Case I and 2026 in Case II.

The petrochemical industry is identified to be the industry that can readily absorb excess gas. Government plans to attract investment for the construction of the first fertiliser manufacturing plant in Ghana.[32] Total fertilizer consumption as at 2018 stood at approximately 310,000 metric tonnes, which denotes a 35% de-cline from the 2017 consumption of approximately 440,000 metric tonnes (Africa Fertiliser, 2019). [33]

However, there are macro-economic conditions that could impact the cost com-petitiveness of fertilisers that will be produced in Ghana making the construc-tion of a fertiliser plant less feasible under the current gas market condition. First is the issue of price. The current adjusted weighted average cost of gas (AWACOG) does not make the petrochemical industry competitive as compared with the price of gas from neighbouring fertiliser producing African countries like Nigeria with a regulated price of USD3.3/MMBtu (transportation cost of USD0.83 and commodity price of USD2.5).

It is even more important to note that the current market players have a locked-in price of about USD1.5 to USD2, a price negotiated before the introduction of regulated prices. The government of Ghana will have to highly subsidise the price of gas for the fertiliser producers by at least USD4.49 per MMBtu which translates to about USD140 on production subsidy per tonne to bring Ghana's fertiliser production at competitive terms relative to price, without accounting for the scale of similar projects in the sub region and their implication on a free trade area, for which Ghana has been a major champion. Total subsidy per 2018 demand of about 300,000 tonnes will amount to approximately USD43million every year. This does not account for the existing government subsidies on fertilisers which was about GHS345.24 million from 2008 to 2013.

5.7 VIEWS FROM INDUSTRY STAKEHOLDERS

The risk of excess gas is shared by most industry players that ACEP reached out to in the course of this study. The perception that the supply of gas is in excess of current and foreseeable future demand could have dire financial consequences. For example, committing to a 12-year take or pay agreement of 250mmscfd of LNG will compound the financial challenges faced in the energy sector and would go to increase the financial burden on consumers.

The perception that the supply of gas is in excess of current and foreseeable future demand could have dire financial consequences.

Due to the huge capital investments that characterise the gas value chain, inves-tors negotiate with governments to guarantee their investments, usually in the form of take-or-pay clauses in the gas sales agreements which is a measure of the confidence and/or risk in the market. If the country is not able to off-take the gas, the investors still get their due, but this leaves huge financial liabilities for the government.

...the country was paying about $32million monthly for unutilised gas from October 2018 for failing to build the infrastructure to off-take the gas on time.

This was what happened in the case of the Sankofa Gye Nyame field operated by ENI, where the country was paying about USD32million monthly for unutilised gas from October 2018 for failing to build the infrastructure to off-take the gas on time. This has reduced to about USD25 million due to increase demand of gas from OCTP. The amount of money used in paying for the take or pay contracts that would occur as a result of the purchase of LNG, which would result in excess gas, can be channelled to other useful priority areas.

Having excess gas supply in the system will mean paying for unutilized gas from different sources and this will put undue pressure on the country's finances.

Moreover, in the view of some industry watchers on power generation, the country is already paying capacity charges due to the take-or-pay agreements signed in the various power purchase agreements (PPAs) due to

32 http://bit.ly/cbodacep2
33 http://bit.ly/cbodacep3

the inability to grow demand for power to meet installed capacity. Thus, having excess gas supply in the system will mean paying for unutilized gas from different sources and this will put undue pressure on the country's finances.

An excess gas supply scenario poses the risk of increased debt in the power sector and defeats the mitigation actions

State Agencies (SA)
"what we have heard about the gas coming in is a cause for concern especially beyond 2021. I mean the take or pay payments alone in a year can build a thermal plant. We are a poor country, so we have to be careful what we do." (SA)
"on the power side we have take-or-pay already and so the take or pay on the gas is just going to compound it. It is like you are being killed twice." (SA)
"I think there is not a very strong competitor to the power side. The power side is the major consumer of gas. We need to find external users. We've gone into this discussion ever since we heard of the coming of LNG" (SA)
"One of the best alternatives is to be able to export the gas. But it's not that easy. First of all, you have to critically plan it. The biggest challenge to exporting gas is our pricing. If you check the prices in the sub region, you will find that our prices are extremely high in the sub region." (SA)
Private Investors (Inv)
"as it is now things in the sector are quite fragile. I mean ESLA was launched with a lot of fanfare and all, but I don't want to say typically, but unfortunately after two years you don't even talk about it anymore. There's no transparency about how the money is being used to improve this whole cash flow situation. So, the excess gas in my estimation is probably coming to compound the problems we have." (Inv 3)
"the domestic gas supply as of today is enough to cover all the requirements. It means that we will be in the condition not to use liquid fuel anymore and potentially not to use imported gas from Nigeria anymore. The country requires 2500MW of power, more or less. Out of that, about 30 to 40% is produced by hydropower system. The rest is coming from thermal with a significant portion still liquid so in the next few months the liquid will definitely be replaced by the gas with the power relocating to the West. That is an important step. *The other important step in our view is to maximize the gas conversion in the west and step by step replace the Nigerian gas with the Ghanaian gas. And in our view, it's the goal the country should have because at the moment, the country is not able to use all the domestic gas. It will have a significant cost reduction in the energy bill because much of the cost of the domestic gas is the cost that goes back to the country itself." (Inv 1)*
"The problem is that you know that ECG is not respecting the debts with regards to the VRA. For example, VRA is not able to pay for the gas. The gas supplier is unable to pay upstream. So, the value chain is not working. The liquidity is not there. At the moment it is not penalising our project because of the structure of the security package in place. It was one of the prerequisites for us if we decided to invest in a capital-intensive project." (Inv 3)
"At the moment we don't see a compelling case for imports. Ghana has strong potential for gas and oil and if you need a backup option at least you already have a pipeline from Nigeria." (Inv2)
"... conversations with the people involved in [power] demand planning indicates that the rate at which they were expecting demand to pick up especially after the tariff reduction hasn't been up to the projections so there are concerns there." (Inv 3)
"There were some projections for electricity consumption ...but I think for now the economy is not expanding as they envisaged, and there's a lot of power theft too. So, I don't think they are able to really measure very well what the consumption is. It's not increasing as they forecasted initially." (Inv 2)
"gas always requires market to use the gas supply and if you don't have market then it means you have to effectively discount the value of the asset and you forget about it." (Inv 1)

Table 20: Views from Industry Stakeholders

to strengthen the power sector value chain which is currently debt-laden. The distributors of electricity were unable to pay the power generators for power distributed which led to the injection of private sector recently. This caused power generators' inability to pay for fuel consumed for power generation. Even without gas obligations, these debts have already piled up and continue to accumulate, threatening the ability of the Energy Sector Levies Act (ESLA) to deal with it. Table 20 outlines some of the views expressed by the industry stakeholders.

5.8 CONCLUSIONS AND RECOMMENDATIONS

The transition from liquid fuels to gas for power-generation is important for Ghana, especially in terms of cost savings. However, Ghana has had challenges with supply, infrastructure and payments in attempts to ensure a robust gas market with reduced risk to the investor and the country.

On the supply side, Nigeria has not met its volume obligations and attempts to supply LNG, since 2012, have proved unsuccessful in the most needful period. Delays in the completion of the needed gas infrastructure to commercialise Jubilee gas contributed to the long spell of 'Dumsor' in Ghana. This repeated itself in ensuring that there is transmission infrastructure to off-take Sankofa gas.

The supply of gas from Nigeria also accumulated debts which, subsequently, led to the demand of Letters of Credits (LCs) before gas is supplied. Government recently has had to pay millions of dollars every month for unutilised gas due to its inability to complete a gas infrastructure on time, leading to a sweep on the escrow account for the OCTP project. The struggle to comply with payment obligations continues even till today and the escrow has not been re-established.

Without a proper policy direction, Ghana will fail to reap the benefit that underscores the transition from liquid fuels to gas. Projections made in the study have shown that Ghana can make use of its domestic gas infrastructure for its needs at least for the next four to five years. With recent discoveries that have been made on the oil fields, and government's push for aggressive investments in the upstream sector, the potential of domestic gas volumes to increase is a high possibility.

A major limitation of this study was the inability to obtain the supply profiles of the gas sources in Ghana for the projected period, making gas supply assume a uniform volume over the projected period. Gas volume projections are not uniform on a year on year basis due to the dynamics that may be present and yet unknown in the fields. However, as noted earlier, the scenarios are smoothened by the additional capacities from other fields, making these conservative projections possible. This, notwithstanding, Ghana has greater odds of obtaining higher volumes of gas than the projected volumes. Based on the findings and the views of industry stakeholders, the study outlines the following recommendations:

1. The first effort of government should be to wipe off the excess domestic gas by encouraging existing power plants to switch from using liquids, such as HFO and RFO, to generate electricity. This will bring relief on the take-or-pay commitments of government.
2. Government must engage broadly with investors and sector agencies to enhance planning and gas supply arrangements to encourage foreign investment in the upstream sector to optimise government's aspiration for aggressive exploration. Poor planning and unrealistic projections can affect market confidence and risk levels, leading to continuous demand for take or pay arrangements for both domestic production and importation of gas.
3. Ghana does not need the importation of LNG through long term contracts. During unanticipated downtimes or

Without a proper policy direction, Ghana will fail to reap the benefit that underscores the transition from liquid fuels to gas.

Ghana can make use of its domestic gas infrastructure for its needs at least for the next four to five years.

Ghana does not need the importation of LNG through long term contracts.

Government must pursue the clean-up of the power distribution subsector.

shortfalls in gas supplies, Ghana can rely on liquid fuels which are easier to store. Also, enough investments have already been made in dual fuel plants which must serve a useful purpose. The cost of liquid fuel, as a short-term security measure, is relatively lower than LNG as backup. Ghana needs to focus on debt-reduction rather than accumulation which appears unavoidable with additional gas from LNG.

4. Government must prioritise the supply of cheapest domestic gas production which will provide electricity at the cheapest cost for households and industry. This can go a long way to realise government's plans for industrialisation as Ghana's electricity prices become more competitive.

5. Government must insist on taking DWCTP gas in line with the Petroleum Agreement to ensure improved gas supply for the domestic market.

   Improved market strategy is also required to assure the investors of returns which could be jeopardised by efforts to prioritised external gas supply.

Government must pursue the clean-up of the power distribution subsector. Actors in this part of the value chain must be closely monitored to achieve the desired results. Otherwise, debt-accumulation within the power value chain will continue to escalate and impact on the gas market which is anchored on the power sector. Increasing competition from self-generation and renewables requires an optimal distribution system to drive down the grid tariff to ensure that the excess capacity can be absorbed in the near future.

6

OUTLOOK & RECOMMENDATIONS

6.1 MARPOL 2020

In 1973, the International Maritime Organisation (IMO) agreed a series of measures to prevent pollution from marine and shipping operations (MARPOL Convention). The IMO MARPOL Annex VI 'Prevention of Air Pollution from Ships', first adopted in 1997 and came into force in 2005, has established limits on Sulphur content in bunker fuel. MARPOL Annex VI started with a global Sulphur cap of 4.5% before it was lowered to 3.5% in 2012.

The steep reduction to a global 0.5% sulphur cap by 1st January 2020 was decided in October 2016 by the IMO Marine Environment Protection Committee (MEPC). Compliance with the new IMO rule will require the marine sector to reduce sulphur emissions by over 80%.

To ensure compliance, vessels will have to switch from the use of High Sulphur Fuel Oil to compliant fuels such as Low Sulphur Fuel Oil, and Marine Gasoil.

Enforcement of MARPOL 2020 will impact the movement, demand and supply of petroleum and petroleum products. Countries will benefit or lose out depending on the type of crude produced, the existing infrastructure[34] they have in place and their willingness to expand infrastructure to capitalize on opportunities MARPOL 2020 will offer.

6.1.1 Market Implications

- It is expected that demand for sweet crude will increase relative to heavy crude. Refiners will prefer to procure light crude (which is low in Sulphur) for refining.
- Refinery margins will also be impacted. Refiners will switch to the production of petroleum products that will command higher prices in order to maximise returns.
- Crude oil price movement will vary depending on the type of crude. Differentials between heavy crude, typically from the Middle East and light crude, mostly found in the West African sub-region are expected to widen.

Enforcement of MARPOL 2020 will impact the movement, demand and supply of petroleum and petroleum products.

6.1.2 Implications on Freight Costs

The switch from the use of HSFO to compliant fuel will have a direct effect not only on fuel cost but on freight rates as well. The general position of the major shipping lines like Maersk and Hapag-Lloyd has been to expect an upward pressure on freight rates.

An additional initial fuel cost of USD60bn is expected to be incurred by the global industry annually in the first years (Hapag-Lloyd 2018).

The switch from the use of HSFO to compliant fuel will have a direct effect not only on fuel cost, but on freight rates as well.

34 *Infrastructure includes refineries, road construction, facilities to procure bunkers or export Marine Gasoil*

Maersk expects to incur an additional cost of USD2bn annually, while Hapag-Lloyd expects to incur an additional cost of USD1bn annually.

Maersk expects to incur an additional cost of USD2bn annually, while Hapag-Lloyd expects to incur an additional cost of USD1bn annually. Maersk has rolled out the Bunker Adjustment Factor (BAF) surcharge for its customers to plan, predict and track the impact of changes in fuel price on shipping freight rate to ensure they recover fuel related costs.

The BAF which was enforced on 1 January 2019 will replace the existing Standard Bunker Factor and will make provisions for the increases in fuel cost following the enforcement of IMO 2020.

The BAF is computed as:

BAF= Fuel price × Trade factor

The fuel price is calculated as the average fuel price in key bunkering ports around the world, whereas the trade factor reflects the average fuel consumption on a given trade as a result of variables

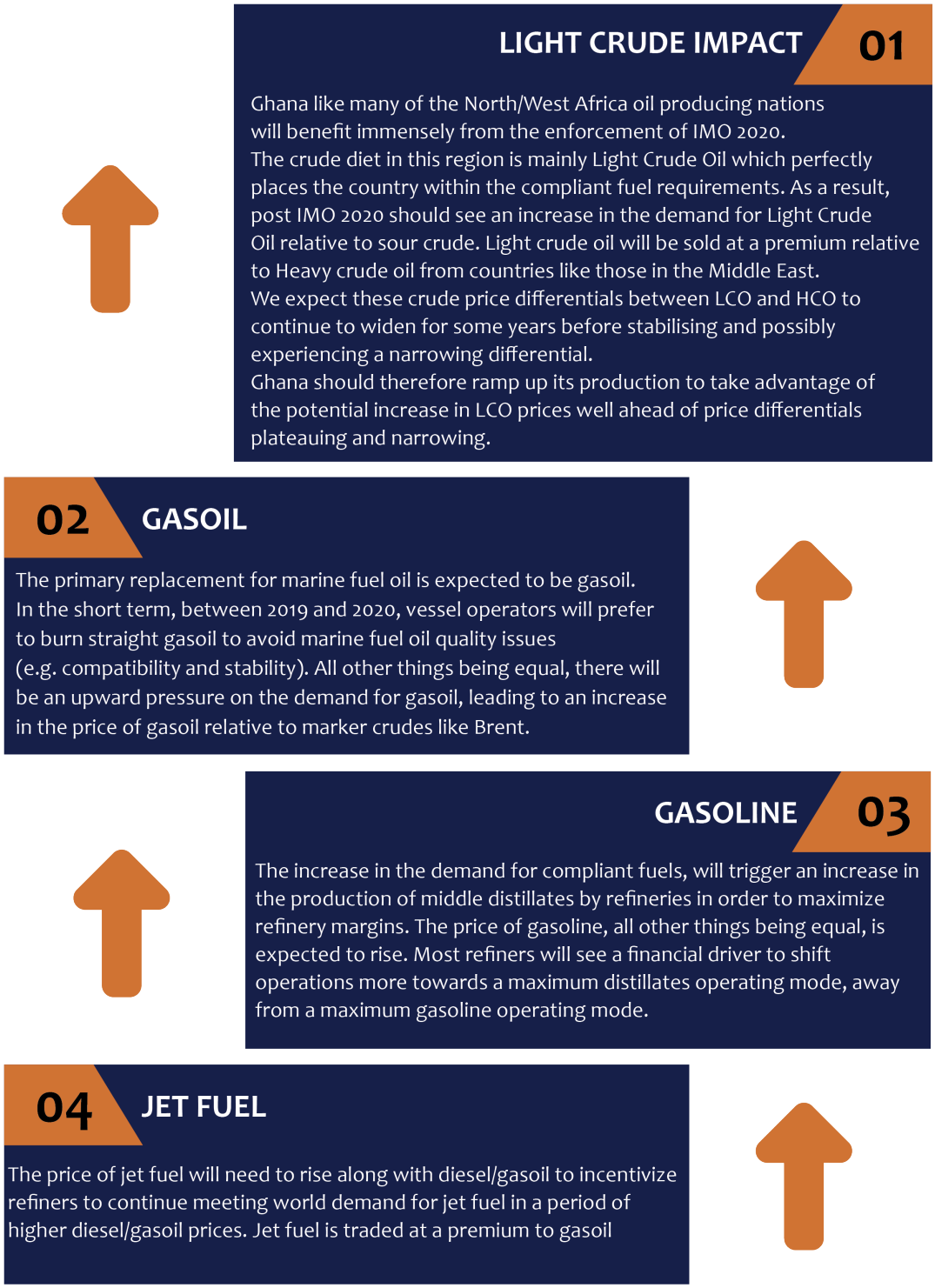
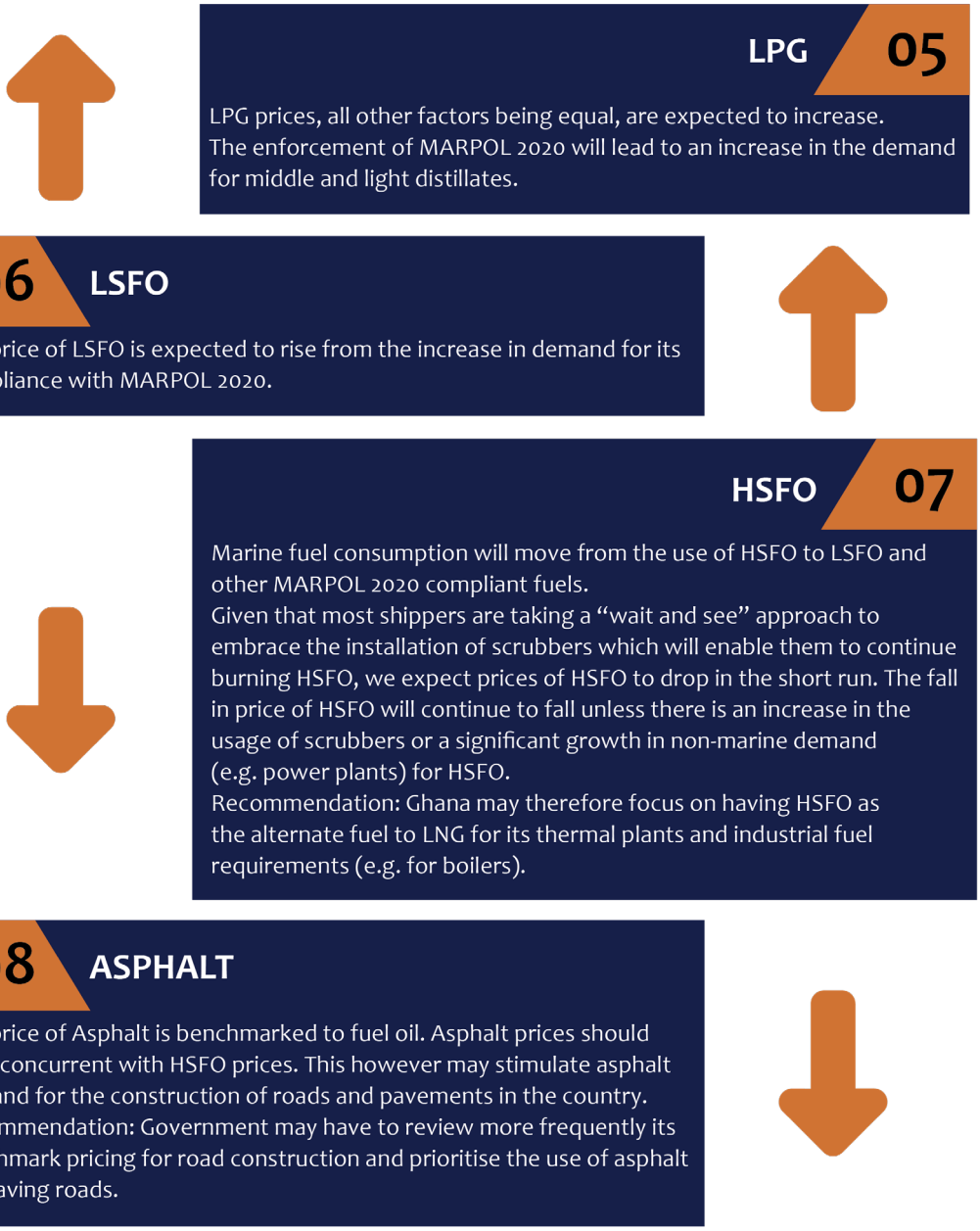


Figure 87: Expected Impact of MARPOL 2020 on Petroleum Products and Crude Oil



like transit time, fuel efficiency and trade imbalance (Maersk 2018).

6.1.3 The Ghanaian Perspective

Prices of petroleum and petroleum products are expected to be impacted by the enforcement of MARPOL 2020. The expected upward or downward movement in prices will depend on the shift in demand from HSFO to compliant fuel and how that shift generally affects other petroleum products in the refining pool.

Ghana, like other countries, will be affected by the enforcement of MARPOL 2020

Figure 87 summarizes the expected impact of MARPOL 2020 on the petroleum products and crude oil.

Ghana can position itself to take advantage of the impact of MARPOL 2020 on the demand and supply of crude and distillates. Government must assess the opportunities of MARPOL 2020 and design policies to ensure the country increases its share of wealth.

6.1.4 Opportunities

Implementation of MARPOL 2020 represents a significant opportunity or challenge.

Ghana can position itself to take advantage of the impact of MARPOL 2020 on the demand and supply of crude and distillates.

- The anticipated increases in the prices of middle distillates present an opportunity for local refineries to skew production plants in favour of middle distillates for profit maximisation.
- With technology getting more sophisticated, TOR can upgrade its existing technology to enable them process heavy crude oil better. TOR is currently not in the process of acquiring new technology to accomplish the same feats and as a result would be behind on the competition in this method of refining activity.
- Various players in industry that use HSFO as fuel source may benefit immensely from the new regulation:
    1. In cement production, HSFO serves as a substitute product for petroleum coke, waste, coal and natural gas as a fuel source to heat the cement kilns. With the new dynamics spurred by the regulation, fuel oil use in cement kilns will likely increase. Factoring in the expected drop in price of HSFO, this usage increase will lead to lowering cost of production in the cement manufacturing industry leading to the creation of more jobs.
    2. Asphalt manufacturers also stand to gain from the drop in HSFO oil prices. Many refiners currently producing HSFO will favour increasing asphalt production in view of significant declines in HSFO unit revenue. Reductions in asphalt prices may stimulate some asphalt demand increase relative to concrete for road paving applications.
    3. Power plants that run on both fuel and light crude oil may switch to the use of HSFO post-MARPOL 2020 to lower their costs of production.

The anticipated increases in the prices of middle distillates present an opportunity for local refineries to skew production plants in favour of middle distillates for profit maximisation.

To optimise this intertemporal bullish outlook through petroleum receipts, Ghana must ramp up its crude oil production.

Ghana's refineries hold a competitive position to be major suppliers of LSFO marine fuel along the West African Coast.

6.1.5 Policy Issues and Recommendation

Bullish Outlook on LCO Prices

The price differentials between HCO and LCO is expected to widen with the price of LCO increasing. This differential is expected to start narrowing by 2024.

Policy Recommendations

1. Ghana's crude oil typicals are Light Crude Oil which is expected to experience a comparative surge in prices. To optimise this intertemporal bullish outlook through petroleum receipts, Ghana must ramp up its crude oil production. Policy must be positioned to attract credible investors and encourage contractors and operators to increase production from fields. This must be a cardinal focus of government prior to MARPOL 2020.
2. Based on the anticipated price increase, we recommend a review in government's petroleum price estimation model for the 2020-2024 budget.

Bullish outlook on LSFO prices

The price of LSFO is expected to rise after the enforcement of MARPOL 2020.

Policy Recommendations

Ghana's refineries are designed to produce LSFO, instead of HSFO. Coupled with their nearness to Light Crude Oil supply, they hold a competitive position to be a major supplier of marine fuel along the West African Coast. It is imperative that government considers the following:

1. Promote investments in LSFO shore bunkering infrastructure to make the country the primary refuelling hub for ocean going vessels that chart West African waters.
2. Develop a functional regulatory framework for the export and offshore bunkering for LSFO.
3. Promote the retooling of local refining floors. The retooling should be carried out such that production

will be biased towards the production of higher value products particularly middle distillates and LSFO, as well as light end products.

In the case of TOR, it is imperative that, a thorough apolitical resolution is reached to address its governance, structural and financial challenges to enable it to secure a fighting chance to optimise the opportunities of MARPOL 2020.

Bearish outlook on HSFO prices

The price differentials between HSFO and LSFO is expected to widen with the price of HSFO decreasing. This differential is expected to start narrowing by 2024.

Policy Recommendations

1. Government must promote the use of HSFO as an alternate fuel source to gas, instead of LCO subject to economic and technical dynamics. In the period of rising LCO prices, power plants can switch to the use of HSFO to reduce their costs of production.
2. Government should consider the option of promoting HSFO for use by industries instead of LSFO. This will minimise government's exposure to RFO subsidies.

Bearish outlook on Asphalt prices

Asphalt prices are benchmarked to HSFO prices which are projected to go down post-MARPOL 2020.

Policy Recommendations

1. Government must prioritise the use of asphalt for road pavements. The cost-saving will effectively lead to better paved coverage of Ghana's road network.
2. Government should also consider reviewing asphalt price assumptions in its engineering estimates at shorter intervals to ensure that the reduced cost of asphalt/bitumen translates into the pricing of road contracts.

Bullish outlook on gasoline, gasoil and LPG prices.

Policy Recommendations

The enforcement of MARPOL 2020 will increase the prices of gasoline, gasoil and LPG. This will negatively impact the cost of petroleum product imports.

With the adoption of a hedging mechanism, Government has the option to use the increase in revenue obtained from the sale of crude oil in periods of high crude oil prices to offset the negative impact on ex-pump prices downstream.

Government must identify its political and economic crude price threshold (CPT). The CPT will be the crude price at which government considers it necessary to directly intervene or subsidise ex-pump prices. The CPT then becomes the strike price in a given hedge programme. The hedge programme should be designed to cover significant portions of the country's consumption. The income generated from the hedge should be used to reduce the petroleum tax burden on consumers through the ex-pump price build up.

In effect, when crude prices rise beyond the CPT and government rakes in hedge income, taxes in the pump prices will be reduced to the extent of the hedge income. In a situation like this, the crude price increase is expected to increase the ex-refinery prices. But with the reduction of taxes the pump prices will be expected to remain significantly the same, all other things being equal.

A partial revenue balancing mechanism may be created; surpluses and windfalls gained in petroleum receipts as a result of increases in the crude oil price beyond government's targeted benchmark price can be used in the form of subsidies to cushion increases in pump prices of petroleum products sold to consumers.

Government should adopt a trigger rule – With this, government can set a price band (+/-10% around the 2019 reference price is suggested). An increase in crude oil price below the 10% band may be

Asphalt prices are benchmark to HSFO prices which are projected to go down post-MARPOL 2020.

Government has the option to use the increase in revenue obtained from the sale of crude oil in periods of high crude oil prices to offset the negative impact on ex-pump prices downstream.

allowed to fully be passed through to the pump price. However, when crude oil prices rise above the 10% band or consecutive accumulation of increases equivalent to a 10% increment, the surplus petroleum receipts can be used to compensate for the adjustments in domestic pump price of petroleum products.

The Dangote Petrochemical Refinery project will definitely impact the flow of products across the West African sub region.

6.2 THE GAME-CHANGING DANGOTE REFINERY

The construction of the 650,000bbls/day Dangote petrochemical refinery, located in Nigeria, is set to be completed in 2020/2021. The project will, definitely, impact the flow of products across the West African sub-region.

According to CITAC, Nigeria's market in 2018 was about 21.3 mn mt and is expected to grow to about 22.2mn mt in 2020 accounting for almost 54.4% of the total West African demand. The shortfall between refinery output and demand in Nigeria is met by imports. 2018 Imports into Nigeria were about 16.6 mn mt. The Dangote Refinery is expected to refine up to 650,000 bbls/day equivalent to about 26mn mt per year. [35]

The Dangote refinery alone can meet total demand in Nigeria provided all its capacity is committed to petroleum product refining only.

This production level exceeds Nigerian consumption by 5.3mn mt and its forecasted growth in 2020 by 4.4mn mt. The Dangote refinery alone can meet total demand in Nigeria, provided all its capacity is committed to petroleum product refining only. Nigeria's current 445,000bbls/day refinery capacity, operated at a utilization capacity of 8.3% (CITAC 2019 annual report), is equivalent to 36,935bbls/day or 1.51mn mt per year. At this rate, Nigeria may end up with a production output of about 28.1mn mt per year, resulting in an excess supply of 6.8mn per year.

6.2.1 Implications for Ghana

Ghana will be one of the most desired export destinations for Dangote as it is the largest market, outside of Nigeria, in West Africa with imports of about 3.66mn mt a year (2018). The commencement of the Dangote refinery poses a direct threat to local refineries in Ghana, given the operational inefficiencies of Tema Oil Refinery. BDCs are, however, expected to benefit from comparatively lower freight costs for supplies from Dangote due to the proximity to Ghana relative to Europe.

The economic relationship existing between Nigeria and Ghana will provide local BDCs with a better opportunity to integrate backward by trading directly with refineries. Dangote presents Ghana with the best opportunity to develop its international ex-refinery trade and nurture trading skills to feed its Petroleum Hub dream.

Dangote presents Ghana with the best opportunity to develop its international ex-refinery trade and nurture trading skills to feed its Petroleum Hub dream.

Figure 88: Structural parts of the Dangote Refinery under construction.

35 *Some volumes of the refinery output may not be dedicated to refined products.*

6.2.2 Impact on Ghana's Petroleum Hub

Ghana's Petroleum Hub aspirations of having a 600,000bbls/day refinery will be economically questioned by the Dangote project. The hub's refinery considerations have been partly guided by the demand anticipated from the Nigerian Market. It is reasonable to wish that 'goodbye' once Dangote comes on stream. The Ghana Petroleum Hub design must pursue alternate markets or pitch to existing European and American refineries with stagnating demand in their home continents to relocate to Ghana in pursuit of the growing sub-Saharan African demand.

The Dangote effect is likely to inhibit investor appetite for additional greenfield refinery projects in West Africa. Ghana's best option to trigger refining activity competitively remains a revamping of the Tema Oil Refinery. TOR which is in the East of Ghana must be positioned as the trigger of refining activity in the Petroleum/Petrochemical Hub concept. The concept must also cease to be conceptualised as a defined location in the West of Ghana alone but rather as a country-wide endeavour. It will cost less to resuscitate and scale up TOR under a revised governance and ownership arrangement than to roll out a greenfield project. As the 'new TOR' shows adequate market activity beyond Ghana, the economic proposition for Ghana as a refining hub may be inked and the development of a greenfield will prove less risky and viable for investors.

The redefinition of the hub to include all petroleum assets (storage and pipeline networks) across the country (particularly in the East of Ghana) will quicken the pace and potential for Ghana becoming the envisioned hub.

6.3 THE BLEEDING FUNDABILITY OF INDUSTRY: NEED FOR RESTRUCTURE

The growing trade losses BDCs face and market abuse of trade credit severely bleeds the BDC funding cycle. Between USD100mn and USD200mn is estimated to have been lost by BDCs in trading and forex losses in 2018 while an estimated GHS1.2bn remains locked up in trade credit to OMCs. These liquidity losses have been masked by acts of teeming and lading. The industry stands the risk of breaching its credit lines with traders and banks especially in the event of a major price drop that exposes the acts of teeming and lading. This situation has implications for national supply and must urgently be addressed.

Between USD100mn and USD200mn is estimated to have been lost by BDCs in trading and forex losses in 2018 while an estimated GHS1.2bn remains locked up in trade credit to OMCs.

In conjunction with the Ghana Association of Bankers, trade credit abuse and forex losses were identified as key reasons for the liquidity bleed in the BDC's funding cycle. To address these, the CREPT and Oil FX Market (OFMAK) proposals have been tabled for Government's consideration. It is imperative that policymakers take a proactive posturing to industry's problems and not a reactionary one, else industry will fail in its productive role to the economy. Both proposals are attached in appendices 4 and 5.

6.4 TOR: A WAY FORWARD

The Tema Oil Refinery (TOR) is Ghana's first and largest refinery dating back as far as 1963. TOR, which is an evolution of the ENI-owned Ghana Italian Petroleum company, has sadly devolved from being a national asset in the 1960s to a national liability in the 21st century.

Since the commencement of deregulation initiatives, which revised Ghana's 'cost-plus' petroleum pricing model to an import parity pricing model, growing inefficiencies in the management of TOR have ensured a never-ending debt spiral for the one-time pride of the industry. TOR's debt has been legendary but hope beckons with the new management which seeks to be honest and apolitical about the way forward.

Since the commencement of deregulation initiatives, which revised Ghana's 'cost-plus' petroleum pricing model to an import parity pricing model, growing inefficiencies in the management of TOR have ensured a never-ending debt spiral.

6.4.1 The Rise and Rise of TOR's Debt

TOR's total liabilities were reported as about GHS430.mn in 2003 and for which reason the TOR Debt Recovery Levy Act (Act 642) was passed. Contrary to expectations that the levy will pay down the debt and cease being a feature of

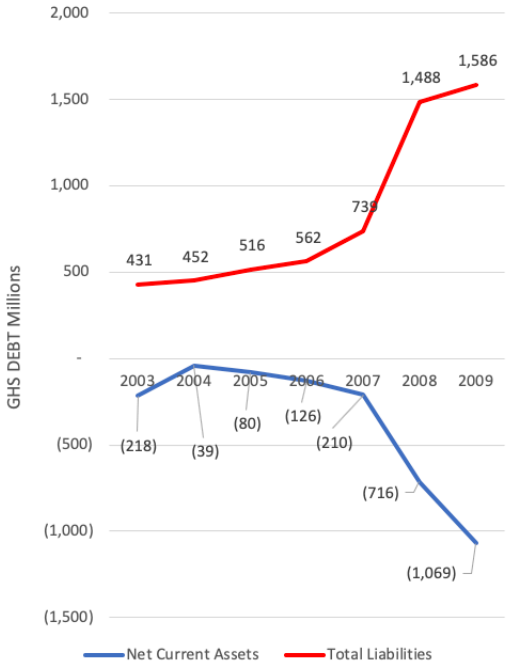


Figure 89: TOR Debt

Contrary to expectations that the TOR debt recovery levy will pay down the debt and cease being a feature of the petroleum tax schedule, it remains an entrenched part of petroleum taxes 16 years on.

the petroleum tax schedule, it remains an entrenched part of petroleum taxes 16 years on. In 2015, 10 years after collecting over GHS1,548mn, the debt stood at GHS2,813mn.

Bonds were subsequently issued by Government by securitising the TOR debt recovery levy and thereafter the Energy Sector Levy to reduce the debt to about GHS1,673mn as at August 2019. This reduction is a result of financial engineering by the shareholder on the back of taxes and not by payments from operations.

Successive Governments for economic rent or political benefits have excessively interfered with the management of TOR.

TOR's troubles started with a change in its business model. Prior to 1996, TOR operated as a tolling refinery, hence bore no pricing risk. After the ENI control of GHAIP, the Government of Ghana through various agencies (Ghana Supply Commission and GNPC) procured crude oil and refined it at TOR at a set fee. TOR's fees were negotiated based on their costs and an agreed margin. Known as the '***cost-plus pricing***' model, it underwrote TOR's inefficiencies as a monopoly and guaranteed it a profit.

In 1996, the decision was taken to have TOR manage its own pricing and crude procurement risk and to have the national pricing changed to an '***import parity pricing***' model where ex-ref prices will be benchmarked to an import equivalent. This effectively marked Ghana's commencement of the deregulation journey and was aimed at eliminating the situation where consumers and central government pay for TOR's inefficiencies.

While intermittent successes were realised, the inefficiencies were exposed over time and together with Government's non-payment of subsidies and excessive interferences, gains were eroded to make way for the ballooning of TOR's debt.

As gains eroded, reinvestments required for competitiveness became rare, thereby, plunging TOR into higher operational losses.

6.4.2 Government Interference

Successive Governments for economic rent or political benefits have excessively interfered with the management of TOR. Too many interests have been at play in the procurement of crude in ways that threatened the commercial viability of each transaction. The political damping of staff at TOR has been a constant feature of the organisation.

It is, therefore, not surprising that a 45,000bbls/day refinery that can be operated by about 150 staff is operated by a workforce of 800 despite its dysfunctional state. This interference is a function of its Governance structure. Its Board room is mainly occupied by political appointees who may not necessarily have the right commercial and fiduciary orientation to promote the interests of TOR. Management is also headed by a political appointee with loyalty to the political authorities other than the company and the State.

This situation conflicts members in their function and subjects them to the influences of politicians who in most cases have not been constructive.

6.4.3 Lost Commercial Orientation

As a result of the above and an

absence of accountability, the commercial orientation required in refinery economics has been absent at TOR. No competent hedging mechanisms are adopted to insulate transactions from variances between crude price fluctuations and product price fluctuations in between crude procurement, production and sales. The poor management of this process exposes transactions easily to losses. This has been a major bane for TOR.

6.4.4 Way Forward

The current management of TOR has been categorical about the need to privatise TOR in some form. One cannot agree any more with the Managing Director, Mr. Isaac Osei. The privatisation of TOR will bring an effective governance structure, accountability, effectiveness and capital to restore TOR as the major supply force. This will require the following:

1. Ringfencing TOR's existing Debt estimated at about GHS2bn. This will imply Government effectively hiving off the debt from the books of TOR in a novation arrangement. This will make it viable for private capital to flow into it unencumbered.
2. Value useful assets as Government's share in a Joint Venture or enter a lease and buy back arrangement that will have the private partner contribute capital and technical expertise to revamp the refinery.
3. Cede management (including the Board) to the private partner to eliminate the unconstructive political interferences and ensure effective management.
4. Provide the new TOR with the first right of refusal in the purchase of Government's share of any unassigned crude as well as facilitate Government-to-Government arrangements for crude purchases to serve as the refinery's feed stock.

The initiatives by the current management to reactivate refinery activity through tolling as a short to medium term strategy for a turnaround inspires hope and ought to be supported. TOR is the most viable option for restarting Ghana's petroleum refinery industry as capital required is way less than a greenfield project, thanks to the existence of some useful assets. TOR has the potential to be very successful but will need to be free of political interferences.

As the Dangote refinery nears its completion, the flow of TOR's human resources to Nigeria should be expected and may pose a major risk to any resurgence. It is imperative that Government takes a firm and clear decision on the future of TOR as soon as possible to grant it a fighting chance ahead of the emerging regional supply shifts.

The privatisation of TOR will bring an effective governance structure, accountability, effectiveness and capital to restore TOR as the major supply force.

6.5 STORAGE INFRASTRUCTURE UTILISATION

Ghana's Tank-turns have taken a turn for the worse by dropping from 0.18 times per month in 2017 to 0.17 times per month in 2018, making our storage infrastructure grossly underutilised. With new projects set to increase capacity over the next 2 years, policymakers must identify this development as a major economic risk to the industry.

The under-utilisation of assets represents the dissipation of pro ductivity and an increased impairment risk to capital deployed in the development of the infrastructure. This is of optimum importance especially as Government pursues its Petroleum Hub agenda. The observation of increased underutilisation of existing storage infrastructure may inhibit confidence in the value proposition Ghana may have in the Petroleum hub agenda. Policy must be positioned to optimise asset utilisation both for economic productivity and investment sustainability.

There are three main options to boost the storage asset utilisation. These comprise, boosting local consumption, Sahelian re-export and ocean re-export.

At the current tank turns, local

The initiatives by the current management to reactivate refinery activity through tolling as a short to medium term strategy for a turnaround inspires hope and ought to be supported.

Ghana's Tank-turns have taken a turn for the worse by dropping from 0.18 times per month in 2017 to 0.17 times per month in 2018, making our storage infrastructure grossly underutilised.

consumption will need to sextuple from the current 3.89mn mt to 23mn mt to enable assets attain an average tank turn of 1 per month. This is, obviously, not practical considering that Ghana's consumption grows at about 6% a year. The Sahelian re-export market opens Ghana mainly to the Malian and Burkina Faso markets which are currently being served by Senegal, La Cote d'Ivoire, Benin and Niger, as well as Ghana. The entire size of both markets is equivalent to 50% of Ghana's consumption. In addition, for security of supply reasons, both countries, by policy, will not subscribe to a single supply route. As at date, Benin and Senegal have been the most preferred routes due to language, less regulation and the frequent smuggling of subsidised products from Nigeria (in the case of Benin).

There are three main options to boost the storage asset utilisation. These comprise, boosting local consumption, Sahelian re-export and ocean re-export.

The third option is ocean re-export by positioning the Tema enclave as a petroleum re-distribution hub in direct competition with Ship-To-Ship (STS) operations currently being undertaken offshore Lome and feeding the Nigerian and other West African markets. The volume being redistributed is estimated at about 20mn mt equivalent to 5-times the Ghana consumption. This presents Ghana with the most viable option provided it can meet all cost constraints. This cost of operating in Lome is extremely competitive and requires Ghana to reposition its logistical cost structure to compete. The following will be key in Ghana's ability to position itself as a re-distribution hub.

1. Downward review of port charges.
2. Ensure an open and unregulated scheduled access to the berthing infrastructure. Traders must operate on a first-in, first-out basis and not need to procure laycans from a regulator.
3. Develop alternate berthing facilities like jetties and offshore mooring facilities.
4. Limit country specifications to pump and ex-rack sales only. This is to enable traders discharge different specifications for blending, subject to re-export market requirements.
5. Revise regulatory requirements for traders to hold and re-export stocks on-shore Ghana.

Ghana is currently over trucked significantly because of the hope of BOST patronage.

The constitution of a cross sector committee to evaluate the economic impact and framework to guide the advancement of policy for the development of Ghana into a re-distribution hub is recommended.

6.6 BOST TRANSPORTATION: REVIEW THE RENT-SEEKING STRUCTURE

The BOST inter-depot transportation function has over the years been a contributing reason for losses experienced by the organisation. Its role as the manager of the entire process is not compensated for but its resources are committed to manage the process. The management of this process has been a major subject of political abuse, rent seeking and institutional bastardisation. The roster of active transporters changes with every government. While the current management is making efforts at minimizing these occurrences, its efforts will yield little unless ingrained in the policy structure of their operations.

Typically, the real transporters opt to hedge political victimisation by partnering key personalities across both dominant parties. Some register different companies and use the same vehicles. Subject to the political sentiments, the transporter fronts its transactions with one of its politically-aligned companies. According to recurring reports from some transporters over the years, companies are aligned to particular political actors who front contracts for rents of between 20%-30% of the gross transportation income. Many investors into trucks have had their investments impaired by political victimisation.

This culture is unsustainable and injurious to investments and BOST as an institution. Ghana is, currently over-trucked significantly, because of

the hope of BOST patronage. Ghana's transportation pricing is based on an eight (8) trips a month assumption for local deliveries (deliveries within a 66km radius). For such a radius, a truck should be operated at about 20 trips minimum a month.

This implies that our asset utilisation premium in the transportation price build up is overstated by 150%. It is no wonder that there is constant agitation from transporters to have the transportation price increased. This does not augur well for Ghana as an economy as the under-utilisation of assets is the dissipation of productivity. It also leads to higher prices being paid by consumers at the fuel pump.

There is the need to professionalise the industry and retain constructive value for BOST and not dissipate it through rent seeking schemes. We recommend the following.

1. That BOST openly auctions the inter-depot transportation of fuel. This will imply that all licensed transporters will have an objective chance at competing. It will also ensure the retention of all 'would have been economic rents' within BOST to fund its operations.
2. The auctions be made based on volume and location with the NPA transportation price as the benchmark. Such auctions must require the posting of easily negotiable performance insurances or financial instruments.
3. Price quotes must be NPA benchmark transportation prices less a management margin for BOST. This implies that NPA benchmarks shall be paid to BOST for their service and the margin retained by BOST to fund their administrative and operational costs for managing the transportation processes.

The above recommendations will ensure Ghana is not short-changed and value is retained in BOST. It will dispel the rent seeking and help truncate the excessive politicisation and polarisation of BOST. As the industry grows, it is imperative that institutions are depoliticized and the citizenry' access to service and opportunities be not dependent on political discretions.

6.7 GHANA'S ILLEGAL TRADE: A WAY FORWARD

Ghana's illegal trade mainly comprises, smuggling, sale under-declaration, re-export and premix dumping as explained below.

6.7.1 Re-Export Dumping

Re-export dumping occurs when products meant for export find their way back into the country. This mainly occurs when the products are not exited out of country but rather dumped at various retail stations or consumer facilities in-country.

Products meant for export do not attract taxes and therefore pose a major revenue loss to the country when dumped back in the market. This trade actively commenced in 2016 after the December 2015 introduction of the Energy sector levies which increased pump prices by about 30%. Exports increased by 406% from 105,195mt in 2015 to 532,803mt in 2016 and fell to 453,080mt in 2017.

The CBOD estimates that about 60% of exports in those two years were dumped in country. The NPA also estimates that Ghana lost USD200mn in tax revenue as a result of this in both 2016 and 2017.

6.7.2 Premix Dumping

Premix fuel, which is a blend of 29 parts of gasoline to 1 part of marine mix, is solely to be used for powering the outboard motors for fishermen.

It is heavily subsidized (about 50%), thereby creating an economic incentive for it to be dumped into retail outlets and sold as regular gasoline at full value by blending with regular gasoline at retail stations. The dumping of Premix has been an ongoing trade for over a decade.

It is recommended that BOST should openly auction the inter-depot transportation of fuel. This will imply that all licensed transporters will have an objective chance at competing.

Ghana's illegal trade mainly comprises, smuggling, sale under-declaration, re-export and premix dumping.

6.7.3 Smuggling

This refers to the delivery of fuel products into Ghana through unapproved routes or the non-declaration of deliveries through approved routes. Previously, this occurred mainly through unapproved shore routes along Ghana's coastline like the use of canoe-like barges to load from vessels offshore and delivered directly into trucks onshore.

Other times, they have been through vessels at the seaports which deliberately describe the products as untaxable petroleum products. (e.g., declaring diesel as sludge).

Figure 90: The Ghana Navy impounds an improvised barge used to smuggle petroleum products

When the volumes smuggled in are less than the volumes smuggled out, the expected sales realised from stock reconciliation becomes less than the official (NPA) reported sales. This was the case for 2018

In recent times, it has been through the under-declaration of imports and/or refining production. This is then completed by the further smuggling of the products from the various depots. When the exact volumes smuggled into depots are smuggled out of the depot, the stock reconciliation process fails to capture it.

However, when the volumes smuggled in are less than the volumes smuggled out, the expected sales realised from stock reconciliation becomes less than the official (NPA) reported sales. This was the case for 2018 where the expected sales were less than the official reported sales by 574.25mn litres with tax value of GHS797.43mn and regulatory margin of GHS76.47mn. It is evident that the regulatory interventions to curb the illegal trade must have 'trapped' a good volume of smuggled products for which reason undeclared imports/production were declared as sales.

The declaration of sales to the NPA is not necessarily, the declaration of petroleum tax obligations which is to be made to the Ghana Revenue Authority. This implies that the declaration of sales to the NPA can be accompanied by the non-declaration of tax obligations.

It is, therefore, not surprising that, based on NPA official volumes, the CBOD tax analysis shows that the Government reported Petroleum taxes were less by GHS433.75mn for 2018, GHS394.44mn for 2017 and GHS340.13mn for 2016.

6.7.4 Under Declaration

This occurs when products are lifted from depots without authorisation or when OMCs, during the filing of taxes, fail to report the full volumes of product lifted from a BDC. This implies that no taxes or regulatory margins are paid to the State for the undeclared or unauthorised liftings.

In a legitimately operated industry, a reconciliation of the official stock data is expected to yield an expected sale (operational losses adjusted). Information equivalent to the actual sales. If the expected sales are higher in quantity than the actual sales, it implies that more stocks have been discharged from the Customs bonded tank farms than recorded or permitted. In simple terms, it implies that sales have likely been under declared and taxes evaded. These stocks are referred to in this

Year	Official Tax Loss Unaccounted Stocks (GHSmm)
2015	65.16
2016	221.84
2017	1,103.73
2018	-
TOTAL	1,390.73

Table 21: Official Tax Loss on Unaccounted Stocks

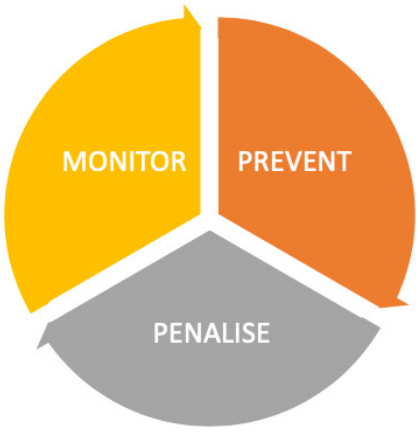
report as the official unaccounted stocks to differentiate it from smuggled stocks whose entry into the country is not captured at all.

As reported in section 2.5.7 of Chapter 2 and noted in the table below, Ghana lost a total of GHS1,390.73mn between 2015 and 2018.

6.7.5 Way Forward

The perpetrators of the illegal trade are a deeply-rooted cartel with partners across the echelons of politics, security and industry. The optimal success of any intervention will require political ruthlessness and an uninhibited resolve to enforce a culture of historical and present accountability in the industry.

Three broad steps, Monitor, Prevent and Penalise (MPP) are recommended in the fight against SEPD.



Monitor

Follow the Stock

For an industry that accounts for over 12% of annual tax revenue and has the stock movement as its tax base, the foremost step required is to follow the stock. The unreported tax receipts of GHS1,168.33mn between 2016 and 2018 and the tax on official unaccounted stocks valued at GHS1,390.73mn for 2015 to 2017 rationalises the imperative need for government to effectively follow the petroleum product stock. Perpetrators of the illegal trade have thrived significantly because of the absence of a coordinated monitoring of stock movements and the enforcement of accountability mechanisms.

As the bearer of tax policy, we recommend that the Ministry of Finance constitutes a Petroleum Product Data and Revenue Monitoring committee to:

1. Undertake a bi-monthly reconciliation and validation of petroleum product stock movement data (ie., depot stocks, imports, production, sales, exports and re-exports, etc.)
2. Reconcile stock movement data with all related financial data for validation. This should include reconciling all forex receipts from export and re-export transactions and commercial invoices or payment instruments for all import transactions.
3. Assess exemptions granted periodically and cause for them to be sufficiently accounted for. The use of exemptions can serve as a vehicle for dumping, as exempted cargoes may find their way back into the regular trade. For example, exemptions granted independent power producers for diesel used as fuel for power generation must be rationalised by the volume of power the IPP produced.
4. Analyse the reasonability of downstream petroleum tax receipt reports by the GRA and advise Government appropriately.
5. Gather intelligence on the illegal trading of petroleum products.
6. Recommend policy and regulatory interventions to curb the illegal trade for considerations by the NPA, GRA and MoF
7. Undertake and/or cause to be undertaken, a forensic audit of stock movements from 2015 to date to ensure stock and tax accountability.

We recommend that the committee be made up of persons of integrity and competence across industry. We recommend representatives from, the NPA, GRA, CBOD, AOMC, ESLA PLC, MoF,

For an industry that accounts for over 12% of annual tax revenue and has the stock movement as its tax base, the foremost step required is to follow the stock.

As the bearer of tax policy, we recommend that the Ministry of Finance constitutes a Petroleum Product Data and Revenue Monitoring committee.

MoE, BoG, TOR, Ghana Association of Bankers and an accounting firm.

Regulate Inspection Companies and International Oil Traders

The inspection companies and International Oil Traders, who serve the importers, are not regulated, but are key in the validation of stock movement data. Their cooperation with BDCs or Refineries can easily facilitate the illegal trade. For example, the under declaration of import volumes by an inspector will enable the smuggled volume to move undetected through a stock reconciliation process. A key validating party will be the supply international oil trader who is an unlikely co-conspirator as it will require payment for full volume. Under the current circumstances, the NPA has no locus to demand data from these parties or penalise them for breaches in their declaration of data or any conspiration in the illegal trade.

We recommend that a regulatory framework and operating code of conduct be put in place for inspectors and supplying international oil traders.

We recommend that a regulatory framework and operating code of conduct be put in place for inspectors and supplying international oil traders. This will deepen Government's ability to effectively monitor stock movements.

Deepen Regulatory Stock Monitoring

- Automatic Tank Gauging

  Steps being undertaken by the NPA to remotely monitor stock activity across the country using automatic tank gauging systems must be promoted. Considering the relevance of the sector to tax revenue, it is reasonable the government drives the needed investments to make this a reality.

- Fuel Marking

  Empower NPA to deepen its retail station and bulk consumer fuel marking monitoring. Frequently auditing the fuel marking activity coupled with punitive measures recommended below will disincentivise the illegal trade.

6.7.6 PREVENTION

Preventing Shore Smuggling

The prevention of shore smuggling requires the effective monitoring and policing of Ghana's coastline. It also requires the elimination of ambiguity (or the semblance of one) around permissible petroleum operations along the coastline to enable security officials easily identify smuggling activities. It is therefore recommended that:

1. The Ghana Navy should be adequately resourced to patrol the coastline. The insufficiency of functional patrol boats and related supplies like fuel and funding of honorariums to effectively guard the Ghanaian coastline is untenable. The revenue lost from petroleum shore smuggling is estimated by the NPA to contribute to the loss of USD200mn in petroleum taxes each year. Funding for Naval equipment (Patrol

Figure 91: A BRV preparing to receive smuggled products from a canoe barge.

Figure 92: Long hoses are used to siphon fuel from canoe barges on the high-seas to drums on-shore

Boats) and operational expenses like fueling may be allocated from the ESLA and SPT receipts as part of mechanisms to protect the receipts. Amendments to laws may be required but will be worth it. Our porous coastline is a major security and economic risk. The successful smuggling of petroleum products deepen a smuggle route and networks that may be used for the smuggling of other products like ammunition and illegal drugs.

2. Ban the importation of all petroleum waste (e.g., Sludge). This will eliminate the masking of the smuggling trade under this description and ensure Ghana is no dumping ground for waste.

3. Ban the operation of Ship to BRV operations (except for crude for power).

Preventing Export Dumping

Track Right

The GRA trackers track locations but are unable to track volume movement. This makes it possible for products to be dumped and empty trucks driven across the borders or trackers rather lodged on smaller vehicles to exit Ghana's borders and thereby misleading official monitoring of the export.

The optimal solution is the use of volume and location trackers similar to those being used by the NPA for domestic supplies. This will require the harmonization of tracking and transportation regulations across West Africa or with export destination countries (Mali, Burkina Faso and Niger) to enable transporters from importing countries operate from Ghana. Tracker should have tamper-proof RFID chips.

The tracking process must cease being the exclusive preserve of GRA officers and should include the exporters, NPA and possibly, the importing country. The use of tamper-proof RFID chips will ensure that in the event of any breach, the system will automatically alert all security and regulatory agencies as well as petroleum service providers (PSPs).

The tracking process must cease being the exclusive preserve of GRA officers and should include the exporters, NPA and possibly, the importing country.

The increase in access to tracking information will create a self-check system and make efforts by smugglers to compromise officials more difficult.

Figure 93: BRVs impounded after trying to dump products meant for export in the country

Physical Tracking

The GRA should make use of remote automatic weighing scales and reading devices at specific journey points possibly riding on the existing GHA axle load points. This increases the measure of accountability and establishment of parallel data to validate digital tracking. The assessment of weight at the various axle load points will partly assist with volume tracking. The use of the existing GHA axle load points will improve the constructive utilization of the facilities.

The Ghana Navy should be adequately resourced to patrol the coastline. The insufficiency of functional patrol boats and related supplies like fuel and funding of honorariums to effectively guard the Ghanaian coastline is untenable.

6.7.7 PENALISE

The reward for engaging in the illegal trade is extremely incentivising for perpetrators. Their deep political and administrative relationships encourage a strong sense of impunity. The cost of engaging in the illegal trade has to

be extremely high and its application swift for any meaningful success in the termination of this trade.

Our recommendations for penalising perpetrators will address the following: low fuel marker, unapproved trading chains and regulatory reforms.

Low Fuel Marker

The identification of a low marker concentration in any tested filling station is evidence that untaxed products have been introduced into the stocks of that filling station or bulk consumer facility. That makes an event of low marker concentration evidence of tax evasion, which is a criminal offense. The authorities must investigate every occurrence of low fuel marker concentration to identify suppliers of unmarked products and prosecute all culprits in the chain. Data exist from 2016 to date to undertake this.

We recommend that a regulatory framework and operating code of conduct be put in place for inspectors and supplying international oil traders.

The Government must cease treating low marker concentration as a regulatory or administrative offence only, but in addition a very serious criminal offence requiring the application of the full sanctions of the criminal law. Relevant laws should be amended to exact very heavy punishments to dis-incentivise these criminals.

Figure 94: An illicit petroleum peddler using gallons to distribute products

Unapproved Trading Chains

The illegal products are not sold only through the traditional chains, i.e.. filling stations and bulk consumer points, but also through unapproved distribution chains, like table-top operators and drum peddlers.

These operatives trade in the open across the length and breadth of the country, particularly in the coastal areas and are sometimes patronized by officers of our security services who should know better.

We recommend the arrest and prosecution of all illegal peddlers of petroleum products (e.g., table top operators, etc.).

Regulatory reforms

The regulatory framework for penalizing perpetrators of the illegal trade within the NPA needs a review to enable its administrative measures to be punitive enough and empower them to swiftly administer or ensure the punishment of culprits.

We recommend the following:

1. Revise regulatory sanctions to be more punitive. For example, fines and penalties applicable should exceed the full cost of the tax evasion and should be applicable on the total volumes traded by the entity in the preceding 12 to 24 months.
2. The NPA should be provided with resident representatives from the Attorney General's Department to swiftly and effectively prosecute culprits as they are caught.
3. Special courts should be set up to address petroleum related crimes and breaches.
4. Reward schemes should be introduced for whistle-blowers and officials who assist in identifying culprits.
5. Administratively, the NPA should start enforcing the provision in section 61(3) of the NPA Act (Act 691) which provides for the liability of directors and officers of corporate bodies found to have engaged in offences.

CONCLUSION

The CBOD's 2018 Industry Report highlights very critical events and analysis which are crucial to sustainable policy-making and industry positioning. The process of putting together the report was, unfortunately, constrained by difficulties and delays in accessing data.

For an industry as crucial to Ghana's economy, politics and society, data on the petroleum industry must be, transparently, gathered and easily-accessible. The industry accounted for 16% of the country's import bill and over 12% of national tax revenues in 2018 and, as such, policy-making has to be well and timeously informed by thorough data analysis.

It is evident that the absence of this data-driven environment has negatively affected tax revenues and encouraged the growth of an underground petroleum economy.

For example, timeous accessibility to data could possibly have positioned Government to mitigate the occurrence of the GHS2.7bn revenue loss, resulting from tax under-reporting and evasion between 2015 and 2018. Another example is the absence of transparency in trade credit information which currently, exposes the industry to a loss of GHS1.2bn from trade credit abuse by Petroleum Service Providers (PSPs). This contributed to the collapse of at least three banks in the recent Ghanaian banking crisis.

Needless to say, the industry poses a major systemic risk to the financial and fiscal stability of the country. Information regarding the industry (economic and non-economic) can, therefore, not continue to be treated in the cavalier manner we have seen over the years. Where it is available, data should not be treated as privileged and/or private.

Information and data, in respect of the activities of PSPs, must have the demands of transparency and disclosure required of institutions listed on the Ghana Stock Exchange or a universal bank regulated by the Bank of Ghana.

The injection of increased visibility and transparency will significantly de-risk the sector, improve fundability and sustainability of the sector. It will improve policymaking and its effectiveness in transforming the sector. It will promote long-range planning and minimise policy failures which have resulted significantly from the failure to collect, keep, manage and utilise data effectively.

For an industry as crucial to Ghana's economy, politics and society, data on the petroleum industry must be transparently gathered and easily accessible.

Appendix 1

NATIONAL PETROLEUM AUTHORITY
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Tel: +233 302 766 195/6
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Website: www.npa.gov.gh

NPA/PPR/RTP/01/12

12TH JANUARY, 2018

TO: SEE DISTRIBUTION LIST

IMPOSITION OF TAXES, LEVIES AND MARGINS ON MGO FOREIGN EFFECTIVE 16TH JANUARY, 2018

We refer to paragraph 851 of the 2018 Budget Statement and Economic Policy which states as follows:

"The lack of taxes and levies on Marine Gas Oil (MGO) Foreign creates a price gap between the product and regular Gasoil and provides an incentive to dump the product on the domestic market as regular Gasoil in order to invade the tax. The Volume of MGO – Foreign increased significantly from 2.4 million liters in the last quarter of 2016 to 18.3 million liters in the 2nd quarter of 2017, representing a 653 percent increase in demand. With effect from 2018, taxes and levies on MGO Foreign will be restored to curb the dumping of illegal acquired Gasoil on the domestic market."

We also refer to a letter from the Ministry of Energy dated 11th January 2018 on the same subject matter (copy attached for ease of reference).

We write to inform you that effective 16th January, 2018 all the taxes, levies and margins applicable to domestic gasoil (with the exception of UPPF Margin) will be applicable to Marine Gasoil (MGO) Foreign.

The specific taxes, levies and margins are listed below:

TAX/LEVY/MARGIN	GHp/Lt
Energy Debt Recovery Levy	41.0000
Road Fund Levy	40.0000
Energy Fund Levy	1.0000
Price Stabilization and Recovery Levy	10.0000
Primary Distribution Margin	7.5000
BOST Margin	3.0000
Fuel Marking Margin	2.0000
Special Petroleum Tax (SPT)*	
Marketers Margin	27.4555
Dealers (Retailers/Operators) Margin	19.0000

**SPT will be communicated in the PBUs published by the NPA for every sales window.*

In case of reply the number and date of this letter should be quoted

Our Ref: MoF/MEP/2018/BGT
Your Ref.....
Tel No.....

NATIONAL PETROLEUM AUTHORITY
RECEIVED
12 JAN 2018
CE'S SECRETARIAT

REPUBLIC OF GHANA

MINISTRY OF FINANCE
P. O. BOX MB 40
ACCRA

11th **JANUARY, 2018**

CURBING DUMPING OF MARINE GAS OIL ON THE DOMESTIC MARKET

Paragraph 851 of the 2018 Budget Statement and Economic Policy states that,

> *"The lack of taxes and levies on Marine Gas Oil (MGO) Foreign creates a price gap between the product and regular gasoil and provides an incentive to dump the product on the domestic market as regular gasoil in order to evade the tax. The volume of MGO-Foreign increased significantly from 2.4 million litres in the last quarter of 2016 to 18.3 million litres in the second quarter of 2017, representing a 653 percent increase in demand. With effect from 2018, taxes and levies on MGO Foreign will be restored to curb the dumping of illegal acquired gasoil on the domestic market."*

We draw your attention to this policy and kindly request that you put the right measures in place to begin the implementation of this policy.

Counting on your cooperation.

PATRICK NOMO
CHIEF DIRECTOR
FOR: MINISTER

HON. MINISTER
MINISTRY OF ENERGY AND PETROLEUM
ACCRA

CHIEF EXECUTIVE OFFICER
NATIONAL PETROLEUM AUTHORITY
ACCRA

Cc: Hon. Minister
Hon. Deputy Ministers
Director, RPD
Commissioner-Gen., GRA

Appendix 2

NATIONAL PETROLEUM AUTHORITY
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Website: www.npa.gov.gh

NPA/PPR/PPS/01/12 8th September, 2017

To: All Export Companies

INTERIM GUIDELINES FOR THE EXPORT AND RE-EXPORT OF PETROLEUM PRODUCTS FROM GHANA TO THE NEIGHBOURING COUNTRIES

Further to our letter dated 9th August, 2017 in which we served notice of decisions on the export and re-export of petroleum products from Ghana to neighbouring countries, we wish to inform you of the new guidelines developed by the Authority for implementation.

Please find under cover of this letter the new guidelines to govern petroleum product export activities to the neighboring countries for your information and necessary action. Kindly note that these guidelines shall be effective **Monday, 11th September, 2017.**

Additionally, we wish to re-affirm the following decisions for strict compliance by the industry:

i. No petroleum product export is allowed to Burkina Faso with the exception of orders from **SONABHY** – the sole importer of petroleum products into **Burkina Faso.**

ii. No petroleum product export is allowed to **Togo** with the exception of LPG.

iii. No Ghanaian truck is allowed to haul petroleum products from Ghana into any of the neighbouring countries with the exception of **LPG** hauled to Togo.

iv. Export loadings will be conducted solely on; **Mondays**, **Wednesdays** and **Saturdays**.

v. The exit border for all petroleum product exports/re-exports to Burkina Faso and Mali shall be the Paga border.

Please note that any exporter in breach of the prescribed procedure in these guidelines without the express approval of the Authority shall be heavily sanctioned.

This letter supersedes the previous letter with reference **No. NPA/PPR/PPS/10/12** and dated **9th August, 2017** on the subject matter "Notice of decision on export and re-export of petroleum products from Ghana to the Neighbouring countries".

Please take note and be guided accordingly.

ALHASSAN S. TAMPULI
CHIEF EXECUTIVE

Cc: The Chairman, Economic Management Team, Accra.
The Hon. Minister, Ministry of Energy, Accra.
The Hon. Minister, Ministry of Finance, Accra.
The Coordinator, National Security Council Secretariat, Accra.
The Director General, Bureau of National Investigations, Accra.
The Commissioner General, Ghana Revenue Authority, Accra.
All Petroleum Product Depots.

Appendix 3

2018 Petroleum Products Import (MT)

IMPORTER	LPG	ATK	FUEL OIL	GASOIL	GASOLINE	CRUDE OIL	TOTAL
Blue Ocean	34,964.60	92,015.42	74,081.22	280,481.70	162,069.70		643,612.65
Juwel		25,927.27		233,397.98	215,848.63		475,173.88
Fueltrade	122,686.61			208,412.38	63,954.02		395,053.01
Go Energy				210,072.94	171,663.93		381,736.88
Ebony oil and gas		42,020.55		98,857.23	144,706.66		285,584.44
Cirrus				162,361.30	102,803.29		265,164.59
Vihama				85,313.69	97,016.82		182,330.50
TOR						129,396.59	129,396.59
Sonabhy				39,011.79	66,972.77		105,984.56
Misyl				69,488.71	26,545.66		96,034.38
PWSL	16,559.31			48,856.25	24,108.04		89,523.60
Chase				25,877.86	58,882.56		84,760.42
LHS				40,151.56	34,107.11		74,258.67
Alfapetro	17,100.71			26,263.70	29,897.91		73,262.32
Woodfields			52,661.68				52,661.68
Eagle Pet.				31,700.00	20,827.91		52,527.91
Dominion				44,553.33			44,553.33
BOST				38,844.22			38,844.22
Globex				25,503.11	11,420.71		36,923.82
Sage				15,502.30	10,986.96		26,489.26
Rama				8,800.00	13,153.71		21,953.71
Firm Energy				1,500.00	19,850.00		21,350.00
Oil channel				3,989.24	12,981.15		16,970.39
Maranatha				6,517.67	9,992.43		16,510.09
Adinkra				3,000.00		9,744.62	12,744.62
Battop				6,981.92	5,711.31		12,693.23
Stratcon		9,977.78		1,352.07			11,329.85
Imperial				5,777.42			5,777.42
Dome/Genser				4,802.80			4,802.80
GOIL				4,000.00			4,000.00
TOTAL	**191,311.23**	**169,941.03**	**126,742.90**	**1,731,371.15**	**1,303,501.28**	**139,141.20**	**3,662,008.80**

Source: National Petroleum Authority

Petroleum Product Export 2016 – 2018 (MT)

	GASOIL	GASOLINE	LPG	NAPHTHA	FUEL OIL	ATK	TOTAL
2016	166,261.44	158,756.57	25142.22	112,810.56	69,832.38	-	**532,803.18**
2017	186,488.56	173,030.31	40,331.96	194.45	53,034.58	-	**453,079.85**
2018	55,351.46	48,894.44	4,809.36	4,809.36	41,483.43	9,977.78	**223,709.96**

Appendix 4

CREPT PROPOSAL

1.0 INTRODUCTION

This paper is, hereby, submitted for your consideration. It recommends the adoption of the Credit practise in trade policy dubbed CREPT in the management of the Ghanaian downstream sector.

2.0 BACKGROUND

2.1 BDC TRADE CREDIT

A review of industry data as at 2016 indicated that over 60% of sales were in breach of prior agreed trade credit terms. Credit terms have evolved within the industry from 2 days to 7, 14, 30 and 60 days. Most remain in breach for over 45 days. In some cases, trade credits have been overaged by as much as 730 days. The BDC trade credit exposure is estimated at GHS1.2billion in 2018. This exposure is mainly unsecured and in many cases doubtful. This continues to erode BDC capital and threaten their commercial sustainability.

For an industry that trades about a billion Cedis a month[1], a 30-day breach yields about GHS20mn loss to the industry per month (in terms of real cost of lost treasury returns). This situation presents a major commercial viability risk to the industry and a liquidity loss challenge to the banking sector.

2.2 BANK CONTINGENT LIABILITY

The current credit bureau regime effectively provides information on crystalised bank debts but not contingent liabilities. BDCs are therefore capable of procuring LC financing from various banks without banks having knowledge of the BDCs total contingent liability. As a result, BDCs are able to teem and lading to cover occurrences of liquidity losses without banking visibility. This exposes banks to major impairment loss arising from the full crystalization of a BDCs' inability to honour its obligations after subsequent periods of liquidity losses. This phenomenon encourages irresponsible behaviour in the industry and leads to the erosion of funding confidence. This situation is unsustainable for the industry and the economy.

3.0 CREPT

CREPT is an initiative to sanitize and improve trade and credit practices within the downstream oil and gas sector. It is being developed as a solution to the perennial credit abuse and liquidity leakages experienced at various levels of the industry. This is a situation that threatens the financial health of the industry and exposes it and the financial sector to high liquidity losses.

The model was developed after various meetings with stakeholders within the industry, including; the Bulk Distribution Companies (BDCs), the Oil Marketing Companies (OMCs), the Oil Financing Banks, the National Petroleum Authority (NPA) and Ministry of Energy (MoEn).

CREPT streamlines trade credit through the establishment of trade credit standards, reporting, monitoring and ratings of Petroleum Service Providers (PSPs) and users. The BoG licensed credit bureau, Dun and Bradstreet, has been nominated to operate CREPT under the oversight of LBL.

3.1 OBJECTIVES OF CREPT

- To reduce liquidity loss and credit default risk.
- To provide relevant credit information to guide trade and credit decisions by stakeholders.
- To reduce industry-wide trade credit abuse
- To foster healthy credit management
- To improve and sustain industry fundability

3.2 THE CREPT ADMINISTRATION

Two bodies are expected to provide administration for CREPT:

1. CREPT Administrator (Legacy Bonds Limited recommended), and
2. BoG Licensed Credit Bureau (Dun and Bradstreet appointed).

THE CREPT ADMINISTRATOR

The CREPT Administrator has been set up to prosecute the mandate stated in 3.2.1.1 below. It is to monitor and guide the execution of the CREPT project in a manner that meets stakeholder requirements and expectations

3.2.1.1 Mandate of the CREPT Administrator

1. Set industry trade credit standards to guide stakeholder activities and provide a reference for the development of the rating methodology.

1 *BDCs traded GHc 1.2 billion a month in 2018*

2. Evaluate and recommend the appointment of technical and operational service providers, including the credit bureau.
3. Review methodology proposed by the credit bureau.
4. Periodically review the credit bureau's performance.
5. Publish periodic state of credit reports on the industry for stakeholders.
6. Provide strategic and operational direction and management for the CREPT programme.
7. Advise industry on issues related to credit risk.

3.2.1.2 Membership

It is envisaged that, to be effective, the Board of the CREPT Administrator be made up of representatives from the following key stakeholders:

- Association of OMCs
- Ministry of Petroleum
- CBOD
- GAB
- Credit Bureau
- NPA.

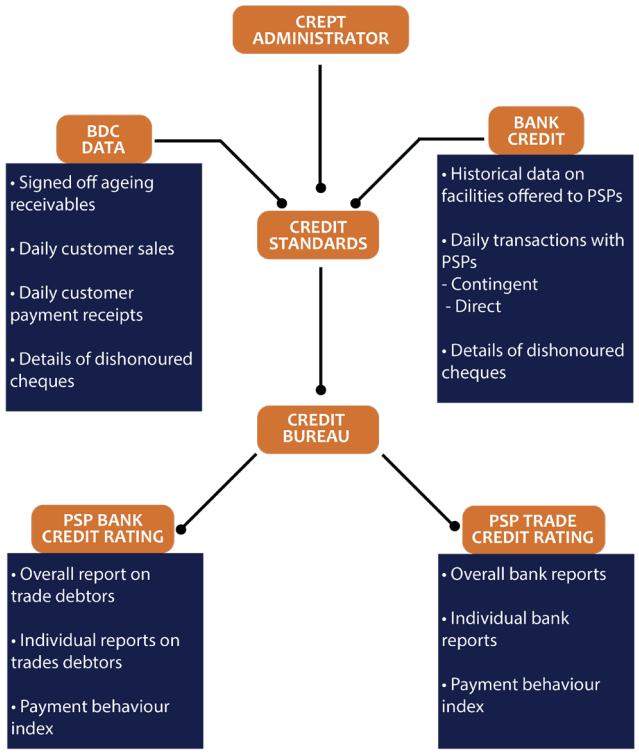
3.2.2 The Credit Bureau

Dun and Bradstreet Credit Bureau Ltd. has been appointed by the CREPT Advisory Board after reviewing proposals from a shortlist of credit bureaus.

3.2.2.1 Mandate of the Credit Bureau

1. Develop rating methodology for review by the CREPT Board.
2. Collect and collate trade credit data from Petroleum Service Providers (PSPs).
3. Collect and collate bank credit data on PSPs.
4. Produce trade and Bank credit reports on PSPs.
5. Develop an index for the overall rating of PSPs.
6. Ensure data integrity.
7. Develop and manage the associated data base and operating portal.

3.3 THE CREPT MODEL



The figure below shows the current structure and the key operators within the agreed model.

4.0 DISPUTE RESOLUTION

The existing credit bureau system, as approved by the Bank of Ghana, would be used to resolve disputes that may arise.

5.0 DATA SUBMISSION

5.1 PETROLEUM SERVICE PROVIDERS (PSPS)

PSPs will submit the following:

- Historical customer account statement prior to project commencement.
- Details of all sales transactions and payments received from customers. This will be executed daily. Information will be daily reconciled with real time sales data reported on the NPA's system.
- Details of dishonoured cheques received from customers.

5.2 FINANCIAL INSTITUTIONS

Financial Institutions will also provide the following data:

- Details of all facilities (contingent and direct) offered to PSPs for the past Three years.
- Daily transactions on every facility extended to PSPs. This will include contingent and direct.
- Details of dishonoured cheques received from borrowers.

6.0 ACCESS RIGHTS

Access rights for each user group is summarized in the table below:

Reports	Banks	IOTCs	BDCs	OMCs	INST. CUST
1. Overall bank credit reports	✓	X	X	X	X
2. Overall reports on trade debtors	✓	✓	✓	✓	X
3. Individual bank credit reports	✓	X	X	X	X
4. Individual reports on trade debtors	✓	✓	✓	✓	X
5. Payment behaviour index	✓	✓	✓	✓	✓

6.1 BANK CREDIT REPORTS

This will show the overall financial position (i.e., crytalised liabilities and contingent liabilities) of each PSP to the entire banking sector. It will only be available to the banks, as shown in the summary above.

6.2 REPORT ON TRADE DEBTORS

This will show the total trade credit position of each PSP to all of its suppliers/trade creditors. The banks will be able to view such reports on all PSP subscribers. PSPs will only have access to trade credit reports on only their customers/debtors in respect of industry exposure.

6.3 PAYMENT BEHAVIOUR INDEX

This is an overall index which would consider both bank and trade credit behaviour to score PSPs on their credit payment behaviour. Only the overall score will be available to all users.

7.0 CREDIT FACILITY APPROVALS

Banks and International Oil Traders who sign onto the project will be required to make CREPT participation a necessary condition precedent for credit facility approvals. This will ensure industry wide visibility on credit risk.

Appendix 5

OIL FX MARKET PROPOSAL

1.0 BACKGROUND

Prior to deregulation, the NPA was responsible for the setting of GHS/USD forex rates (FX rates) in the determination of ex-refinery and pump prices. The Bank of Ghana was also responsible for the supply of FX for oil imports. The negative variances between the exchange rate set by the NPA and the exchange rate with which the Bank of Ghana supplied FX for oil imports became what is known as the FX under recovery subsidy. Between 2011 and 2015, the GoG incurred USD806mn. To eliminate these occurrences, Government, in July 2015, deregulated the pricing of most petroleum products.

1.1 FX MISPRICING AND BANK IMPAIRMENT RISK

Under the current deregulation structure, Government no longer underwrites the FX pricing and supply risks. This implies that BDCs price their FX for their own trades and procure their FX from the open market, as a result, any form of loss arising from mispricing is borne by them. Events of mispricing reduce the adequacy of cedi inflows from a given transaction to meet the related USD obligations underwritten by an LC issuing bank. This poses a major liquidity risk to transactions funded by the banking sector. For a BDC trade estimated at about $2bn per annum, every 1% FX mispricing may yield a transaction loss of about USD20mn per year.

1.1.2 FX Overpricing

Typically, the risks highlighted in Section 1.1 above, are mitigated by adopting derivative solutions. Unfortunately, Ghana is yet to develop a very active FX derivative market. BDCs on their own estimate forwards either through guts or adjustments to a covered interest parity model. In periods of high FX speculations and sharp rises, FX estimates used in the pricing may be unduly high and will significantly impact the estimated pump prices. As is expected, any assumed or estimated forward rates will be a function of current rates, interest rates and a forward tenor. In the case of BDCs, the forward tenor often adopted is 60-90 days based on the current credit practice and delayed payments. This situation compounds the impact on pump prices, as the longer the tenor, the higher the FX forward estimate and vice versa. For example, for the 16th September to 30th September 2018 pricing window, BDCs estimate their 60-day forward FX at between 5.1 and 5.15. This estimate is between 5% and 8% higher than the current BOG spot rate and 3% higher than the commercial bank rates.

1.2.3 Demand Duplication

The FX shopping activities by BDCs in an uncoordinated manner duplicates demand in the market and unduly exerts upward pressure on the exchange rate. For example, a USD10mn shopping by a BDC around 5 banks, duplicates demand and creates a false demand of US50mn on the market. This negatively affects our exchange rate. For a commodity that accounts for about 20% of Ghana's total import bill, a duplication of its FX demand is of material relevance.

1.3 THE OBJECTIVE OF THE PROPOSAL

The Oil FX Market proposal seeks to:

- Eliminate the occurrences of FX demand duplication from the petroleum downstream sector and its consequential negative impact on FX rates, by centralising the FX demand and supply mechanism.
- Provide government with a functional mechanism for intervening in stabilising petroleum prices through the intertemporal supply of FX directly to the petroleum downstream sector.
- Provide industry with optimally priced FX through an open competitive bidding process.
- Eliminate the risk of loan impairments to the banking sector resulting from FX underpricing.
- Provide government with visibility to effectively monitor FX pricing, petroleum pricing and FX supply.

1.4 THE OIL FX MARKET (OFM)

The OFM is an online platform, which is proposed to be available to BDCs, BoG and banks as the sole

platform for the procurement and supply of foreign exchange for oil imports in an open and competitive structure. This will centralise demand for FX by BDCs and eliminate the occurrence of demand duplication. The openness and competitiveness in supply ensures optimal FX pricing.

The centralised market structure also creates opportunities for BoG to intervene and stabilise FX rates in BDCs' pricing estimates during periods of high FX speculation. Such interventions can be used by the government to partly stabilise petroleum price escalations.

The OFM will trade FX spots and forwards not exceeding a tenor of 30days.

1.4.1 Proposed Solution

Solution	• **Oil FX Market** ○ **FX Forwards and Spots online trading platform dedicated to the downstream Oil sector.**
Counterparties	• Bank of Ghana • Commercial banks • Bulk Distribution Companies (BDCs) • Oil Trading Companies (OTCs)

Ownership and Administration	• The platform will be owned and administered by Legacy Bonds Ltd., an SPV owned by the Ghana Association of Bankers and the Ghana Chamber of Bulk Oil Distributors.
	• Legacy Bonds Ltd. shall:
	  ○ Define and enforce the rules governing participation on the platform. The governing rules shall be agreed by all parties.
	  ○ Settle disputes that may arise between counterparties.
	  ○ Own the platform.
	• A legal framework shall be developed to support the administrative arrangements that will be agreed. The International Swaps and Derivatives Association (ISDA) and existing Credit Support Annex (CSA) shall serve as a guide culminating into a master agreement to be signed by all parties on the platform.
	• The **Reuters EIKON** platform has been nominated as the operating platform.

Operating Dynamics	• The platform shall operate daily excluding banking holidays. • Forwards shall not exceed 30-days in line with ongoing trade credit protocols being developed for the industry. • Offers from banks will only be visible to the requesting non-bank counterparties and the platform operator.

Underlying Protocols	• The OFM shall serve as the sole medium for FX supply to BDCs & OTCs.
	  ○ This will provide an avenue for visibility in the BDC trade, which helps to reduce information asymmetry and prevent teeming and lading.
	  ○ It will significantly harmonize the FX rate assumptions in BDC ex-refinery pricing and eliminate the risk of unhealthy FX rate speculation.
	  ○ It will ensure market efficiency and activity.
	• Underwriting a non-bank counterparty risk is considered a pure credit activity for which individual banks are required to adopt their own credit evaluation without recourse to the platform.
	• BDCs will be required as part of the product financing structure to procure FX in advance of their projected daily sales.
	• The Platform Administrator (PA) shall be responsible for all broadcasts on the platform while banks shall file quotes to the non-bank counterparty.

1.4.2 Participation of BoG on the platform

The platform will be subject to the regulations of BoG. The Bank of Ghana, in addition to its regulatory and monitoring roles, will be allowed to operate as a counterparty. Its trades to the BDC/ OTC counterparties will be subject to the BoG allowed spreads chargeable by the underwriting bank to the account of the BDC (currently 25pips). The monthly FX requirement is estimated at about USD205mn.

1.4.3 Realigning Trade Credit

The forward tenor for BDC trades are linked to the estimated trade credit tenor BDCs grant the industry (particularly OMCs). The longer the trade credit tenor, the farther the forward tenor required, which in turn increases the spread between the spot and forward FX rates. This may lead to an increase in pump prices.

A misalignment in the trade credit and forward tenors will result in the inability of BDCs to collect sales proceeds and make Cedi funds available to the underwriting banks in time to meet forward contracts. This will heighten credit risks within the banking sector.

To address this, the GAB and CBOD through LBL recommend the adoption of the CREPT proposal. (Please see attached).

CREPT is an initiative to sanitise and improve trade and credit practices within the downstream oil and gas sector. It streamlines trade credit through the establishment of trade credit standards, reporting, monitoring and ratings of Petroleum Service Providers (PSPs) and users. The recommended cap on trade credit has currently been set at 14 days. The BoG licensed credit bureau, Dun and Bradstreet, has been nominated to operate CREPT under the oversight of LBL.

1.4.4 Transaction Process

1.4.5 Impact of Traded Forwards on Spot Rates

NO.	PROCESS	BY	MEDIUM	COMMENT
1	Determine FX requirement and identify UB	BDC	Offline	
2	Request identified bank to underwrite the transaction. Approved request shall be forwarded to the Platform Administrator (PA) indicating the following; • Deal size • Spot/Forward tenor up to 30 days • Estimated transaction date	BDC/UB	Offline: By email	
3	Broadcast deal notice to all platform treasurers advising the following; • Deal size • Deal date • Deal window • Deal tenor • Non-bank counterparty • Underwriting Bank (UB)	PA	Online: OFM Platform	Each broadcast shall be administered on a First in First Out (FIFO) basis. The deal window from the broadcast shall not exceed 30mins
4	Price broadcasted deal to the non-bank counterparty	Counterparty bank	Online: OFM Platform	
5	Accept preferred bid(s) from counterparty banks	BDC/OTC/Platform Administrator	Online: OFM Platform	
6	Inform Bank(s) that have won BIDS and their allocated amounts	Both counterparties	Offline: By email	This is to reconcile information from all parties and ensure transaction details are same as observed by both parties.
7	At maturity, honor forex and cedi obligations and notify PA	Both counterparties	Offline: By email	

We are of the opinion that the counterparties and the financial sector are competent enough to understand that forward rates are a function of interest rate and not the anticipated demand and supply influences that characterise spot rates. We, therefore, do not expect that speculation will drive spot rates towards the traded forwards.

However, should this be of concern, we recommend that forward points are predetermined on the basis of the BoG/Market benchmark interest rates (e.g., Policy rate and inter-bank rates), while counterparties on the platform quote and compete only on the spot-rate base. As a result, the forwards trade on the platform will be derived and not quoted on the platform. The absence of the full visibility of the forward quote is expected to mitigate any risk of unhealthy speculation.

1.4.6 General Advantages of the Oil FX Market Proposal

1. It increases the flow of FX to the industry. The supply of FX and credit are currently paired such that FX is mainly supplied by the LC financing bank. As a result, if a given bank is unwilling to participate in credit, it reduces the FX supply to the industry. The OFM separates credit from the FX supply to the industry and allows players uncomfortable with participation on the credit side to nonetheless participate directly on the FX supply side.
2. It provides enhanced visibility in the BDC trade and enables banks to detect default risk in time.
3. The increased flow of FX and the open trading structure of the OFM will facilitate efficient FX pricing.

1.4.7 Advantages of Oil FX Market Proposal to the

Bank of Ghana

1. Centralisation of oil FX demand eliminates the duplication of demand which places an upward pressure on the FX rate resulting from the false hike in demand. This, we expect, will contribute to the stability of the Cedi.
2. It provides BoG with improved visibility of the impact of oil imports on FX supply.
3. It will improve the stability of the banking sector as banks will get more visibility of credit and help BDCs to eliminate losses underwritten by the banks.
4. Centralisation provides the market with better assessment of demand patterns to enable BoG and the financial sector effectively plan to meet these demand patterns within the industry.

NOTES

1. Information access and sharing
   a. During the bidding process for a given transaction, quotes from competing banks shall only be visible to the requesting BDC and the PA.
   b. After a given transaction, any financing bank or party of a given BDC may be advised of the outcome of a given transaction by the PA who shall share only the transaction information excluding the details of the counterparty bank.
2. There will be a fixed market open and close time.
   a. All transaction windows are to be executed within this time. A maximum of 30 mins is recommended
   b. 9:00 a.m. to 3:00 p.m. duration for trading.
3. Partial trading shall be allowed, i.e., traders may quote and accept a fraction of the published deal size.
   a. Quotes shall, however, be executed in deal lots of a given size. A lot size of USD100,000 is recommended.
   b. The above implies that published deal sizes will be in lots of USD100,000.
   c. Quotes shall also cover lots sizes in multiples of USD100,000.

KEY

- PA – Platform Administrator
- UB – Underwriting Bank
- LC – Letter of credit

Appendix 6 - 2018 National Domestic Consumption (mt)

Month	Fuel oil (Industrial)	Fuel oil (Power Plant)	Gasoil (Diesel)	Marine Gasoil (Local)	Naphtha (Unified)	Kerosene	*LPG	LPG- Propane (Power Plant)	Gasoline (Premium)	Premix	Marine Gasoil (Foreign)	Gasoil (Mines)	ATK	Gasoil (Rig)	Total
Jan-18	1,312	28,389	113,680	1,802	75	667	24,101	8,486	111,359	5,402	2,336	22,096	19,098	5,874	344,678
Feb-18	3,495	24,698	101,068	2,624	-	628	21,916	6,481	91,726	4,658	642	22,051	8,993	7,391	296,370
Mar-18	2,226	30,370	129,150	3,703	398	268	22,814	8,225	116,963	5,789	352	25,247	17,229	8,272	371,006
Apr-18	2,357	-	113,393	1,608	82	424	23,962	9,630	102,682	5,055	319	23,073	16,223	7,188	305,996
May-18	-	-	135,249	1,401	41	446	24,949	9,245	111,078	5,545	240	21,845	13,982	5,946	329,968
Jun-18	6,147	-	126,365	1,688	61	348	23,946	9,821	100,101	5,861	733	20,532	17,430	6,845	319,878
Jul-18	3,167	-	109,062	1,669		243	23,412	9,534	94,344	4,658	2,679	21,002	18,378	7,986	296,135
Aug-18	2,079	-	124,376	1,669	14	359	25,261	8,289	104,703	4,719	377	26,660	19,675	6,917	325,999
Sep-18	5,149	-	105,024	1,980	245	280	24,027	10,200	95,310	2,854	-	21,779	14,603	4,420	285,870
Oct-18	4,140	222	121,462	1,473	122	678	24,374	9,684	102,727	4,138	228	27,751	19,466	9,570	326,036
Nov-18	3,106	10,516	123,160	2,879	122	486	23,592	9,128	109,514	4,159	1,302	26,511	17,799	6,416	338,690
Dec-18	2,576	9,151	128,268	1,563	204	138	25,974	7,300	114,635	2,497	1,049	25,397	17,462	11,345	347,558
TOTAL	35,754	103,345	1,430,256	24,060	1,362	4,966	288,329	106,024	1,255,443	55,335	10,259	283,945	200,337	88,171	3,887,286

Appendix 7 - 2018 BDCs Performance Statistics (mt)

No	Company	Fuel oil (Industrial)	Fuel oil (Power)	Gas oil	Marine Gasoil	Unified	Kerosene	LPG (Butane) Domestic	LPG (Propane) Power	Premium	Premix	Marine (Foreign)	Gasoil(Mines)	ATK	Gasoil (Rig)	Total
1	AEL ENERGY COMPANY LIMITED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	**AKWABA LINK**	14,516	-	24,116	-	122	-	-	-	-	-	-	-	-	-	38,755
3	ALFAPETRO GHANA	-	-	28,541	11	-	-	15,767	-	31,443	-	319	198	-	-	76,280
4	**BATTOP ENERGY LIMITED**	-	-	11,461	-	-	-	-	-	13,881	-	-	-	-	-	25,342
5	BLUE OCEAN INVESTMENTS LTD	-	83,705	233,436	1,323	-	-	29,782	-	148,058	-	3,266	6,312	96,410	3,189	605,482
6	**CHASE PET. GHANA LIMITED**	-	-	23,677	844	-	-	-	-	56,499	-	-	3,995	-	-	85,016
7	CHROME ENERGY RESOURCES LIMITED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	**CIRRUS OIL SERVICES LIMITED**	3,444	19,640	77,192	3,202	-	-	-	-	80,555	-	240	8,686	-	43,875	236,833
9	DEEN PETROLEUM GHANA LIMITED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	**DOME ENERGY RESOURCES LIMITED**	-	-	3,723	319	-	-	19,227	108,482	3,214	-	-	-	-	-	134,965
11	DOMINION INT. PETROLEUM LIMITED	-	-	37,314	-	-	-	-	-	10	-	-	-	-	-	37,324
12	**EAGLE PETROLEUM COMPANY LIMITED**	-	-	40,495	-	-	-	-	-	27,362	-	-	91	-	-	67,948
13	EBONY OIL & GAS LIMITED	6,913	-	97,081	1,243	-	4,038	-	-	143,184	-	228	11,000	56,559	-	320,246
14	**ECO PETROLEUM LIMITED/SAGE**	-	-	6,885	91	-	-	79,674	-	5,754	-	-	-	-	-	92,405
15	FIRM ENERGY	-	-	12,464	319	-	-	-	-	20,126	-	-	183	-	-	33,092
16	**FUELTRADE LIMITED**	-	-	44,474	307	-	15	85,660	-	8,710	-	2,796	124,411	-	-	266,373
17	GLOBEX ENERGY LIMITED	972	-	15,914	2,076	-	-	2,110	-	12,712	-	274	274	-	-	34,332
18	**GoENERGY COMPANY LIMITED**	-	-	254,392	4,067	-	-	12,478	-	255,577	-	1,555	76,285	-	41,107	645,461
19	HASK OIL CO. LIMITED	-	-	-	-	-	-	-	-	2,198	-	-	-	-	-	2,198
20	**JUWEL ENERGY LIMITED**	-	-	208,466	331	-	914	-	-	203,472	-	-	21,555	47,062	-	481,799
21	L.I.B GHANA LIMITED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	**LHS GHANA LIMITED**	-	-	44,524	445	-	-	2,432	-	30,619	-	320	-	-	-	78,340
23	MARANATHA OIL SERVICES	-	-	17,246	23	-	-	-	-	11,574	-	-	279	-	-	29,122
24	**MED PETROLEUM COMPANY LIMITED**	-	-	8,768	-	-	-	-	-	7,732	12,843	-	-	-	-	29,342
25	MIMSHACH ENERGY LIMTED	-	-	6,223	-	-	-	-	-	2,880	-	-	-	-	-	9,103
26	**MISYL ENERGY COMPANY LIMITED**	-	-	50,207	3,091	-	-	-	-	20,431	-	-	-	-	-	73,730
27	MOBILE ENERGY RESOURCES LTD.	-	-	3,069	-	-	-	175	-	2,490	-	-	-	-	-	5,734
28	**NATION SERVICES LTD.**	-	-	2,197	-	-	-	-	-	3,134	-	-	-	-	-	5,331
29	OIL CHANNEL LIMITED	-	-	16,171	-	-	-	-	-	31,272	-	42	-	-	-	47,486
30	**OIL TRADE COMPANY LIMITED**	-	-	4,562	-	-	-	-	-	7,725	-	-	-	-	-	12,287
31	PEACE PETROLEUM COMPANY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	**PET. WAREHSN & SUPPLY**	-	-	46,696	1,506	-	-	34,345	-	35,456	-	578	30,676	-	-	149,258
33	PLATON GAS OIL LIMITED	9,908	-	2,877	593	1,240	-	-	-	-	-	639	-	-	-	15,257
34	**RAMA ENERGY LIMITED**	-	-	16,221	-	-	-	-	-	16,779	-	-	-	-	-	33,000
35	RHEMA ENERGY CO. LTD	-	-	221	11	-	-	-	-	1,583	-	-	-	-	-	1,816
36	**RICHELLE ENERGY LIMITED**	-	-	-	-	-	-	-	-	116	785	-	-	-	-	900
37	SA ENERGY LIMITED	-	-	738	-	-	-	-	-	3,704	-	-	-	-	-	4,441
38	**SPRINGFIELD ENERGY LIMITED**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	SUMMIT PETROLEUM LIMITED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	**TEMA OIL REFINERY (TOR)**	-	-	2,489	-	-	-	6,539	-	993	-	-	-	306	-	10,327
41	TIMELESS OIL COMPANY LIMITED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	**VIHAMA ENERGY LIMITED**	-	-	76,962	2,909	-	-	-	-	62,478	41,708	-	-	-	-	184,057
43	XF PETROLEUM & ENGINEERING LTD.	-	-	34	-	-	-	-	-	-	-	-	-	-	-	34
44	**WI Energy**	-	-	1,260	-	-	-	-	-	1,437	-	-	-	-	-	2,697
45	IMPERIAL ENERGY	-	-	3,600	228	-	-	141	-	1,984	-	-	-	-	-	5,954
46	STRATCON ENERGY TRADING LIMITED	-	-	6,558	1,118	-	-	-	-	-	-	-	-	-	-	7,676
	TOTAL	35,754	103,345	1,430,256	24,060	1,362	4,966	288,329	108,482	1,255,143	55,335	10,259	283,945	200,337	88,171	3,889,744

Appendix 8 - 2018 OMC Performance Statistics (mt)

All Products are in Litres except LPG in Kg

OMC PERFORMANCE STATISTICS FOR JANUARY-DECEMBER 2018

NO.	COMPANY	GASOLINE	GASOIL	LPG (Domestic)	KEROSENE	ATK	PREMIX	RFO	MGO LOCAL	MGO FOREIGN	GASOIL MINES	GASOIL(RIG)	UNIFIED
1	AGAPET LIMITED	10,557,000	13,230,000	982,400	40,500	-	769,500	-	1,201,500	-	-	-	625,500
2	AI ENERGY GROUP LIMITED	5,687,000	10,766,000	-	-	-	121,500	-	-	50,000	612,000	168,000	-
3	ALINCO OIL COMPANY LIMITED	5,778,000	8,316,000	-	-	-	2,497,500	-	-	-	-	-	-
4	ALIVE GAS	-	-	2,390,770	-	-	-	-	-	-	-	-	-
5	ALLIED OIL COMPANY LIMITED	50,048,500	22,722,000	-	-	-	-	-	-	-	-	-	-
6	AMDAWAY COMPANY LIMITED	1,989,000	1,305,000	-	-	-	-	-	-	-	-	-	-
7	ANASSET COMPANY LIMITED	-	-	4,703,760	-	-	-	-	-	-	-	-	-
8	ANDEV COMPANY LIMITED	-	-	13,504,860	-	-	-	-	-	-	-	-	-
9	ANNANDALE GHANA LIMITED	-	-	5,527,420	-	-	-	-	-	-	-	-	-
10	AP OIL & GAS GHANA LIMITED	2,700,500	2,926,000	463,920	40,500	-	-	1,427,036	1,242,000	-	-	-	261,000
11	APEX PETROLEUM GHANA LIMITED	9,720,000	9,195,500	-	-	-	216,000	-	-	-	-	-	-
12	ASPEN PETROLEUM	-	-	207,960	-	-	-	-	-	-	-	-	-
13	AVOS OIL & GAS	774,000	1,287,000	-	-	-	-	-	-	-	-	-	-
14	BAFFOUR GAS COMPANY LIMITED	-	-	1,447,440	-	-	-	-	-	-	-	-	-
15	BANO OIL COMPANY LIMITED	-	-	-	-	-	-	-	-	-	-	-	-
16	BEAP ENERGY GHANA LIMITED	1,380,000	898,500	-	-	-	-	-	-	-	-	-	-
17	BENAB OIL COMPANY LIMITED	16,429,500	16,861,500	724,510	-	-	-	-	-	-	-	-	-
18	BF PETROLEUM LIMITED	9,022,500	11,642,500	-	-	-	-	-	-	-	-	-	-
19	BG PETROLEUM LIMITED	4,262,000	3,082,500	-	-	-	-	-	-	-	234,000	-	-
20	BISVEL PETROLEUM SERVICES	931,500	562,500	-	-	-	-	-	-	-	-	-	-
21	BLANKO OIL COMPANY LIMITED	3,676,000	2,033,000	-	-	-	-	-	-	-	-	-	-
22	CAPSTONE OIL LIMITED	2,718,000	2,596,500	-	-	-	-	-	-	-	-	-	-
23	CASH OIL COMPANY LIMITED	7,278,500	10,963,000	373,520	-	-	9,679,500	-	-	-	-	-	-
24	CENT EASTERN GAS LIMITED	-	-	1,104,020	-	-	-	-	-	-	-	-	-
25	CENTRAL BRENT PETROLEUM LIMITED	-	-	2,297,940	-	-	-	-	-	-	-	-	-
26	CHAMPION OIL CO. LTD	7,629,000	30,522,600	1,685,590	27,000	-	2,416,500	-	1,674,000	-	14,559,000	-	-
27	COEGAN GHANA LIMITED	-	842,500	4,275,200	-	-	-	-	-	-	-	-	-
28	COMPASS OLEUM LIMITED	15,799,500	9,999,600	-	-	-	-	-	-	-	-	-	-
29	CORNOIL PETROLEUM LIMITED	-	-	-	-	-	-	-	-	-	-	-	-
30	CROWN PETROLEUM GH. LTD	6,265,500	5,585,500	346,020	121,500	-	-	-	-	-	-	-	-
31	DA OIL CO. LTD	-	189,000	803,900	-	-	-	-	-	-	-	-	-
32	DABEMENS GAS CO.	-	-	1,310,330	-	-	-	-	-	-	-	-	-
33	DEEP PETROLEUM LIMITED	175,500	351,000	-	-	-	-	-	-	-	-	-	-
34	DELIMAN & COMPANY LTD	6,923,000	16,229,500	245,730	-	-	-	-	-	-	-	-	-
35	DESERT OIL GHANA LIMITED	527,000	517,500	-	-	-	-	-	-	-	-	-	-
36	DUKES PETROLEUM COMPANY LTD.	23,558,500	17,103,000	4,623,200	-	-	-	-	-	-	-	-	-
37	ENGEN GHANA LTD	8,730,000	21,565,500	3,034,000	99,000	-	-	-	67,500	527,500	-	-	-
38	EV. OIL CO. LTD	10,767,000	4,946,500	157,790	-	-	-	-	-	-	-	-	-
39	EXCEL OIL CO. LTD	15,522,000	16,726,500	-	-	-	-	-	3,834,000	-	-	-	-
40	FIRST GAS COMPANY LIMITED	-	-	2,992,860	-	-	-	-	-	-	-	-	-
41	FINEST OIL COMPANY LIMITED	3,101,000	3,943,500	-	-	-	-	-	-	-	-	-	-
42	FRAGA OIL GH. LTD	3,752,000	4,498,000	198,080	-	-	-	-	-	-	-	-	-
43	FRIMPS OIL CO. LTD	34,153,000	38,381,500	2,852,270	94,500	-	2,335,500	-	-	-	-	-	-
44	FRONTIER OIL GHANA LIMITED	3,433,500	4,599,000	-	-	-	270,000	1,525,500	-	-	3,496,000	-	756,000
45	GAB ENERGY LIMITED	2,997,000	958,500	-	-	-	-	-	-	-	-	-	-

46	GALAXY OIL CO. LTD	13,198,500	11,569,500	-	49,500	-	7,209,000	-	256,500	-	-	-	-
47	GASO PETROLEUM LIMITED	8,088,000	7,300,500	2,737,820	-	-	-	-	-	-	-	-	-
48	GB OIL LIMITED	2,394,000	675,000	-	-	-	-	-	-	-	-	-	-
49	GHANA OIL COMPANY LIMITED	369,039,600	310,044,500	27,864,510	90,000	19,201,100	-	-	4,732,212	1,710,000	-	48,661,240	-
50	GLASARK OIL CO. LTD	3,059,500	3,336,000	-	-	-	-	-	-	-	-	-	-
51	GLEE OIL LIMITED	6,687,000	8,728,000	-	-	-	2,119,500	-	-	-	-	-	-
52	GLOBAL STANDARD PETROLEUM LIMITED	81,000	531,000	-	-	-	-	-	-	-	-	-	-
53	GLORY OIL CO. LTD	20,968,000	21,527,500	1,117,100	-	-	135,000	-	27,000	-	-	-	-
54	GO-GAS VENTURES LIMITED	-	-	1,801,470	-	-	-	-	-	-	-	-	-
55	GOLDEN PETROLEUM LIMITED	5,377,500	8,241,000	111,980	-	-	-	-	-	-	702,000	-	-
56	GOODNESS ENERGY LIMITED	17,237,500	21,821,500	-	-	-	-	-	-	-	-	-	-
57	G&G OIL COMPANY LIMITED	18,208,000	25,038,000	-	-	-	-	-	-	-	-	-	-
58	GRACE OIL PETROLEUM CO. LTD.	-	-	-	-	-	-	-	-	-	-	-	-
59	GRID PETROLEUM GHANA LIMITED	5,364,000	6,039,000	-	-	-	4,779,000	-	-	-	-	-	-
60	GULF ENERGY GHANA LIMITED	3,523,500	1,552,500	-	-	-	-	-	-	-	594,000	-	-
61	HAK OIL CO. LTD	-	-	-	-	-	-	-	-	-	-	-	-
62	HAVILAH OIL GHANA LTD	2,395,000	2,965,500	-	-	-	-	-	-	-	-	-	-
63	HILLS OIL MARKETING COMPANY LIMITED	-	-	14,800,710	-	-	-	-	-	-	-	-	-
64	HOLMAN PETROLEUM	-	-	-	-	-	-	-	-	-	-	-	-
65	HOSSANA OIL COMPANY LIMITED	900,000	1,215,000	-	-	-	-	-	-	-	-	-	-
66	HUMANO ENERGY LIMITED	6,759,500	16,488,000	-	-	-	-	-	-	-	-	-	-
67	INFIN GHANA LIMITED	6,943,500	8,014,500	87,230	67,500	-	3,240,000	-	-	-	-	-	-
68	JD- LINK OIL COMPANY LIMITED	978,000	1,039,500	9,800	-	-	-	-	-	-	-	-	-
69	JO & JU OIL COMPANY LTD	2,456,100	5,473,800	-	-	-	-	-	-	-	-	-	-
70	JOEKONA COMPANY LIMITED	-	-	4,662,510	-	-	-	-	-	-	-	-	-
71	JUSBRO PETROLEUM CO. LTD	5,386,500	6,536,500	158,220	-	-	-	-	-	-	-	-	-

72	KABORE OIL LIMITED	2,363,500	3,970,500	206,710	-	-	-	-	-	-	-	-	-
73	KAN ROYAL SERVICE STATION & TRADING LIMITED	5,612,500	7,691,000	1,813,600	-	-	-	-	-	-	-	-	-
74	KARELA OIL AND GAS LIMITED	5,166,000	4,516,200	-	-	-	-	351,000	-	-	-	-	-
75	KAYSENS GAS COMPANY	-	-	2,811,820	-	-	-	-	-	-	-	-	-
76	KINGS ENERGY LIMITED	5,302,500	4,725,000	-	-	-	-	-	-	-	-	-	-
77	KI ENERGY LIMITED	108,000	-	2,719,570	-	-	-	-	-	-	-	-	-
78	LAMBARK GAS COMPANY LIMITED	-	-	2,900,230	-	-	-	-	-	-	-	-	-
79	LAMININ BEE VENTURES LIMITED	-	-	2,805,580	-	-	-	-	-	-	-	-	-
80	LIFE PETROLEUM COMPANY LTD	5,157,000	8,199,000	-	-	-	-	-	-	756,000	-	-	-
81	LILYGOLD ENERGY RESOURCES LIMITED	2,984,000	1,975,500	-	-	-	-	-	-	-	-	-	-
82	LONESTAR GAS COMPANY LIMITED	-	-	5,772,330	-	-	-	-	-	-	-	-	-
83	LOUIS GAS COMPANY LIMITED	-	-	1,294,100	-	-	-	-	-	-	-	-	-
84	LUCKY OIL CO. LTD	4,947,000	4,591,500	5,241,790	-	-	-	-	-	-	-	-	-
85	MANBAH GAS COMPANY LIMITED	-	-	16,249,800	-	-	-	-	-	-	-	-	-
86	MAXX GAS LIMITED	-	630,500	649,150	-	-	-	-	-	-	-	-	-
87	MAXX ENERGY LIMITED	6,967,000	6,783,500	3,154,960	-	-	810,000	274,301	3,321,000	324,000	-	-	-
88	MAXXON PETROLEUM LIMITED	2,163,000	850,000	-	-	-	-	-	-	-	-	-	-
89	MERCY OIL MARKETING COMPANY LIMITED	2,592,000	1,372,500	-	-	-	-	-	-	-	-	-	-
90	MIDAS OIL & GAS LIMITED	-	-	5,754,980	-	-	-	-	-	-	-	-	-
91	MIGHTY GAS COMPANY LIMITED	-	-	8,276,880	-	-	-	-	-	-	-	-	-
92	MODEX OIL CO. LTD	-	-	-	-	-	-	-	-	-	-	-	-
93	MOTOHAUS OIL CO. LTD	-	-	-	-	-	-	-	-	-	-	-	-
94	MS OIL	-	-	-	-	-	-	-	-	-	-	-	-
95	NAAGAMNI GHANA LTD	14,550,000	10,993,000	-	-	-	-	-	-	-	-	-	-
96	NASONA OIL COMPANY LIMITED	17,523,000	17,591,500	-	-	-	-	-	-	-	-	-	-
97	NEXTBONS GAS LIMITED	-	-	3,161,850	-	-	-	-	-	-	-	-	-

98	NICK PETROLEUM GHANA LIMITED	8,640,000	5,233,500	-	81,000	-	-	-	-	-	-	-	-
99	NORGAZ PETROLEUM LTD	-	-	577,660	-	-	-	-	-	-	-	-	-
100	NURU OIL COMPANY	3,816,000	2,826,000	-	-	-	-	-	-	-	-	-	-
101	O.J.K COMPANY LIMITED	-	-	-	-	-	-	-	-	-	-	-	-
102	OANDO GHANA LIMITED	675,000	1,008,500	439,520	-	-	-	-	-	-	-	-	-
103	OCEAN OIL COMPANY LIMITED	-	-	65,820	-	-	-	-	-	-	-	-	-
104	OMEGA ENERGY LTD	-	-	-	-	-	-	-	-	-	-	-	-
105	ORIENT ENERGY LIMITED	3,079,000	2,439,000	329,360	-	-	810,000	-	-	-	-	-	-
106	PACIFIC OIL GHANA LIMITED	25,051,000	29,124,000	1,415,620	-	-	3,658,500	-	-	-	-	-	-
107	PATRICK K.A BONNEY & CO. LIMITED	-	-	3,544,050	-	-	-	-	-	-	-	-	-
108	PETRO AFRIQUE GHANA LTD.	5,101,500	4,043,500	-	-	-	-	-	-	-	-	-	-
109	PETROBAY OIL LIMITED	2,853,000	3,656,500	29,660	-	-	-	-	-	-	-	-	-
110	PETROCELL LIMITED	-	-	99,440	-	-	-	-	-	-	-	-	-
111	PETROLAND LIMITED	3,582,000	6,696,000	-	-	-	-	-	-	-	-	-	-
112	PETROLEUM SOLUTIONS LIMITED	33,777,500	38,518,000	171,440	-	-	-	-	-	-	-	-	-
113	PLUS ENERGY	4,198,500	5,891,000	8,660	-	-	#########	-	54,000	-	972,000	-	-
114	POWER DISTRIBUTION COMPANY LIMITED	4,746,500	5,857,500	-	-	-	-	-	-	-	-	-	-
115	PUMA ENERGY GHANA LIMITED	43,575,600	71,158,900	2,226,405	-	121,022,400	-	84,686,520	108,000	2,427,960	81,000	3,592,500	-
116	Q8 Oil(GH) COMPANY LIMITED	-	-	-	-	-	-	-	-	-	-	-	-
117	QUANTUM PETROLEUM LIMITED	7,893,000	18,611,000	5,410,020	648,000	-	-	-	2,376,000	-	-	-	-
118	R&P OIL COMPANY LIMITED	1,998,000	1,166,000	-	-	-	-	-	-	-	-	-	-
119	RADIANCE PETROLEUM LIMITED	12,251,500	12,104,500	3,893,940	-	-	7,776,000	108,000	-	-	-	-	-
120	READY OIL LIMITED	2,448,000	2,142,000	-	-	-	-	-	-	-	-	-	-
121	RICH OIL COMPANY LIMITED	6,385,500	3,780,000	276,560	-	-	2,808,000	-	337,500	-	-	-	-
122	RIEMA COMPANY LIMITED	-	-	335,450	-	-	-	-	-	-	-	-	-
123	ROOTSENAF GAS COMPANY LIMITED	-	-	6,177,820	-	-	-	-	-	-	-	-	-

124	ROYAL ENERGY COMPANY LIMITED	90,000	180,000	4,958,450	-	-	-	-	-	-	-	-	-
125	ROYAL ROSES OIL COMPANY LIMITED	1,195,500	1,465,500	-	-	-	-	-	-	-	-	-	-
126	RURAL ENERGY RESOURCES LIMITED (RUNEL)	1,660,500	918,000	2,142,750	-	-	-	-	-	-	-	-	-
127	SAMA OIL	1,069,000	1,530,000	8,740	-	-	-	-	-	-	-	-	-
128	SANTOL ENERGY LIMITED	6,242,500	8,140,500	-	-	-	-	-	-	-	-	-	-
129	SAWADIGO OIL COMPANY LIMITED	486,000	189,000	-	-	-	-	-	-	-	-	-	-
130	SAWIZ PETROLEUM COMPANY LIMITED	2,952,000	6,421,500	-	-	-	135,000	-	-	-	-	-	-
131	SEAM OIL COMPANY LIMITED	5,926,500	5,922,000	3,208,120	-	-	1,660,500	-	-	-	-	-	-
132	SEMANHYIA OIL LIMITED	3,238,000	3,496,000	-	-	-	3,132,000	378,000	270,000	-	-	-	-
133	SEPHEM OIL COMPANY LIMITED	16,012,500	26,808,000	-	-	-	2,956,500	-	-	-	-	-	-
134	SHAKAINAH VENTURES LIMITED	-	-	3,319,820	-	-	-	-	-	-	-	-	-
135	SHELLEYCO PETROLEUM LIMITED	-	-	2,779,720	-	-	-	-	-	-	-	-	-
136	SHEELM OIL	-	-	-	-	-	-	-	-	-	-	-	-
137	SKY PETROLEUM LIMITED	4,642,500	4,571,000	-	-	-	-	-	-	-	-	-	-
138	SO ENERGY GH LIMITED	2,871,000	6,164,000	1,479,130	-	20,268,000	-	493,805	729,000	-	-	-	-
139	SONNIDOM LIMITED	630,000	459,000	-	-	-	-	-	-	-	-	-	-
140	SPIRITS PETROLEUM LIMITED	4,981,500	9,328,500	-	-	-	-	-	216,000	-	-	-	-
141	STAR OIL CO. LTD	45,867,000	43,348,200	2,095,840	216,000	-	1,647,000	175,820	7,533,000	810,000	-	-	-
142	STRATEGIC ENERGIES LIMITED	11,587,500	14,125,500	-	90,000	-	-	-	-	-	-	-	-
143	SUPERIOR OIL COMPANY LTD.	2,750,500	3,096,000	4,145,130	-	-	-	-	-	-	-	-	-
144	TEL ENERGY LIMITED	3,942,000	9,443,000	-	1,319,000	-	-	23,923,103	130,500	650,000	-	51,922,780	-
145	TOP OIL COMPANY LIMITED	20,731,500	33,079,500	2,372,040	-	-	1,552,500	16,966,000	-	-	-	-	162,000
146	TOTAL PETROLEUM GHANA LIMITED	184,698,000	194,890,500	5,369,450	2,974,500	15,217,000	-	5,207,168	-	1,320,000	47,358,000	-	-
147	THOMCOF ENERGY LIMITED	-	-	2,093,370	-	-	-	-	-	-	-	-	-
148	TRADE CROSS LIMITED	-	-	4,348,940	-	-	-	-	-	-	-	-	-
149	TRIGON ENERGY LIMITED	-	-	-	-	-	-	-	-	-	-	-	-
150	TRINITY OIL COMPANY LIMITED	-	-	11,499,810	-	-	-	-	-	-	-	-	-
151	TRIPLE A LP GAS LIMITED	-	-	1,932,460	-	-	-	-	-	-	-	-	-
152	T- TEKPOR ENERGY	1,053,000	1,444,500	3,072,320	-	-	-	-	-	-	-	-	-
153	UNION OIL GHANA LIMITED	13,861,000	13,855,500	83,760	-	-	405,000	-	-	378,000	-	-	-
154	UNIQUE OIL COMPANY LTD.	1,917,000	540,000	-	-	-	-	-	-	-	-	-	-
155	UNITY OIL COMPANY LIMITED	8,994,500	8,900,500	-	-	-	-	-	-	-	-	-	-
156	UNIVERSAL OIL COMPANY LIMITED	-	-	-	-	-	-	-	-	-	-	-	-
157	VENUS OIL COMPANY LIMITED	6,757,000	8,438,500	15,260	-	-	-	-	-	-	-	-	-
158	VIRGIN PETROLEUM LTD	-	-	8,045,030	-	-	-	-	-	-	-	-	-
159	VIVO ENERGY GHANA LIMITED	263,105,500	211,366,100	-	202,500	72,829,600	-	4,845,600	-	139,500	40,903,500	-	-
160	WARREN OIL COMPANY LIMITED	108,000	67,500	-	-	-	-	-	-	-	-	-	-
161	WEST AFRICAN PETROLEUM COMPANY (WAPCO)	11,236,500	10,935,500	-	-	-	-	-	-	-	-	-	-
162	WORLD GAS COMPANY LIMITED	-	-	4,787,060	-	-	-	-	-	-	-	-	-
163	XPRESS GAS LIMITED	-	-	17,880,880	-	-	-	-	-	-	-	-	-
164	YOKWA GAS LIMITED	-	-	5,271,090	-	-	-	-	-	-	-	-	-
165	ZEN PETROLEUM LIMITED	12,992,500	11,855,500	-	-	-	-	-	363,500	3,047,400	##########	-	-
	TOTAL	1,662,436,300	1,692,608,400	288,328,785	6,161,000	248,538,100	73,291,500	140,361,853	28,473,212	12,140,360	336,028,600	104,344,520	1,804,500

Appendix 9 - National Stock Reconciliation (2015-2018)

2018

	Opening Stock (1/1/18)	Purchases (Imports) for the year	Production	Available Stock	Less Allowable Losses within the year*	Less Closing Stock (31/12/18)	Expected Sales (ES) for 2018	Domestic Reported Sales	Export Reported Sales	Total Reported Sales (RP)	Difference (ES-RP)	Total
	(a)	(b)	(c)	(d=a+b+c)	(e)	(f)	(g=d-e-f)	(h)	(i)	(j=h+i)	(j=g-j)	(∑j)
GASOIL	148,616,601	2,048,956,564	137,112,640	**2,334,685,805**	-	(418,702,815)	**1,915,982,990**	2,173,595,092	**65,504,579**	2,239,099,671	**(323,116,681)**	
GASOLINE	**102,508,741**	**1,726,486,851**	**136,380,235**	1,965,375,827	-	**(416,024,954)**	1,549,350,873	**1,735,727,800**	64,760,680	**1,800,488,480**	(251,137,607)	**(574,254,289)**
	251,125,342	**3,775,443,414**	**273,492,875**	**4,300,061,631**	-	**(834,727,769)**	**3,465,333,862**	**3,909,322,892**	**130,265,259**	**4,039,588,151**	**(574,254,289)**	

2017

	(a)	(b)	(c)	(d=a+b+c)	(e)	(f)	(g=d-e-f)	(h)	(i)	(j=h+i)	(j=g-j)	(∑j)
GASOIL	**211,995,001**	**2,533,920,517**	**12,893,367**	2,758,808,885	**(6,367,035)**	**(148,616,601)**	2,603,825,250	1,967,264,841	236,704,766	**2,203,969,607**	399,855,642	
GASOLINE	136,569,861	2,100,852,093	8,665,884	**2,246,087,838**	(6,750,458)	(102,508,741)	**2,136,828,639**	**1,522,797,100**	**232,255,122**	1,755,052,222	**381,776,417**	781,632,059
	348,564,862	4,634,772,610	21,559,251	5,004,896,723	(13,117,492)	(251,125,342)	4,740,653,889	3,490,061,941	468,959,888	3,959,021,829	781,632,059	

2016

	(a)	(b)	(c)	(d=a+b+c)	(e)	(f)	(g=d-e-f)	(h)	(i)	(j=h+i)	(j=g-j)	(∑j)
GASOIL	**224,710,508**	**2,080,574,229**	**314,444,673**	2,619,729,410	**(5,987,547)**	**(211,995,001)**	2,401,746,862	2,091,572,978	311,393,128	**2,402,966,106**	(1,219,245)	
GASOLINE	112,258,640	1,631,445,112	327,460,366	**2,071,164,118**	(6,268,498)	(136,569,861)	**1,928,325,759**	**1,510,273,052**	**260,599,420**	1,770,872,472	**157,453,287**	156,234,043
	336,969,148	3,712,019,341	641,905,039	4,690,893,528	(12,256,045)	(348,564,862)	4,330,072,621	3,601,846,030	571,992,548	4,173,838,578	156,234,043	

2015

	(a)	(b)	(c)	(d=a+b+c)	(e)	(f)	(g=d-e-f)	(h)	(i)	(j=h+i)	(j=g-j)	(∑j)
GASOIL	**222,176,636**	**2,155,824,192**	**53,658,759**	2,431,659,586	**(5,523,707)**	**(224,710,508)**	2,201,425,371	2,256,529,716	10,202,000	**2,266,731,716**	(65,306,345)	
GASOLINE	221,415,725	1,691,130,682	42,699,269	**1,955,245,677**	(5,548,256)	(112,258,640)	**1,837,438,780**	**1,623,189,850**	**105,653,127**	1,728,842,977	**108,595,803**	43,289,458
	443,592,361	3,846,954,874	96,358,028	4,386,905,263	(11,071,963)	(336,969,149)	4,038,864,151	3,879,719,566	115,855,127	3,995,574,693	43,289,458	

* *Allowable losses are computed on the following rate on total volume imports and production*

Product	Rate
Gasoil	*0.25%*
Gasoline	***0.32%***

Appendix 10

2018 PETROLEUM TAX REVENUE

Tax Revenues	GASOLINE	GASOIL	KEROSENE	MGO LOCAL	FUEL OIL	LPG DOMESTIC	LPG POWER	UNIFIED	MGO Foreign	ATK	GASOIL MINES	GASOIL RIGS	PREMIX	EXEMPTIONS	TOTAL
ENERGY DEBT RECOVERY LEVY	681,598,883	693,969,444	-	854,196	5,614,474	106,681,650	-	-	4,006,668	-	137,771,726	42,781,253	-	(193,152,543)	1,480,125,752
ROAD FUND	664,974,520	677,043,360	-	-	-	-	-	-	3,908,944	-	134,411,440	41,737,808	-		1,522,076,072
ENERGY FUND	16,624,363	16,926,084	61,610	-	1,403,619	-	-	-	97,724	-	3,360,286	1,043,445	-		39,517,130
PRICE STABILISATION AND RECOVERY LEVY	199,492,356	169,260,840	-	-	-	28,832,879	-	-	977,236	-	33,602,860	10,434,452	-	(217,270,000)	225,330,623
EXPORT DUTY	-	-	-	-	-	-	-	-	-	23,263,166	-	-	-		23,263,166
SPT	764,720,698	778,599,864	2,402,790	13,097,678	-	138,397,817	52,071,337	830,070	-	-	154,573,156	47,998,479	-		1,952,691,888
Total	2,327,410,820	2,335,799,592	2,464,400	13,951,874	7,018,093	273,912,346	52,071,337	830,070	8,990,571	23,263,166	463,719,468	143,995,438	-	(410,422,543)	5,653,427,174
Product Share of Revenue	41.17%	41.32%	0.04%	0.25%	0.12%	4.85%	0.92%	0.01%	0.16%	0.41%	8.20%	2.55%	0.00%	-7.26%	100.00%

2018 PETROLEUM TAX RATES AND VOLUMES

Tax Revenues	GASOLINE	GASOIL (REG.)	KEROSENE	MGO LOCAL	FUEL OIL	LPG DOMESTIC	LPG POWER	UNIFIED	MGO Foreign**	ATK	GASOIL MINES	GASOIL RIGS	PREMIX	TOTAL
VOLUMES (LITRES EXCEPT LPG IN KG)	1,662,436,300	1,692,608,400	6,161,000	28,473,212	140,361,853	288,328,785	108,481,952	1,804,500	9,772,360	248,538,100	336,028,600	104,344,520	73,291,500	4,700,631,082
ENERGY DEBT RECOVERY LEVY	41.00	41.00	-	3.00	4.00	37.00		-	41.00	-	41.00	41.00	-	
ROAD FUND	40.00	40.00	-	-	-	-		-	40.00	-	40.00	40.00	-	
ENERGY FUND	1.00	1.00	1.00	-	1.00	-		-	1.00	-	1.00	1.00	-	
PRICE STABILISATION AND RECOVERY LEVY	12.00	10.00	-	-	-	10.00		-	10.00	-	10.00	10.00	-	
EXPORT DUTY	-	-	-	-	-	-		-	-	9.36	-	-	-	
SPT	46.00	46.00	39.00	46.00	-	48.00	48.00	46.00	-	-	46.00	46.00	-	

All taxes are in Ghp/litre

* 2 Cents per litre of ATK were converted at a rate of GHS4.68 to US$

** Net volume position after adjusting gross volume of 12.14mn with 2.37mn litres sold in the first window of the year when the product was non-taxable.

Appendix 11

2016 PETROLEUM TAX REVENUE

Tax Revenues	GASOLINE	GASOIL	KEROSENE	MGO LOCAL	FUEL OIL	LPG	UNIFIED	MGO Foreign	ATK	GASOIL MINES	GASOIL RIGS	PREMIX	EXEMPTIONS	TOTAL
ENERGY DEBT RECOVERY LEVY	$89,649,721	702,877,084	-	1,199,370	$20,320	104,306,944	-	1,114,380	-	95,180,393	31,168,894	-	(155,729,628.00)	1,370,287,478
ROAD FUND	575,268,021	685,733,740	-	-	-	-	-	1,087,200	-	92,858,920	30,408,677	-		**1,385,356,558**
ENERGY FUND	14,381,701	17,143,344	100,000	-	130,080	-	-	27,180	-	2,321,473	760,217	-		34,863,994
PRICESTABILISATION AND RECOVERY LEVY	172,580,406	174,433,435	-	-	-	28,194,066	-	274,800	-	23,214,730	7,602,169	-		**409,293,606**
EXCISE DUTY	39,981,127	30,858,018	103,700	117,718	-	2,101,054	97,717	-	-	-	-	-		73,261,374
EXPORT DUTY	-	-	-	-	-	-	-	-	14,442,243	-	-	-		**14,442,243**
SPT	649,621,412	728,077,798	2,799,000	10,122,687	-	113,187,110	1,498,445	-	-	-	-	-		1,505,306,472
Total	2,041,482,389	2,336,123,419	3,002,700	11,439,746	650,400	247,788,193	1,596,162	2,500,560	14,442,243	213,575,516	69,939,957	-	(155,729,628)	4,786,811,705
Product Share of Revenue	42.65%	48.80%	0.06%	0.24%	0.01%	5.18%	0.03%	0.05%	0.30%	4.46%	1.46%	0.00%	-3.25%	103.25%

Appendix 12

2016 PETROLEUM TAX RATES AND VOLUMES

Tax Revenues	GASOLINE	GASOIL (REG.)	KEROSENE	MGO LOCAL	FUEL OIL	LPG	UNIFIED	MGO Foreign	ATK	GASOIL MINES	GASOIL RIGS	PREMIX	TOTAL
VOLUMES (LITRES EXCEPT LPG IN KG)	1,438,770,052	1,714,334,350	10,000,000	39,979,016	13,008,000	28,190,659	3,515,000	2,718,000	164,116,400	232,147,300	76,021,692	75,181,500	4,057,101,969
ENERGY DEBT RECOVERY LEVY	41.00	41.00	-	3.00	4.00	37.00	-	41.00	-	41.00	41.00	-	
ROAD FUND	40.00	40.00	-	-	-	-	-	40.00	-	40.00	40.00	-	
ENERGY FUND	1.00	1.00	1.00	-	1.00	-	-	1.00	-	1.00	1.00	-	
PRICE STABILISATION AND RECOVERY LEVY	12.00	10.00	-	-	-	10.00	-	10.00	-	10.00	10.00	-	
EXCISE DUTY	2.78	1.80	1.04	0.29		0.75	2.78						
EXPORT DUTY	-	-	-	-	-	-	-	-	8.80	-	-	-	
SPT	45.17	42.47	27.99	25.32	-	40.550	42.63	-	-			-	

All taxes are in Gh¢/litre

* 2 Cents per litre of ATK were converted at a rate of GH¢4.44 to US$

Appendix 13

APPENDIX 132017 TAX LOSS ON OFFICIAL UNACCOUNTED STOCKS

Tax Revenues	GASOLINE	GASOIL	TOTAL
ENERGY DEBT RECOVERY LEVY	156,528,331	163,940,813	320,469,144
ROAD FUND	152,710,567	159,942,257	**312,652,824**
ENERGY FUND	3,817,764	3,998,556	7,816,321
PRICE STABILISATION AND RECOVERY LEVY	45,813,170	39,985,564	**85,798,734**
EXPORT DUTY	-	-	-
SPT	184,970,674	192,018,677	**376,989,351**
Total	543,840,506	559,885,867	1,103,726,374
Product Share of Revenue	49.27%	50.73%	100.00%

2016 TAX LOSS ON OFFICIAL UNACCOUNTED STOCKS

Tax Revenues	GASOLINE	GASOIL	TOTAL
ENERGY DEBT RECOVERY LEVY	64,555,848	(499,890)	64,055,958
ROAD FUND	62,981,315	(487,698)	62,493,617
ENERGY FUND	1,574,533	(12,192)	1,562,340
PRICE STABILISATION AND RECOVERY LEVY	18,894,394	(121,924)	18,772,470
EXCISE DUTY	4,377,201	(21,946)	4,355,255
EXPORT DUTY	-	-	-
SPT	71,121,650	(517,813)	70,603,837
Total	223,504,941	(1,661,465)	221,843,477
Product Share of Revenue	100.75%	-0.75%	100.00%

2015 TAX LOSS ON OFFICIAL UNACCOUNTED STOCKS

Tax Revenues	GASOLINE	GASOIL	TOTAL
ENERGY DEBT RECOVERY LEVY	44,524,279	(26,775,602)	17,748,678
ROAD FUND	43,438,321	(26,122,538)	17,315,783
ENERGY FUND	1,085,958	(653,063)	432,895
PRICE STABILISATION AND RECOVERY LEVY	13,031,496	(6,530,635)	6,500,862
EXCISE DUTY	3,018,963	(1,175,514)	1,843,449
EXPORT DUTY	-	-	-
SPT	49,052,724	(27,735,605)	21,317,120
Total	154,151,743	(88,992,957)	65,158,786
Product Share of Revenue	236.58%	-136.58%	100.00%

Appendix 14

Regulatory Margins (RM) lost on Official Accounted Stocks (2015 - 2017)

2015	Regulatory Margins (GHS/ltr)	Variance (ltrs)	Amount (GHS)
Gasoline	0.19	108,595,803	20,972,565
Gasoil	0.19	(65,306,345)	(12,612,288)
Total	0.39	43,289,458	8,360,277
2016	Regulatory Margins (GHS/ltr)	Variance (ltrs)	Amount (GHS)
Gasoline	0.16	157,453,287	25,192,526
Gasoil	0.16	(1,219,245)	(195,079)
Total	0.32	156,234,043	24,997,447
2017	Regulatory Margins (GHS/ltr)	Variance (ltrs)	Amount (GHS)
Gasoline	0.25	381,776,417	96,796,229
Gasoil	0.25	399,855,642	101,380,066
	0.51	781,632,059	198,176,295
		Total RM	**231,534,019**

Appendix 15

CONCENTRATION RATIO, AND NUMBER OF BDCs

HERFINDARH-HIRSCHMAN INDEX

YEAR	No. of BDCs	CR4	CR5	CR10	GO ENERGY MKT. SHARE
2015	31	52.18%	59.73%	82.64%	19.64%
2016	39	51.10%	59.28%	79.76%	22.14%
2017	43	49.88%	56.96%	78.64%	18.70%

New Guidelines (2010)	Index	Actions
Unconcentrated	HHI<1500	No action
Moderately Concentrated	HHI>1500<2500	ΔHHI>100 warrants scrutiny
Highly concentrated	HHI>2500	ΔHHI>100<200 warrants scrutiny. ΔHHI>200 presumed likely to increase market power.

Source: U.S. Department of Justice/Federal Trade Commission, 2010 as cited in Hays and Ward (n.d)

TABLE OF PRODUCT HHI

	2017	2016	2015	average
Fuel oil	6,621	3,917	6,118	5,552
Gas oil	1,142	1,134	981	1,085
Marine Gasoil (Local)	1,115	1,378	1,361	1,285
Unified	10,000	10,000	5,931	8,644
Kerosene	6,474	3,688	2,483	4,215
LPG	2,366	3,060	4,008	3,145
Premium	1,165	1,250	1,146	1,187
Premix	5,020	10,000	10,000	8,340
Kerosene Industrial			10,000	10,000
Marine (Foreign)	1,271	4,787	2,399	2,819
Gasoil (Mines)	3,534	2,533	3,315	3,127
ATK	4,576	3,779	4,572	4,309
Gasoil (Rig)	3,177	6,649	6,968	5,598
min				1,085
max				10,000

Appendix 16

NPA LICENCE CATEGORIES

There are more than twenty categories of Petroleum Service Providers (PSPs) that are licensed by the National Petroleum Authority (NPA) to operate in Ghana's petroleum downstream industry. PSPs are licensed as follows:

1. **Bulk Distribution Company Category 1 Licence:** Holders are authorised to import crude oil as well as procure, store, distribute and sell petroleum products wholesale to OMCs and LPGMCs.
2. **Bulk Distribution Company Category 2 Licence:** Holders are authorised to procure petroleum products in-tank from the local refineries or Category 1 BDC license holders for sale to OMCs and LPGMCs
3. **Oil Marketing Company (OMC) Licence:** The licence authorises a company to procure finished petroleum products locally from the BDCs, TOR and BOST for sale to bulk customers and the public through retail stations and reseller outlets.
4. **LPG Marketing Company (LPGMC) Licence:** A company with this licence is permitted to procure, store and sell liquefied petroleum gas to bulk customers and the public through LPG refilling plants throughout the country.
5. **LPG Bottling Companies (LBCs) Licence:** Holders are responsible for filling empty gas cylinders for onward distribution by LPGMCs.
6. **Bulk Oil Storage Licence:** The licence authorises a company to own, manage, develop and operate storage depots, rent or lease storage depots to any petroleum service provider.
7. **Bunkering (Offshore) Licence:** This licence authorises a company to bunker ocean going vessels, trawlers and fishing vessels within the contiguous zone of Ghana.
8. **Bunkering (Onshore) Licence:** The licence authorises a company to engage in the storage, terminalling, delivering and handling of petroleum products to ships, oceangoing vessels, trawlers and fishing vessels.
9. **Bunkering (Services) Licence:** This licence permits a company to engage in the bunkering of oceangoing vessels, trawlers and fishing vessels under the strict supervision of the Ghana Bunkering Services Limited and the Ghana Ports and Harbours Authority.
10. **Bulk Road Vehicle Inspection Company Licence:** A company with this licence is authorised to conduct and certify the road worthiness of Bulk Road Vehicles (BRVs) engaged in the haulage and distribution of petroleum products.
11. **Bulk Transportation of Petroleum Products Licence:** The licence authorises a company to operate as a bulk transporter of petroleum products using licensed bulk road vehicles.
12. **Calibration of BRV and Underground Tanks Licence:** The calibration licence authorises a company to calibrate Bulk Road Vehicles and Underground Storage Tanks for the storage of petroleum products.
13. **Conventional Buoy Mooring (CBM) & Single Point Mooring (SPM) Systems Licence:** This licence authorises a company to develop and operate facilities for the offloading of refined petroleum products from tanker vessels of capacities up to 75,000 tonnes (dead weight) into designated storage facilities. The SPM is for offloading crude oil from tanker vessels of capacities up to 150,000 tonnes (dead weight)
14. **Gas Processing Plant Licence:** The licence authorises a company to procure and process raw gas from the Jubilee Fields into Liquefied Petroleum Gas (LPG) for sale to companies licensed by the Authority to distribute and market LPG as well as export to any foreign market under customs seal.
15. **Lubricant Blending (Contract) and Marketing Licence:** This category of licence authorises a company to blend for sale to bulk customers including Oil Marketing Companies and licensed Petroleum Service Providers.
16. **Manufacture of Lubricating Oils Licence:** This licence authorises a company to own, manage, develop and operate lube oil manufacturing and blending plants.
17. **Non-destructive Test Inspection Services Company Licence:** This licence permits a

company to conduct non-destructive test (NDT) on petroleum product storage tanks.

18. **Petroleum Product Tank Cleaning Services Licence:** The licence authorises a company to undertake the mechanical cleaning of petroleum/petroleum product storage tanks as well as Bulk Road Vehicles (BRVs).

19. **Petroleum Product Export Licence:** This licence authorises a company to procure, store and export petroleum products to neighbouring countries under customs seal.

20. **Petroleum Product Refinery Licence:** A company is authorised by this licence to procure and process crude oil into petroleum products for sale to companies licensed by the Authority to distribute, export and market petroleum products, any other entity that may be licensed by the Authority to procure petroleum products from the refinery and for export to any foreign market.

21. **Waste Oil Recycling & Treatment Licence:** This licence authorises a company to collect, haul, store and process waste oils and offer the recycled product for sale to industries. The licence authorises a company to operate a Waste Oil Recycling and Treatment Plant.

22. **Petroleum Product Retail Station/ LPG Refilling Plant Licence:** This licence authorises an Oil/LPG Marketing Company to operate a petroleum product retail station/LPG Refilling Plant and offer for sale petroleum products to the public through such facilities.

23. **Construction Permit:** Construction permits are issued to enable companies construct petroleum downstream related facilities such as storage depots, retail outlets and refineries, among others.

Appendix 17

OBJECT AND FUNCTIONS OF NATIONAL PETROLEUM AUTHORITY[1]

The object of the National Petroleum Authority is to regulate, oversee and monitor activities in the petroleum downstream industry and where applicable do so in pursuance of the prescribed petroleum pricing formula.

To achieve the object, the Authority shall:

a) monitor ceilings on the price of petroleum products in accordance with the prescribed petroleum pricing formula.

b) grant licenses to applicants under this Act

c) maintain a register and keep records and data on licenses, petroleum products and petroleum marketing service providers

d) provide guidelines for petroleum marketing operations

e) protect the interests of consumers and petroleum service providers

f) monitor standards of performance and quality of the provision of petroleum services

g) initiate and conduct investigations into standards of quality of petroleum products offered to consumer

h) investigate on a regular basis the operation of petroleum service providers to ensure conformity with best practice and protocols in the petroleum downstream industry

i) promote fair competition amongst petroleum service providers

j) conduct studies relating to the economy, efficiency and effectiveness of the downstream industry

k) collect and compile data on:

   i) international and domestic petroleum production, supply and demand,

   ii) inventory of petroleum products, and

   iii) pricing of petroleum products for the information of the public which the Board considers necessary for the performance of its functions

l) periodically review in consultation with petroleum service providers the prescribed petroleum pricing formula and publish in the Gazette the respective formula

m) publish in the Gazette the ex-refinery prices and ex-pump prices of petroleum products based on the prescribed petroleum pricing formula

n) monitor daily the import parity price of refined petroleum products and publish the price periodically in the Gazette

o) collaborate with relevant institutions for purposes of this Act

p) oversee open and transparent international competitive bidding for the procurement of petroleum products and crude oil

q) approve charges for the provision of petroleum services within the downstream industry

r) monitor and evaluate operations of the UPP Fund established under section 62 to ensure the achievement of the object of the Fund

s) approve expenditure charge on the fund under this Act

t) publish in the Gazette user fees for monopoly infrastructure and

u) Perform any other function that is ancillary to the object of the Authority and assigned to it under this Act.

1 National Petroleum Authority Act, 2005 (Act 691)

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