

# Business Overview and Strategy

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# Business Overview

Luberef draws on its rich experience in the base oil business to bring quality products that offer reliability and consistency on a global scale. Luberef’s products are used by a broad range of critical and core industries to make offerings that positively impact the lives of millions of people around the world.

## Products Overview

Luberef is one of the largest pure-play producers of high-quality Group I and II Base Oils globally. It also produces various Byproducts such as asphalt, marine heavy fuel oil (MHFO), slack wax, extract and sulfur and white products like ultra-low sulfur diesel (ULSD), naphtha and drilling fluid. Luberef draws on its rich experience in the base oil business to bring quality products that offer reliability and consistency on a global scale. Luberef’s products are used by a broad range of critical and core industries to make offerings that positively impact the lives of millions of people around the world.

### Base Oils

Base oil products typically have two specific identifiers in their name to help identify the product’s grade and group. The grade is defined by the number stated in the product name, which is a reference to the product’s viscosity. The base oil groups are based on the technical specification of the base oils and where they fall within the American Petroleum Institute (API) definition.

### Product Categories

As a member of the Base Oil Alliance, all alliance members market their products under a global Aramco brand. The brands are aramcoDURA, aramcoPRIMA, and aramcoULTRA brands referring to Group I, II and III.

TABLE: Products Overview and Properties

Group	Trademark	Key Properties	Products
Group I	aramcoDURA™	Good viscosity index	aramcoDURA 150
			aramcoDURA 500
			aramcoDURA BS 150
Group II	aramcoPRIMA™	Good viscosity index, low sulfur	aramcoPRIMA 70
			aramcoPRIMA 110
			aramcoPRIMA 230
			aramcoPRIMA 500
Group III	aramcoULTRA™	Good viscosity index, low sulfur	aramcoULTRA 2*
			aramcoULTRA 4*
			aramcoULTRA 6*
			aramcoULTRA 8*

\* Not currently produced by Luberef.



Group I Base Oils

408,000 MT  
Production in 2022

Group II Base Oils

787,000 MT  
Production in 2022

Base Oils alliance trade

62,000 MT  
Sales in 2022

Group I and Group II Base Oils

Luberef produces three grades of Group I Base Oils: aramcoDURA 150, aramcoDURA 500 and aramcoDURA BS 150. aramcoDURA 150 and aramcoDURA 500 are produced at the Jeddah Facility. The Yanbu Facility produces aramcoDURA BS 150. These products are primarily sold in end markets in the Kingdom, the UAE, India, Singapore and Africa.

Luberef produces four grades of Group II Base Oils, namely aramcoPRIMA 70, aramcoPRIMA 110, aramcoPRIMA 230 and aramcoPRIMA 500, at the Yanbu Facility. These products are mainly sold in end markets in the Kingdom, India, the UAE and Africa.

Table: Luberef Production of Group I and Group II Base Oils (MT)

Product	2021 ('000 MT)	2022 ('000 MT)	% Change yoy
Group I Base Oils	412	408	(1%)
Group II Base Oils	761	787	3%

Base Oil Alliance Sales

While Luberef does not currently produce Group III Base Oils, it procures them from S-Oil – a Aramco Base Oil Alliance

member- and markets these products primarily in the Kingdom and other countries in the MENA region.

Table: Group III Base Oils

Product	2021 ('000 MT)	2022 ('000 MT)	% change yoy
Group III Base Oils*	67	81	21%

\* It refers to the sales made by Aramco Base Oil Alliance members (S-Oil and Motiva) in Luberef’s zone and it includes minimal alliance Group I sales.

Byproducts

The Byproducts produced by Luberef include asphalt, Marine Heavy Fuel Oil (MHFO), slack wax, bright stock extract and sulfur, as well as white products such as Ultra-Low Sulfur Diesel (ULSD), naphtha and drilling fluid.

Table: Byproducts Production

Product	2021 ('000 MT)	2022 ('000 MT)	% Change yoy
White Products	438	397	(9%)
Other Byproducts	2,113	2,181	3%

Production Facilities

Luberef currently operates two base oil production facilities, the Yanbu Facility and the Jeddah Facility, both strategically located on the west coast of the Kingdom.

Table: Company Facilities, Details and Production Capacity

Facility	Commis- sioning	Capacity (MT/year)		Production* 2021		Production* 2022	
		Base Oil	Byprod- ucts**	Base Oil	Byprod- ucts**	Base Oil	Byprod- ucts**
Yanbu	1997	1,070,000	1,600,000	912,839	1,522,507	952,729	1,588,325
Jeddah	1977	275,000	1,050,000	260,292	1,028,594	241,850	990,257

\* Based on current operating products slate.

\*\* Byproducts volumes include White Products.





## Yanbu Facility

# 300,000 MT

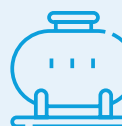
Annual Production  
Capacity in 1997



## Yanbu Facility

# 710,000 MT

Expansion in Annual  
Production Capacity in 2017



## Yanbu Facility

# 1,070,000 MT

Annual Production  
Capacity Today

## The Yanbu Facility

The Yanbu Facility currently produces Group I (aramcoDURA BS 150) and Group II Base Oils, as main products, and ULSD, naphtha, drilling fluids, MHFO, asphalt, bright stock extract and sulfur as Byproducts.

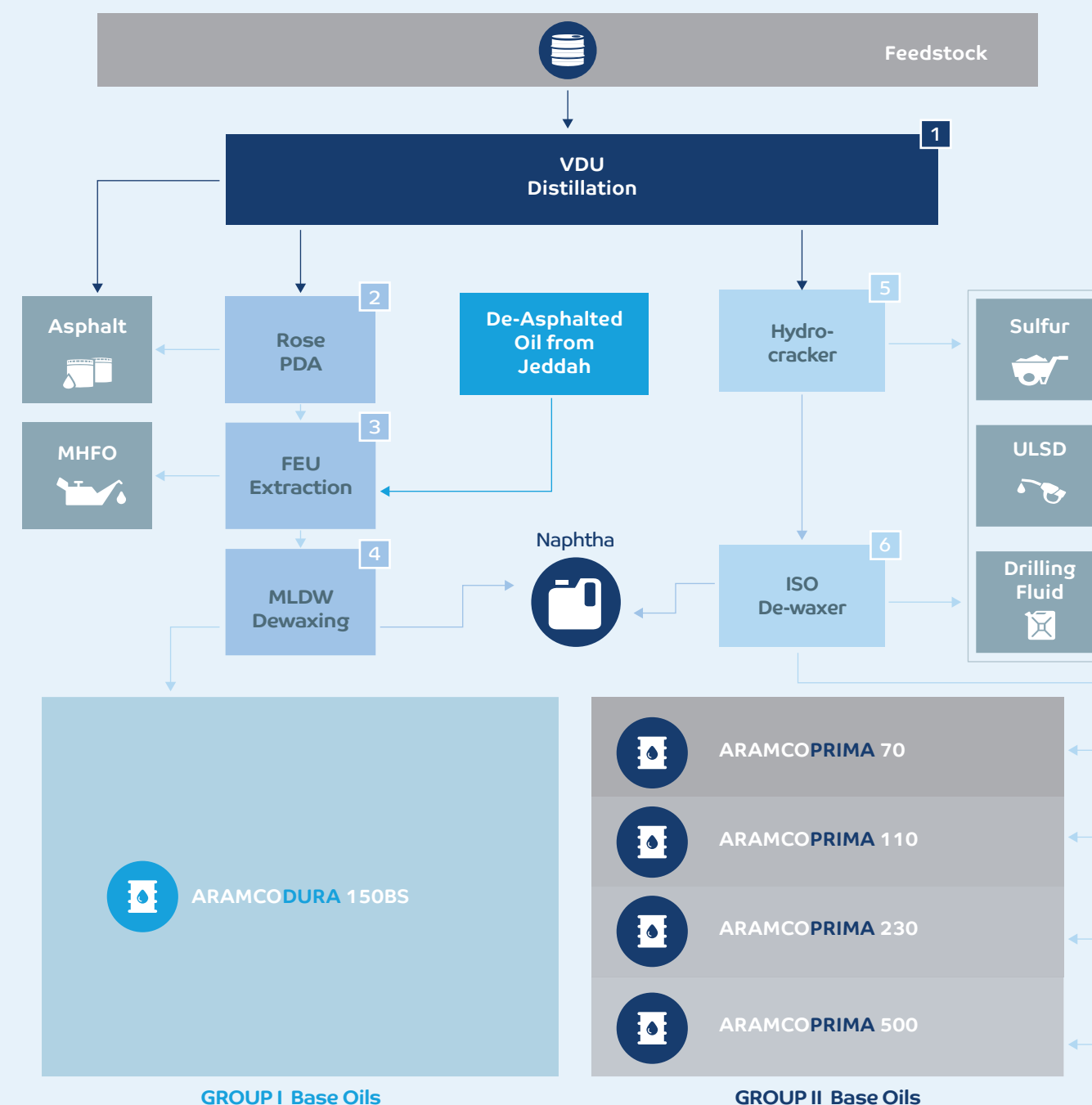
The Yanbu Facility was commissioned in 1997 to produce high quality Group I Base Oils at a production capacity of approximately 300 thousand MT per year. The site was producing aramcoDURA 150, aramcoDURA 500 and aramcoDURA BS 150 until November 2017.

The Yanbu Growth I Expansion was completed at the end of 2017 and enabled the site to produce Group II Base Oils including aramcoPRIMA 70, aramcoPRIMA 110, aramcoPRIMA 230 and aramcoPRIMA 500 as well as aramcoDURA BS 150 as main products, and ULSD, naphtha, drilling fluids, MHFO, asphalt,

bright stock extract and sulfur as Byproducts. After the commissioning of the Yanbu Growth I Expansion, the Yanbu Facility production capacity reached approximately 1 million MT, including the introduction of 710 thousand MT Group II Base Oils production capacity. This brought Luberef's total base oils production capacity (in both facilities) to approximately 1.255 million MT per year by the end of 2017.

During 2021, the Yanbu Facility production capacity reached approximately 1.07 million MT after the increase of the capacity of certain units through transformation initiatives, and Luberef's total base oils production capacity in both the Yanbu and Jeddah facilities reached approximately 1.345 million MT per year.

Luberef plans to undergo the Yanbu Growth II Expansion project, which is planned to be completed in 2025.



**1** Vacuum Distillation Unit (VDU): feedstock heated to a high temperature using fired heater

**2** Propane De-Asphalting Unit (PDA): process has 2 stages: (1) extraction and (2) solvent recovery

**3** Furfural Extracting Unit (FEU): uses solvent extraction process to remove undesirable components

**4** Mobile Lube Dewaxing Unit (MLDW): separation section for Group I base oils

**5** Hydrocracker: distillates produced by VDU are fed to the hydrocracking reactor

**6** ISO De-waxer: convert wax into base oil through isomerization process using catalyst.



The Jeddah Facility

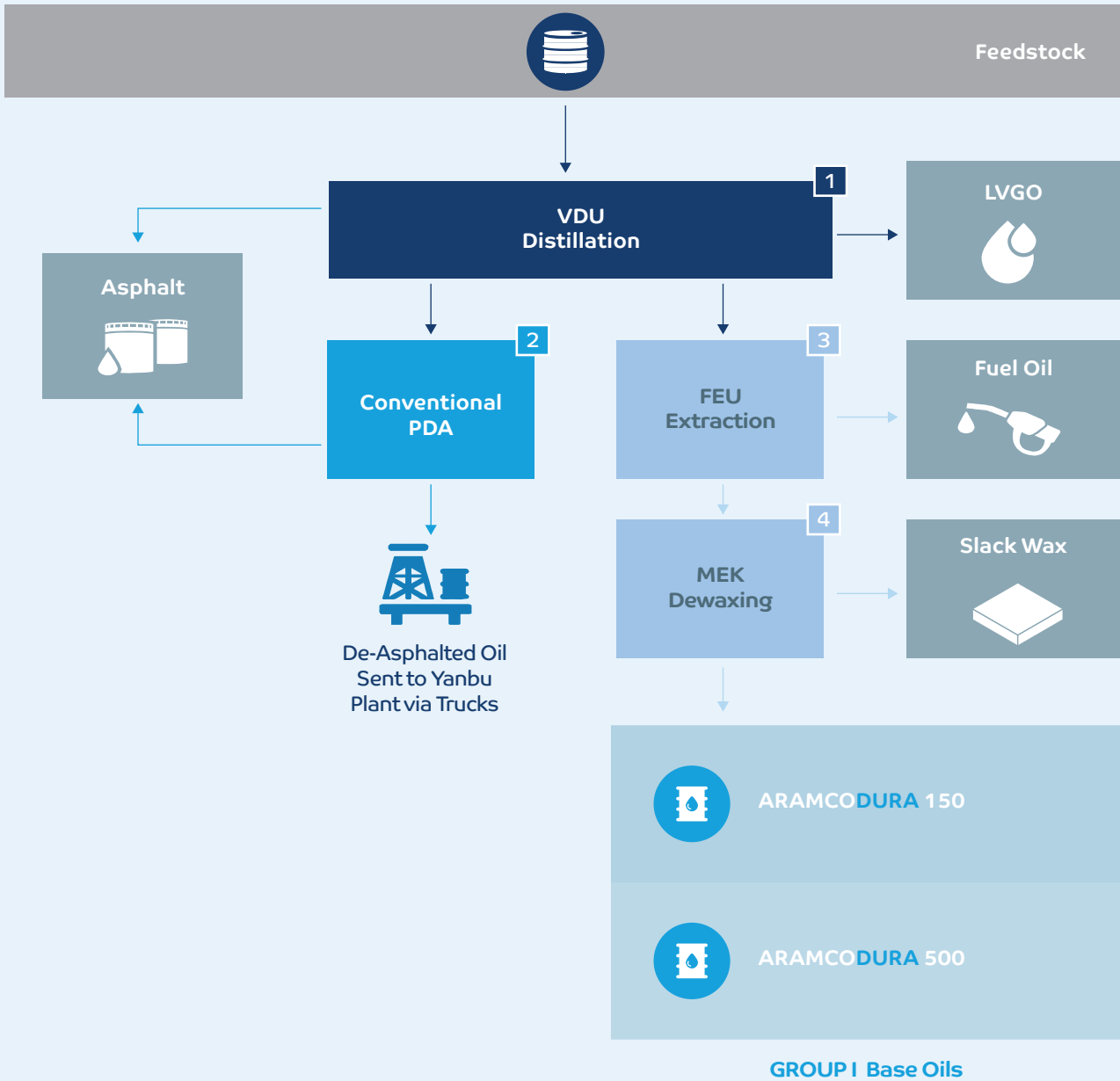
The Jeddah Facility was originally commissioned in 1977 to produce aramcoDURA 150 and aramcoDURA 500 Group I Base Oils. The Jeddah Facility has undergone a number of de-bottlenecking projects and has synergized its operations with the Yanbu Facility which led to an increase in its annual production capacity from approximately 180 thousand MT to the current 275 thousand MT.

Jeddah Facility

**180,000 MT**  
Annual Production  
Capacity in 1977

Jeddah Facility

**275,000 MT**  
Annual Production  
Capacity Today

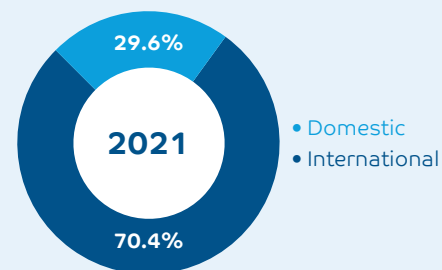


- 1** Vacuum Distillation Unit (VDU): feedstock heated to a high temperature using fired heater
- 2** Propane De-Asphalting Unit (PDA): process has 2 stages: (1) extraction and (2) solvent recovery
- 3** Furfural Extracting Unit (FEU): uses solvent extraction process to remove undesirable components
- 4** MEK Dewaxing Unit: uses mixture of MEK and toluene to crystallize waxes to be removed, producing Group I base oils



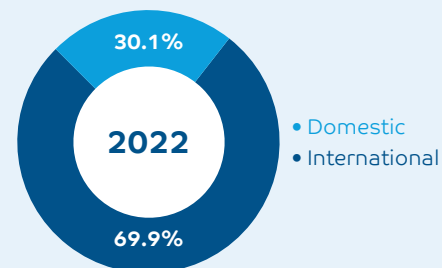
## Base Oils Sales

Luberef's base oils are sold mostly in the Kingdom, the MENA region, and India, and remaining volumes are sold globally. Luberef manages the sales of base oils sold in its Base oil alliance marketing zone, which is the Middle East, The African continent and Pakistan. Luberef Base oil sales outside the marketing zone are managed through the Base Oil Alliance members, where Motiva is responsible for sales in the Americas, and S-Oil is responsible for sales in Asia and Europe. As part of its Africa penetration strategy, Luberef has started utilizing distributors to sell base oil in South Africa, Tanzania and Sudan.



**Domestic**  
**350,516 MT**  
Base Oil Volume

**International**  
**834,052 MT**  
Base Oil Volume

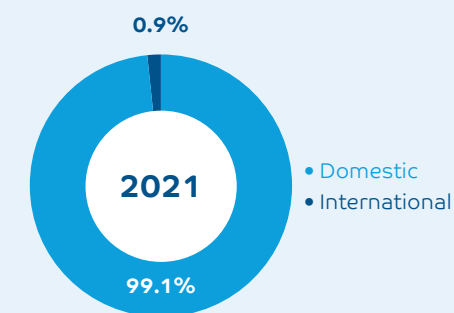


**Domestic**  
**376,053 MT**  
Base Oil Volume

**International**  
**871,879 MT**  
Base Oil Volume

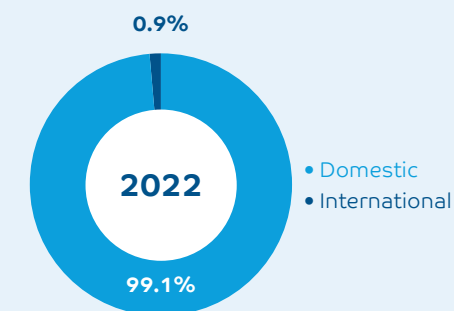
## Byproducts Sales

Luberef produces and sells Byproducts such as asphalt, Marine Heavy Fuel Oil (MHFO), slack wax, bright stock extract and sulfur and White Products such as ultra-low sulfur diesel (ULSD), naphtha and drilling fluid. Luberef sells the majority of its Byproducts to Saudi Aramco and its Affiliates.



**Domestic**  
**2,515,982 MT**  
Byproducts Volume

**International**  
**23,569 MT**  
Byproducts Volume

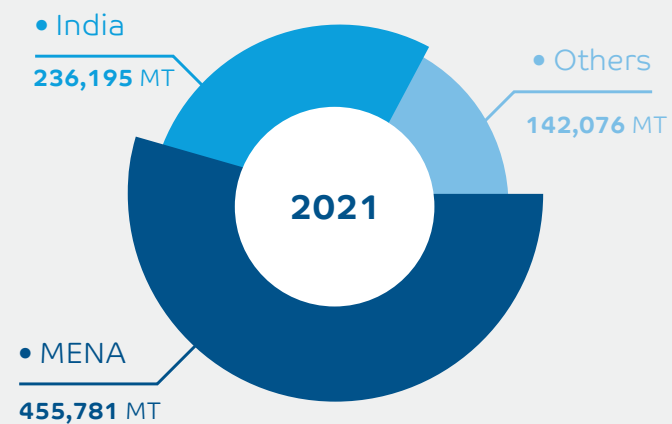


**Domestic**  
**2,540,818 MT**  
Byproducts Volume

**International**  
**22,885 MT**  
Byproducts Volume

## International Base Oil Sales

### 2021



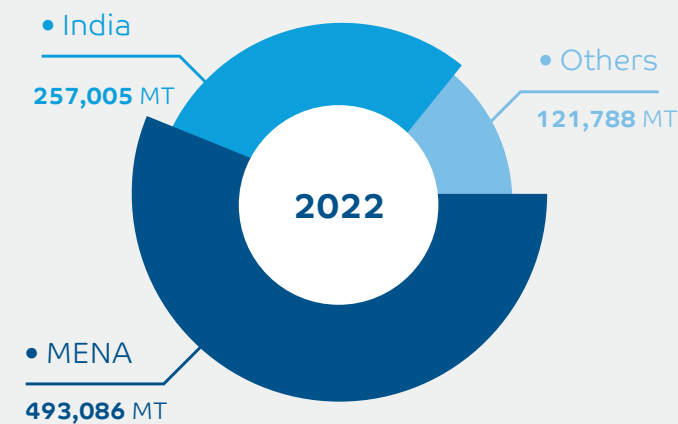
MENA Volume  
**455,781 MT**

India Volume  
**236,195 MT**

Other Volume  
**142,076 MT**

## International Base Oil Sales

### 2022



MENA Volume  
**493,086 MT**

India Volume  
**257,005 MT**

Other Volume  
**121,788 MT**



# Market Overview

## Global Economic Outlook

### Global GDP growth

**2.9%**

from 2022 to 2030

### Global lubricant demand

**0.8%**

during 2022 to 2030

### Global base oil demand

#### Group II

**3.5%**

#### Group III

**4.8%**

between 2022 and 2030

The global economy is experiencing a number of turbulent challenges. Inflation higher than seen in several decades, tightening financial conditions in most regions, Russia's invasion of Ukraine, and the lingering COVID-19 pandemic all weigh heavily on the outlook. Under this backdrop, the global real GDP is forecasted to grow by 2.9% CAGR from 2022 to 2030. The markets responded well in 2022 with a swift recovery that pushes the global liquids demand and expected to grow at a CAGR of 0.9% from 2022 to 2030.

Global lubricant demand is expected to witness a growth rate of 0.8% of CAGR during 2022 to 2030 and the global

base oil demand for Group II and Group III is expected to grow at a CAGR of 3.5% and 4.8% between 2022 and 2030, respectively. The prices of base oils are a function of supply and demand dynamics. It is anticipated that despite demand growth, the industry could see pricing pressures, while the 2022 momentum could mean that prices may remain steady or be slightly lower in the near future. The market could witness slow activities coupled by increasing borrowing cost with series of refineries maintenance that could put base oil prices under stress. The global markets, however, expect a reduction in oversupply but ample supplies will be available in all regions.

## Regional Markets Outlook

China, Asia Pacific and Middle East regions will be the growth engines for next ten years, while US and Europe may see a contraction based on efficiency drive. Africa can see mixed growth trends in different countries but shows a promising picture growing forward. The prevailing trends in regional markets will impact the lubricants and base oil demand and supply. The demand and supply scenario in Asia Pacific, Middle East and Africa will be much more favourable when it comes to positive price positioning. Long availability and ease in global logistics can support product flow from Asia Pacific to other regions impacting the short and long-term market shares. Major blenders are set to take cautious steps in maintaining the regional demand supply balance.

## Middle East & KSA Market Outlook

Stronger economics of Middle East and KSA backed by their massive infrastructure investment, healthy population growth and Vision 2030 poses a very promising picture in 2023 and beyond. Major global institutions have projected very strong growth in MENA region that could lead to 3.5%+ in 2023. The strategic location of KSA provides an ample opportunity to capitalize on demand supply challenges, KSA is developing into strong logistic hub mitigating the risk of supply chain as markets have witnessed during COVID-19 times. The Middle East's & KSA demand for Group II and III Base Oils is expected to grow higher than the rest of the regional markets thus presenting a very positive outlook. Based on the demand and supply outlook along with core patch of sales in KSA, Middle-East and Africa, Luberef is set for growth in years to come.

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Note: The source of forecasts in this section is the Market Advisor (IHS Global).





# Strategy

## Growth in key markets with high demand

**Luberef is a highly specialised, pure-play base oil producer with global scale assets and a unique position in the Middle East with an established reputation for delivering high-quality products to customers.**

**In 2022 track record with a mechanical availability**

# 99.7%

**High capacity utilization of**

# 88.8%

Luberef aims to grow sales in key end markets with attractive demand outlooks. Luberef's products are currently sold in key regional and international end markets, including base oil products which are critical in applications across the automotive, marine, and industrial sectors, amongst others. In 2022, Luberef sold approximately 1.2 million MT of base oils (including Group III Base Oils sales), with 30.1% of volumes sold in the KSA, 39.5% in the MENA region excluding KSA, 20.6% in India, and 9.8% in other markets.

Per data from the Market Consultant, global demand for Group II and Group III Base Oils is expected to grow at a CAGR of 3.5% and 4.8% between 2022 and 2030, respectively. In the Middle East, demand for Group II and III Base Oils is expected to grow at a CAGR of 4.4% and 5.9% between 2022 and 2030, and in Saudi Arabia at a CAGR of 2.2% and 5.9% between 2022 and 2030, respectively. Furthermore, Luberef achieved growth in base oil volumes at a CAGR of 22% from 2017 to 2022, despite global demand for paraffinic base oil decreasing at a CAGR of 1% over this period per Market Consultant data. Luberef's sales and marketing activities are supported by the Aramco Base Oil Alliance and the international distribution and logistics network it uses, thereby allowing it to reach customers across its key end-markets.

Note: The source of forecasts in this section is the Market Advisor (IHS Globa).



## Utilize advantaged cost and value chain positions

Luberef is supplied with RCO under long term agreements. Luberef considers this feedstock advantageous for use in producing base oils, and RCO is typically sold to Luberef at a price comparable to high sulfur fuel oil, with high sulfur fuel oil market prices typically being on average lower than Brent in 2022. Luberef believes its feedstock security enables its facilities to operate at a high utilization rate, leading to cost efficiency, and that this feedstock supply also provides a competitive advantage over base oil producers that rely on their internal refinery operations to provide feedstock for their base oil production.

Base oil producers cost of productions average, weighted by capacity, in 2021 at approximately SAR 1162/MT per data from the Market Consultant. As part of the same assessment Luberef's unit production cost, excluding feedstock, is over 60% lower than the average of base oil competitors. Luberef's base oil unit production cost, excluding feedstock, was approximately SAR 446 / MT in 2021. Luberef has further improved its operations and reach a unit cost of Production of 439 SAR/MT in 2022.

This cost position is driven by Luberef's asset scale, high utilization of 88.8% in 2022, with mechanical availability for Luberef of 99.7% in 2022, as well as low energy costs for its production assets located in the Kingdom. Luberef's facilities are located in the Kingdom, a key base oils market, and in proximity to other key base oil markets including the UAE and India. The strategically advantaged location of Luberef's facilities in Yanbu and Jeddah leads to lower shipping costs and faster access to customers.

Luberef has multi-decade relationships with leading lubricant customers including Petro Lube (previously known as Petromin Corporation), the Arabian Petroleum Supply Company (APSCO), Al Jomaih and Shell Lubricating Oil Company Limited, Alhamrani Fuchs Petroleum Saudi Arabia Ltd, TotalEnergies Supply MS, Total Marketing Middle East, and ENOC Lubricants and Grease Manufacturing Plant LLC.

**Luberef has advantaged positions in the value chain in feedstock, in its assets and operations, and in its customer relationships.**



## Focus on high-margin and specialty products

Luberef is focused on converting low value RCO into high-margin, high value base oils. Luberef generates premium base oil crack margins, both domestically and on exports. Luberef historically has outperformed base oil industry crack margin benchmark, our performance has typically ranged from 375 to 750 SAR per metric ton depending on market conditions. Luberef's historical crack margins for the

last 10 years was around 1,856 SAR per metric ton (based on average margin weighted by Luberef's Group I and Group II Base Oils sales volumes in the Kingdom and export markets for comparison purposes. Luberef's base oils crack margins are calculated as revenues less freight (where applicable for exports), minus feedstock cost).

## Maintain operational excellence and financial discipline

Luberef strives to maintain operational excellence and financial discipline, and is committed to providing a safe and healthy workplace by fostering a culture of zero harm, and aims to implement international safety standards to minimize potential risks to people, communities, assets, and the environment. Luberef seeks to regularly train its

employees to implement safety practices and had a Total Recordable Incident Rate (TRIR) of 0.0 in 2022. Luberef also maintains financial discipline and has low gearing of 3% at 31 December 2022, maintains low levels of capital expenditures and follows rigorous processes for allocating capital to growth projects.





# Future Projects

## Yanbu Growth II Expansion

The Yanbu Growth II Expansion aims to expand existing units at the Yanbu Facility to their maximum production capacity potential and introduce the production of Group III Base Oils to Luberef's current base oils product portfolio. The expansion will allow flexibility for additional Group II and Group III Base Oils based on market demand by the expected ability to switch between Group II and Group III Base Oils production. The key features of this project are;

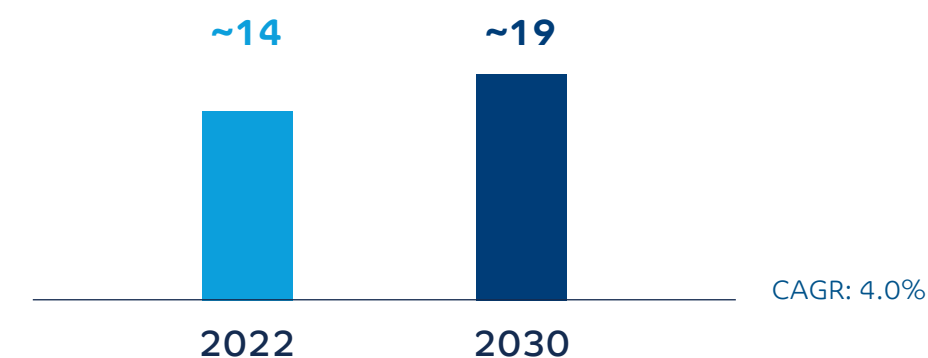
- Target to increase the Yanbu Facility base oil production capacity to approximately 1.3 million MT per annum in 2025 (270 thousand of Group I, 815 thousand for Group II and 175 thousand for Group III).
- Global for demand for GII & GIII base oils is forecasted to grow by 5 million MT by 2030.
- Yanbu Facility is expected to have the flexibility to produce up to 670 thousand

MT of Group III Base Oils with no Group II production or 1,120 thousand MT of Group II Base Oils with no Group III Base Oils production.

- The Board approved the final investment decision for the Yanbu Growth II Expansion in July 2022, and it is planned to start operation in 2025. Luberef expects the investment to range from SAR 563 - 750 million, and to be incurred between 2022 and 2025.

Luberef is proactively pursuing and assessing a number of projects to further optimize its performance and to expand its business and activities

## Group II & III Demand Globally Mn MT



## Main Project Package

**1** Expansion of existing VDU  
**45** MBD ➔ **65** MBD

**2** Expansion and upgrade of existing HCU  
**26** MBD ➔ **35** MBD

**3** Expansion and optimization of existing ISO de-waxing unit  
**19** MBD ➔ **29** MBD

## Business Transformation Initiative

Luberef is currently in the implementation phase of a business transformation program which was initiated in 2021 in line with Saudi Aramco's transformation initiative for its joint ventures. The program is focused on major initiatives in the areas of

- Commercial excellence,
- Yield improvements
- Synergies with Saudi Aramco affiliates
- Capacity increases
- Products upgrades
- Opex Improvements

In 2022 as part of the transformation initiative program Luberef has completed the De-bottleneck upgrade and testing of the VDU in the Yanbu Facility to increase the capacity to 50.0 MBD.