



Product pipelines at Leh

## Management's Discussion & Analysis

The Company is fast transforming itself from being India's **flagship national oil company** to being **India's foremost holistic energy solutions provider**. During the year, the Company set a target of increasing its share in the Indian Energy Basket from 1/11<sup>th</sup> presently to 1/8<sup>th</sup> by 2040. A massive scale-up in the Company's operations, reach and spread has thus been envisaged, in line with its vision of being **'The Energy of India'**. The Company envisages maintaining its leadership position in downstream oil, while sizably scaling its share and building a stronghold in the fast-growing alternate energy and natural gas sectors in India.

To orient itself with the nation's COP26 commitment, the Company is making significant strides in **'Crafting a Green Future'** by expanding its business portfolio for **'sustainable and affordable energy solutions for tomorrow'**. During the year, the company fructified its commitment to achieve Net-Zero (operational emissions) by 2046. The Company is working tirelessly to make its conventional product offerings greener and reduce its carbon footprints while also swiftly foraying in a big way in alternate energy solutions.

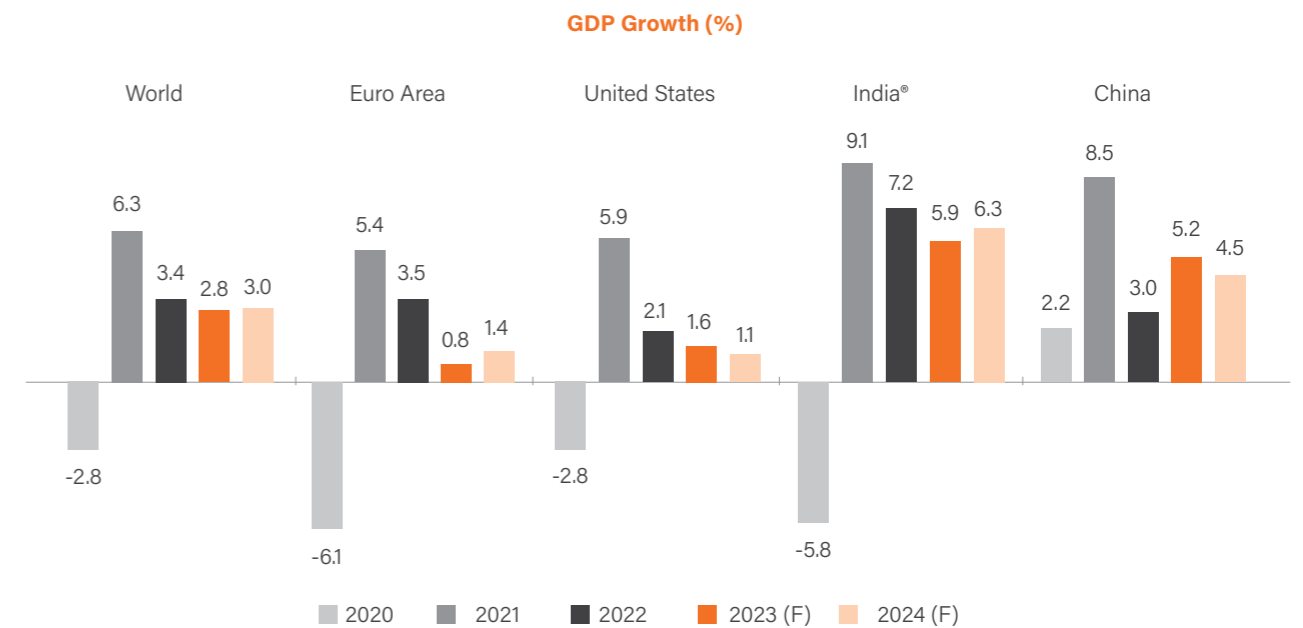
Fuelled by the mission to 'Propel the Nation' and the zeal of being 'On Duty Always', the Company has embraced its 5<sup>th</sup> Value of **'Nation-First'**, in addition to its existing values of Care, Innovation,

Passion & Trust. These values will be the guiding light for the Company's actions and plans.

### GLOBAL ECONOMY

The tumultuous year saw global inflation rates flaring to record high, driven by multiple drivers, including commodity price increases, aggravated by the Russia - Ukraine war, supply chain bottlenecks and strong policy-supported resurgence in demand from the lows of the pandemic. Global inflation increased to 8.8% in 2022 (annual average) from the pre-pandemic (2017-19) levels of about 3.5%. To contain the surging inflation, globally central banks tightened the monetary policy and raised interest rates at a pace not seen in the last 50 years, resulting in increased cost of borrowing globally.

During the year, global economic growth slipped to 3.4% from 6.3% in 2021. Erosion in household purchasing power due to high inflation, coupled with supply uncertainty (especially in the context of energy supplies) weighed on demand in many economies and was compounded by high borrowing costs and weakening of currencies of many developing economies. In China, the Covid surge and the Zero Covid policy, along with the ongoing stress in the property sector, restrained economic activity, dipping growth to its lowest in the last 40 years (barring 2020).



\*India growth numbers refer to a financial year, with 2022 representing 2022-23. F refers to Forecast Source: IMF, April 2023

In the first quarter of 2023, consumer price inflation had come off from its peaks in most economies due to the softening in energy and commodity prices and easing of supply chain bottlenecks. Central banks shifted towards smaller hikes, and many indicated a pause in rate hikes. The reopening of the Chinese economy towards the end of 2022 helped it to turn around and is expected to have a positive impact on global activity. On the other hand, recent events in the global banking sector pointed towards the stress, especially in the small & regional US banks and associated fears of a global contagion. Overall, global economic growth is expected to slip further to 2.8% in 2023 from the impact of global monetary tightening and the prevailing high interest rates. Moreover, inflation though softened, remains sticky and above the central banks' comfort targets for most economies, hence there is a lurking risk of financial vulnerability.

### INDIAN ECONOMY

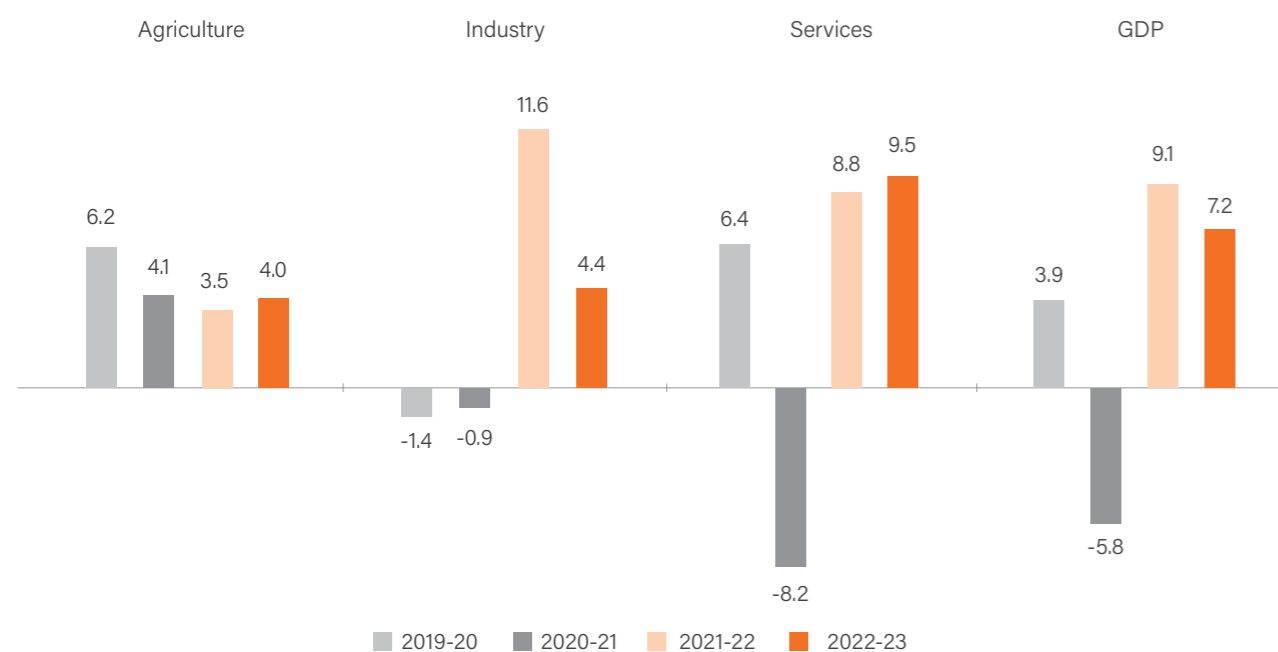
During the year, India overtook the UK to become the fifth largest economy in the world. Indian economy posted a strong growth of 7.2% in 2022-23, albeit slower than 9.1% posted in 2021-22, nevertheless standing out as the 2<sup>nd</sup> fastest growing large economy, second only to Saudi Arabia. In a year marked by record high oil

**7.2%**  
India GDP growth

prices and heightened economic woes for many developing economy oil importers, strong growth by India – the world's 3<sup>rd</sup> biggest oil importer, stands as a testament to the Indian economy's innate strengths.

India's large domestic market drove domestic consumption and helped the economy weather the global headwinds. Private final consumption grew by 7.5% and propelled the economy even as the Government's final consumption slowed stagnated at 0.13% growth. Consumer confidence on the current economic situation, after being shaky for some time, improved during the course of the year. A sustained turnaround in investment was witnessed too, with 9.6% growth during the year, on top of 18% growth in the previous year. The investment turnaround has been concomitantly backed by the Government's continued strong capex push which crowded in private investments as well. On the supply side, agriculture continued to support growth, but the main thrust of growth was from the services sector, where growth accelerated to 9.5% from 8.8% in the previous year. The services have traditionally been the main driver of growth for the Indian economy but had been the hardest hit by the pandemic and the lockdown. However, with normalization and return of high contact services such as hotels, restaurant and tourism, growth in the services bounced back strongly.

India's GDP & Sectoral Growth Rates (%)



Source: Ministry of Statistics and Programme Implementation, Government of India (Gol)

In the backdrop of high global commodity prices, India too faced high inflation rates during the year, with retail inflation averaging at 6.65% during 2022-23, exceeding the RBI's targeted range of 2%-6%. To control the runaway inflation, the Reserve Bank of India (RBI) implemented an aggregate 250 bps hike through its rate hike cycle that began in May 2022, pushing borrowing costs back to 2019 levels. The Rupee depreciated by 7.3% during 2022-23 on account of continued strengthening of the US Dollar internationally, foreign portfolio capital outflows, and rising import bill, driven by high commodity prices. However, the Rupee performed far better than its peers, supported by the RBI's foreign exchange interventions, increased interest rates, and continued FDI inflows. The country's large holding of foreign exchange reserves built judiciously over the years and especially ramped up during the pandemic years provided an adequate buffer against global spill-overs.

Looking ahead, in 2023-24, growth is expected to be moderate on account of slowing global growth, geopolitical tensions, financial market volatility and tightening global financial conditions. Nevertheless, India is set to be the fastest growing large economy backed by sound macro management, the Government's focus on capital expenditure and an overall rebound in consumption. The recent moderation in the inflation numbers too augurs well for the growth story, along with the pause in rate hike by the RBI in its April 2023 meeting.

GLOBAL ENERGY SECTOR

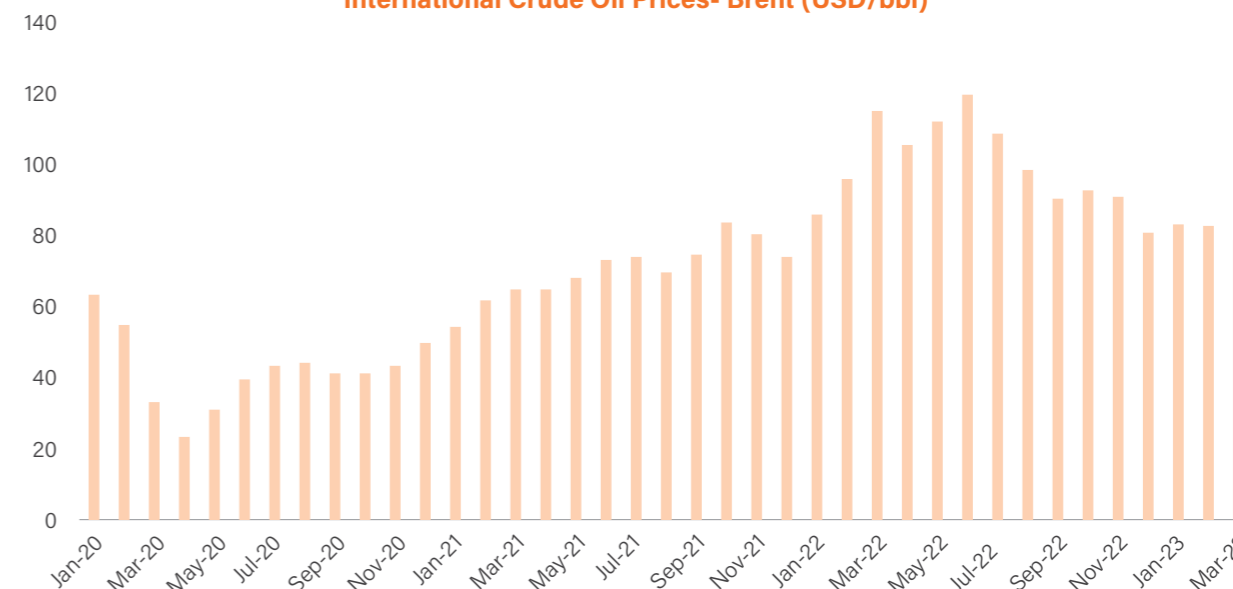
It has been a turbulent year for the global energy sector, marked by high geo-political uncertainty, redrawing of energy trade routes and high and volatile energy prices. In addition to immediate emergency measures to address the crisis, which meant looking

for new suppliers and subsidies for consumers hit by high prices, the crisis also marked long term policy shifts in many cases. Energy security was clearly back in focus as a concomitant goal, along with energy transition, with the thrust on diversity of supplies and domestic production. The criticality of continued investments in oil and gas to ensure an orderly transition came to the fore. Nevertheless, the events of the year hastened the policy push towards energy transition and marked the beginning of a 'great industrial scale-up' in clean energy. In this regard, the International Energy Agency (IEA 2023) noted that major economies are acting to combine their climate, energy security and industrial policies into broader strategies for their economies, with most notable responses being the US Inflation Reduction Act (IRA), REPowerEU, and India's Production-Linked Incentive (PLI) scheme in green energy areas.

Oil Market

After a sharp rise in the first half of 2022, global oil prices fell in the second half of 2022 and the downwards trajectory continued in the first quarter of 2023 as well. The workings of the global oil markets were complicated by a multiplicity of factors, which rendered the market to record price volatility, second only to levels observed during the 2008 financial crisis. The supply concerns mired the market first, followed by high interest rates, fears of recession and China's Covid-containment measures that pulled prices down later. Alongside this, historic draw-downs in government strategic oil inventories by the IEA members also helped ebb the surging market. In 2023, while reopening of the Chinese economy acted as a booster, the troubles in the global banking sector and the ensuing financial market stress weighed on the prices.

International Crude Oil Prices- Brent (USD/bbl)



Source: The World Bank

Overall, both demand and supply grew in 2022. However, demand failed to recover to the pre-pandemic levels, trailing at 99.8 MBPD, 1 MBPD below the 100.7 MBPD of 2019. On the supply side, bans and sanctions by the EU and its partners resulted in a seismic shift in oil trading routes and in Russia's trade relations with the EU. Nevertheless, Russia's oil production and exports remained resilient, as Russia continued to deliver its 10% share in global oil supply albeit the different buyers. OPEC+ raised its production by 3 MBPD in 2022 but many OPEC+ member countries continue to produce below their targeted quotas, although the extent of shortfall has reduced in 2023. In the US, production increased modestly by 1 MBPD, despite high prices amidst investor pressure to maintain capital discipline.

Gas Market

The natural gas markets witnessed unprecedented turmoil in 2022. Europe's efforts to meet its gas demand through LNG as its main alternative destabilized the global LNG market and trade, resulting in diversion of flows, soaring of spot LNG prices, and LNG demand destruction among Asian importers. Europe's high dependence on piped natural gas imports from Russia pushed global gas markets into a crisis, with global gas prices hitting record high levels. Sanctions and counter-sanctions between the EU & Russia and later curtailment of gas flows to Europe left Europe scrambling for supplies following the soaring prices across markets. European gas prices (Dutch TTF) in late August hit record highs of over \$90/mmbtu on continued uncertainty about Russian supplies and worries about meeting winter demand. With a robust build-up in European gas inventories (above the previous 5-year average), reduced natural gas consumption in Europe, milder winters and incoming LNG flows, natural gas prices fell across markets in the latter half of 2022 and well into 2023.

Overall, global natural gas consumption fell by 2% in 2022, marking the fifth annual reduction since 1965. The decline was largely on account of reduction in European consumption, which was 8% below the 2015-2019 average. In 2022, LNG trade grew by 5%, demand in Europe rose by a striking 63% while in the Asia Pacific

region LNG demand fell by 8% due to record high spot LNG prices. Russia's piped gas exports to Europe in 2022 fell by 50%, the lowest since mid-1980s. While Russian natural gas production fell sharply, global natural gas supplies remained stable as supplies from elsewhere helped offset the decline. In particular, natural gas production in the US hit record levels in 2022, driven by high prices and high LNG export demand, which was serviced through new liquefaction capacity additions.

Upstream Investments

Structural underinvestment in hydrocarbons has been under way since the middle of the last decade in the context of low energy prices and rising investor focus on ESG (specifically carbon). Threats to energy security faced during the year brought the focus back on upstream investments, which hit an eight-year high and posted the largest year-on-year increase in history. According to the International Energy Forum (IEF) & S&P Global Commodities, upstream investment will need to rise even further to stave off a global oil supply shortfall this decade. A cumulative investment of US\$ 4.9 trillion between 2023 and 2030 would be required to meet oil market needs, even if demand growth plateaued.

Low Carbon Energy

Global renewable energy capacity rose by 9.6% in 2022 (IRENA), of which solar and wind accounted for 90% of the net additions, and almost half of the new capacity was added in Asia. The additions lifted total renewable energy capacity to 3,372 gigawatts (GW) at the end of 2022, which was 295 GW higher than the previous year. Investment in clean energy hit a record US\$ 1.7 trillion in 2022. According to the IEA, the ratio of clean energy to fossil energy investment which was 1:1 just five years ago has been rising, touching 1.7: 1 in 2022.

9.6%

Rise in global renewable energy capacity

The events of the past year made it clear that a pragmatic focus on decarbonization and energy security would be crucial in sustaining the energy transition. Many mega policies and plans were launched such as the IRA (US 2022), REPowerEU (EU 2022), the Green Transformation (GX) programme (Japan, 2022), which not only focused on solar, wind and battery technologies but also on clean hydrogen, CCUS, nuclear and low emission gases in a big way.

**INDIAN ENERGY SECTOR**

As the Indian economy normalized, emerging from the shadows of the pandemic, its energy demand surged, growing by 5.6%. The upsurge in economic and industrial activity lifted power consumption by 9.5% year-on-year in 2022-23, more than double the pace of the Asia Pacific region. India added over 15 GW of renewable energy capacity in 2022-23 (of which 12.8 GW was solar) taking the total of non-fossil power generation capacity to 179 GW by the end of 2022-23.

The year was rocked by high and volatile energy prices, especially those of oil and gas. While consumers were protected from high oil prices to a large extent, in case of natural gas, LNG imports took a hit. Oil consumption grew by 10.2% year-on-year and also surpassed the pre-pandemic levels of 2019-20 by 8MMT. Natural gas consumption fell by 5.6% year-on-year and was at its lowest in the last five years. While domestic gas production at 33.7 BCM was the highest since 2014-15, LNG imports fell by 13%, the lowest since 2017-18 as LNG spot prices hit unprecedented highs.

The Government of India's pragmatic stance on importing Russian oil not only helped India import Russian crude oil at competitive prices but also helped India diversify its crude oil sourcing. Russian oil imports to India increased manifold in 2022-23 compared to the previous years and in April 2023, Russian oil imports touched a record high, exceeding the combined flows from Saudi Arabia and Iraq. Russia is the third biggest oil producer in the world and prior to February 2022, 50% of crude oil exports from Russia were destined for Europe, while India was home to less than 2% of crude oil exports from Russia. By offering a market to Russian oil flows, India significantly contributed to the larger welfare as the world could ill-afford the loss of 10% of its oil supplies.

The year 2022-23 was marked with a considerable number of policy announcements that aimed to provide for building an affordable and sustainable energy security for the nation. In a landmark announcement, the Government launched the National Green Hydrogen Mission to make India the Global Hub for production, usage and export of Green Hydrogen and its derivatives. The Mission planned to build capabilities to produce at least 5 Million Metric Tonne (MMT) of Green Hydrogen per annum by 2030, with the potential to reach 10 MMT per annum with the growth of export markets. The year marked the launch of the country's first green bonds. The proceeds from these bonds would be spent on

a variety of renewable power projects, low emissions hydrogen, public transport, and afforestation. In a significant strategic call to prioritise energy security, India reduced the prohibited/no-go areas in its Exclusive Economic Zone (EEZ) by 99%, thereby releasing 1 Million sq. km for oil exploration and production. During the year, India initiated the process of establishing domestic regulations and procedures to operate a carbon market, with amendment of the Energy Conservation Act 2001 (Energy Conservation (Amendment) Act, 2022).

Ethanol of blending in India increased from just 1.5% target from 2005-14 to 11.8% in the ethanol supply year 2022-23 (up to 16.7.23). Decisive policy reforms and initiatives in the form of price assurance to farmers, opening up of alternate supply routes to address feedstock availability, and financial assistance schemes have helped bring about adequate increase in ethanol supply. The industry is geared up to meet the E20 target with more than adequate supplies of ethanol lined up, leaving room for pushing surplus ethanol for flex-fuel options.

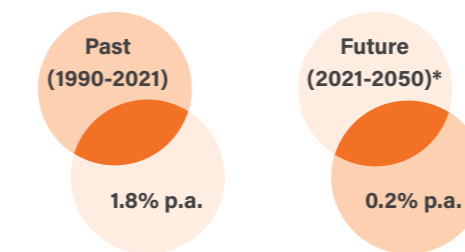
Several landmark reforms in the gas sector were also announced during the year. The Government amended the regulations on unified tariff for natural gas pipelines transportation, which will boost the natural gas supply in faraway areas due to reduction in transportation cost. A new gas-pricing formula with floor and ceiling cap was introduced, which is expected to provide a stable pricing regime for domestic gas consumers, while at the same time providing adequate protection to producers from adverse market fluctuations with incentives for enhancing production. It is also likely to give an impetus to both PNG and CNG demand in the country.

**LONG TERM ENERGY TRANSITION OUTLOOK**

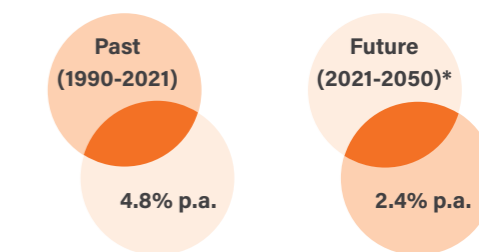
The energy sector globally and in India is witnessing a slow, yet profound shift towards low carbon energy forms. Today, majority of the countries have taken up Net-Zero Commitments, and India too made its historic announcement of reaching Net-Zero emissions by 2070 at COP 26. While a pervasive global phenomenon, energy transition pathways and the speed of transition will be unique for every country, depending on the context of their stage of economic development, demographics, resource base, among other factors.

Over the long term, global energy demand is expected to remain almost unchanged at current levels, with energy demand estimated to have already peaked in the OECD countries. The declining share for all hydrocarbons, especially coal, rapid expansion in renewables in both absolute and relative terms, increasing electrification of final energy consumption, are seen as the vital three trends underpinning the long-term energy transition outlook globally. While the scale-up in renewables and increased electrification of final energy consumption are expected to be substantial across all scenarios, the scale of decline in share of hydrocarbons over the long term is seen to vary in a wide range across scenarios, especially for natural gas and oil, to some extent.

**Total Energy Demand Growth- World**



**Total Energy Demand Growth- India**



\*Median Forecast (IEA & BP)

**India an island of growth in a stagnating world**

India has set itself a target to achieve Net-Zero emissions by 2070 and thereby reaffirmed India's energy sector's sustainability approach. Over the long term, India's energy demand is expected to grow robustly at a median rate of 2.4% p.a. up to 2050. Megatrends underpinning this are an expanding economy, a rising population, urbanization, industrialization, an emerging middle class, and a young population in contrast to ageing societies of advanced economies. Moreover, in India there is also a pressing need to bridge the energy access deficit. Despite being the third largest energy consumer in the world, its per capita energy consumption levels continue to be strikingly low. At 0.6 toe (tonnes

of oil equivalent) per person, India stands not only well below the world average of 1.8 toe per person, but also below the non-OECD average of 1.3 toe per person-pointing towards a conspicuous energy access deficit. On the supply front, India is currently highly dependent on imported energy supplies and this dependence is expected to rise, at least in the medium term. The recent energy crisis has brought energy security back into focus with the need for energy transition to be grounded in energy security. Ensuring 'energy access & affordability' and 'energy security' are, therefore, the other two clear priorities for India.

**India's Energy Priorities**

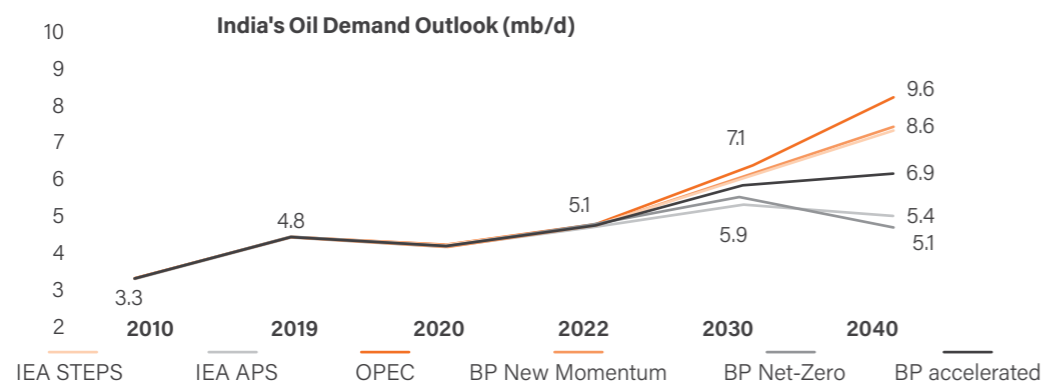


**"Ensuring energy justice while adhering to global commitments to sustainable growth":  
Hon'ble Prime Minister of India, Sh. Narendra Modi**

Given this dynamic canvas where different variables and objectives play out, in the long-term India's energy needs will have to be met through a holistic energy basket, where all energy forms co-exist. In India too, the share of renewables is set to rise, as is the share of modern bio-energy, in line with global trends and on account of policy support, as the Government works towards its Net-Zero 2070 target. A series of decisive policy measures and initiatives have been announced/ rolled out by the Government over the last

few years such as Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME II), Sustainable Alternative Towards Affordable Transportation (SATAT), Advancement of Ethanol Blended Petrol (EBP) 20%, the Green Hydrogen Mission, Production Linked Incentive (PLI) scheme, among others, which have invigorated investment in renewable energy, electric mobility, Green Hydrogen and bio-fuels sectors.

Continued Role of Oil in India



<p><b>Energy Access</b></p> <p>Per capita energy consumption: 0.6/1.8 toe (India/global avg.)</p>	<p><b>Improving Standard of Living &amp; Urbanization</b></p> <p>Car ownership rates per thousand 22/135 (India/global avg.) Air transport passengers carried per thousand person 60/289 (India/global avg.) Per capita polymer consumption: 2/35 kg (India/global avg.)</p>	<p><b>Economic Development</b></p> <p>Growth in Road freight Petrochemicals growth story</p>
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**India's oil demand is set to grow robustly in this decade from around 5 MBPD currently to over 7 MBPD by 2030 and further may reach 9 MBPD by 2040, driven by rising per capita income, growing demand for personal vehicles, air travel, urbanization and shifting income pyramid**

In contrast to the accepted global prognosis of the declining share of hydrocarbons globally over the long term, in India, we would see energy transition progress on a different path. Wherein, the role of natural gas in India's energy mix is set to enhance substantially and India sees natural gas to be crucial to its decarbonization strategy massive investments in the building of natural gas infrastructure are underway in the country. India's oil demand is set to grow robustly in this decade from around 5 MBPD currently to over 7 MBPD by 2030 and further may reach 9 MBPD by 2040, driven by rising per capita income, growing demand for personal vehicles, air travel, urbanization and shifting income pyramid. Given the fact that India's incremental demand will be the highest in the world between the period till 2040, the path to Energy transition will need to be calibrated and pragmatic to strike the balance between energy affordability, accessibility, security, and justice on one hand and the other addressing sustainability & climate change. While increasing penetration of EVs and alternatives may affect gasoline demand, oil demand in India would get substantial support from feedstock demand with growth in the petrochemicals segment.

On the domestic oil and gas supply front, India has a sedimentary basin cover of 3.4 Million square km and is appraised through geoscientific surveys to the extent of 61% of the total area. However, the exploration through drilling has penetrated less than 10% of the area. Government of India has taken various measures to boost hydrocarbon production activities and raise crude oil production in India by revamping its hydrocarbon policy, launching of Open Acreage Licensing Policy (OALP), Discovered Small Fields (DSF) Bid Rounds, etc. Domestic crude oil production has been witnessing tapering in the last couple of years. Although, an upward swing to the tune of around 5MMT by 2024-25 is expected i.e. production is expected to rise to 34 MMT by the same period. As regards natural gas, domestic production has of late witnessed

an upswing, with production in 2024-25 expected to be over 44 BCM up from around 34 BCM in 2022-23.

**INDIANOIL - AT THE CUSP OF ENERGY TRANSITION**

IndianOil, as a leader in downstream oil business in India, views energy transition objectively and thoroughly understands its position in this regard.

The ongoing energy transition, in fact, presents a wide range of opportunities in high growth emerging energy areas and this, coupled with India's vibrant and growing energy market, along with strong and pragmatic policy support, offers a robust opportunity for the Company.

The Company has assiduously built its pan-India presence and is deeply connected to its extensive customer base. Its untiring services, even in the hour of crisis and calamities, have emboldened its brand image of being a reliable energy supplier. This innate strength of the Company will continue to empower it, as it navigates through energy transition. In addition, its well proven ability in marshalling large-scale investments and expertise in operating world-scale installations, scaling-up operations swiftly and its track record in meeting stiff deadlines further fortify its confidence to effectively enter and grow in the new energy areas. Backed up with these, the Company envisages tapping new opportunities to emerge as a global, low cost, low carbon holistic energy solutions provider. These newer forays would not only provide it a growth platform but also help manage transition-related challenges of expected slowdown in growth of its core business over the long term. Nevertheless, realignment of its R&D and development and acquisition of newer talent as it enters new areas will be the priority as it navigates through the transition pathway.

Energy Transition: How IndianOil is Placed?

<p><b>STRENGTHS</b></p> <ul style="list-style-type: none"> <li>IndianOil's Brand Image</li> <li>Pan India Presence</li> <li>Customer Connect</li> <li>Ability to Scale-up</li> </ul> <p><b>Leverage strengths to:</b></p> <p>Emerge as a global low cost, low carbon, holistic Energy Solutions Provider</p>	<p><b>WEAKNESSES</b></p> <ul style="list-style-type: none"> <li>While expert talent pool in oil exists, similar expertise in other energy areas is required</li> </ul> <p><b>Address weaknesses by:</b></p> <p>Developing expertise in new energy areas through realignment of R&amp;D and developing/acquiring talent</p>	<p><b>OPPORTUNITIES</b></p> <ul style="list-style-type: none"> <li>Avenues for high growth in emerging energy areas</li> <li>Low per capita Petchem consumption in India</li> <li>Gol Targets of Net-Zero</li> </ul> <p><b>Tap opportunities by:</b></p> <p>Investing in low carbon fuels and technologies and growth segments like petrochemicals</p>	<p><b>THREATS</b></p> <ul style="list-style-type: none"> <li>New Business Dynamics (of new &amp; in existing)</li> <li>Geo-politics of energy transition</li> <li>Limited entry barriers</li> <li>Financing challenges</li> </ul> <p><b>Tackle threats by:</b></p> <p>Exploring markets for refinery surpluses and finding innovative financing solutions</p>
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**OPPORTUNITIES & CHALLENGES**

**Continuous Improvement in Core Business to Maintain Leadership**

The Company holds the leadership position in India's downstream oil market. With India being the most prominent oil growth market, there is sizeable growth opportunity for the Company in this segment.

**Refineries**

The recent energy crisis has brought to the fore the importance of energy security. Concerns and shortages in supply of refined petroleum products was one of the key fall-outs of the crisis, wherein product prices surged to unprecedented highs in global markets.

IndianOil as the leading refined product supplier to the nation has been continuously improving its refineries' capabilities to process a broader range of opportunity crudes and strategically diversifying its sources of supply. During the year, 36 new grades were added to the Company's crude basket, which now includes 247 grades from various regions such as Africa, the Middle East, the Americas, and Russia, among others. Further, over the long term, while India will continue to depend on imported crude oil supplies to meet its growing demand, having adequate domestic refining capacity would hold merit in strengthening India's energy security.

India's energy demand is set to grow exponentially, driven by its rapid economic growth. The rising demand for road transport fuels further adds to this increasing trend. As the leading fuel refiner in the country, the Company is committed to ensuring Atmanirbharta as the country's appetite for petroleum products grows in this decade and beyond. To meet this surge in demand, we are actively expanding our refining and distribution infrastructure across the country. The Company is augmenting the capacities of its existing refineries and with the ongoing expansions, the group refining capacity is set to increase from 80.55 MMTPA (including CPCL) to 107.4MMTPA (including CPCL) by 2030.

IndianOil is currently executing significant brownfield expansion projects, with an estimated investment of over ₹ 1 Lakh Crore which are integrated with petrochemicals expansion and aim at increasing Petrochemical Intensity Index (PII) to 15%. These projects encompass various developments, such as expanding the capacity of the Panipat Refinery from 15 to 25 MMTPA (₹ 34,627 Crore), revamping the Gujarat Refinery to 18 MMTPA and integrating it with Lube and Petrochemical Production Units (₹ 18,936 Crore), and increasing the capacity of the Barauni Refinery from 6 to 9 MMTPA (₹ 14,810 Crore), among others. Once completed, these projects will enhance our crude processing capacity by more than 17 MMTPA. Furthermore, IndianOil's subsidiary CPCL is planning a 9 MMPTA (₹ 31,580 Crore) expansion in Tamil Nadu, contributing to a total capacity augmentation of over 26 MMTPA.

Given the ongoing consolidation in the global refining sector, these expansions offer significant value to IndianOil. Although global oil demand is not projected to reach its peak until 2030, the closure of refineries, particularly in Europe, is accelerating. This creates a scenario where demand continues to rise without a corresponding increase in supply. Consequently, the current decade is seen as the "golden age" for refiners and the Company is well-positioned with its plans to capitalize on this favourable situation. Besides, the recent tumultuous geopolitical events have shown how even the developed economies had to rearrange their energy baskets and lean back towards conventional fuels. The criticality of conventional fuels will be even more pronounced for a developing nation like India. The country's energy demand is poised to grow three times faster than the rest of the world and will account for almost a quarter of the rise in global energy demand by 2040. While meeting the climate goals is a must, there is also a broad consensus in the global energy fraternity that oil & gas will continue to play an essential role in sustaining the growth of developing economies like ours, at least for the next couple of decades. So, the focus on conventional fuel forms like oil is essential to fulfilling the national priorities of energy accessibility, affordability, security and sustainability.

The ongoing energy transition would also entail changes in the refinery product demand patterns, with the importance of some products growing, while others facing a relative decline in their shares. In this regard, the Company's refineries are equipped with the flexibility to have swing capabilities from one product to another. For instance, our refineries are fully equipped to reduce HSD production by 10% from the normal level and maximize ATF production. Further, increasing the utilization of Naphtha stream for new petrochemical projects would keep the light distillates intact as gasoline feels the pressure from growing EV penetration over the long term. Keeping the changing product slate in mind, many of our expansion projects are aimed at enhancing bitumen production capacity significantly. With the development of road infrastructure in the country getting a concerted push through the PM Gatishakti- National Master Plan for Multi-modal Connectivity, the demand for bitumen is expected to receive a major fillip. In this context, sticking to the current production rate of bitumen would result in a deficit in the face of the growing demand, leading to an increase in imports.

The Company stands fully committed to the principle of sustainability and aims to make its existing refinery operations and future expanded operations Net-Zero by 2046 and has adopted a multi-pronged approach to achieve the same by focusing on using low carbon/ renewable fuels such as natural gas, renewable power, CBG and green hydrogen along with the focus on increasing furnace and boiler efficiencies.

The R&D Division of the Company has over the years developed many indigenous refining technologies, which have been successfully adopted by its refineries, for instance indeDiesel® (Diesel Hydrotreatment) Technology, indeHex® (Hexane Hydrogenation) Technology, INDAdeptG Technology for the production of low-sulfur gasoline, inJet® Technology for ATF production by selective removal of mercaptan sulphur, INDMAX Technology for converting heavy distillate and residue into LPG/ light distillate products and many more such technologies. Another area of opportunity in this regard is that of developing indigenous catalyst used in the refinery processes, which are invariably imported. The refineries are collaborating with R&D to develop in-house catalysts, which can go a long way in improving profitability and reducing operating costs.

### Pipelines

The Company has a sprawling oil and gas pipelines network, which is more than 17,500 km in length. At present, the share of pipelines in the Company's Petroleum, Oil, and Lubricants (POL) transportation stands at 64%. The low emissions profile of pipeline operations along with lower costs make pipelines the best fit in the context of sustainable operations and value creation. The Company plans to raise the share of pipelines in its modal mix to 80% by 2031-32, in line with what is currently seen in many developed economies. The Company is working on the expansion of its pipeline network, which includes projects lined up to link its 11 Group refineries through pipelines to enhance the productivity of its refineries. In this regard, the Company's New Mundra Panipat Crude Oil Pipeline is a transformative infrastructure project with a budget over ₹ 9,000 Crore, aims to meet the increasing crude oil demand of the Panipat refinery upon its expansion to 25 MMTPA.

The Company is making changes to its pipeline operations as it diversifies its fuel mix. Alongside oil pipelines, the Company now has an expanding network of natural gas pipelines. To comply with the Gol's 20% ethanol-blending target, the Company has begun transporting ethanol-blended petrol through its product pipelines. Further, the Company is also working on feasible routes for introduction of hydrogen into its gas pipeline network. It is also collaborating with globally leading organizations for conversion of its existing natural gas pipelines for the transportation of hydrogen-blended natural gas.

Pipelines also provide a unique opportunity to expand geographically beyond national boundaries and search for captive markets. In this regard, the Company has been guided by the Government of India's 'Neighbourhood First Policy'. The Company has laid India's first transnational oil pipeline, the Motihari-Amlekhganj (Nepal) POL pipeline, and is considering expansion of the same to Chitwan in Nepal. The Company will continue with the Neighbourhood First policy as we expand our presence in the Indian subcontinent. The Company is also looking into laying another POL pipeline from Siliguri to Jhapa in Nepal. The Company is exploring the expansion of its pipeline network in Bangladesh and Sri Lanka as well.

The R&D Centre continues to focus on making pipelines operation greener. Recently, in an 'Industry First' initiative, a Drag Reducing Agent (DRA) trial by the Company's R&D Centre was successfully carried out in an LPG pipeline, which will aid in reducing energy consumption as well as cost.

To ensure that the pipelines are in perfect working conditions, the strict maintenance and surveillance schedules are paramount. The Company is increasingly leveraging state-of-the-art technologies such as Pipeline Intrusion Detection and Warning System (PIDWS) and drone patrolling to ensure enhanced monitoring.

### Marketing

The Company is the leader in India's petroleum products market. The Indian market presents numerous growth opportunities, with projected growth rates being higher than any other market. As the leading supplier in India's high growth petroleum products market, the Company is confident in maintaining its leadership position through a range of interventions. In this pursuit, one major focus area is expansion of the marketing and distribution infrastructure, in line with growing demand, and tailoring these augmentations in the distribution network strategically to achieve cost efficiencies and be the 'least costly' supplier.

IndianOil is developing Wayside Amenities (WSA), which is a new concept of Government of India and State Governments wherein one stop amenities for Fuel, Food, Toilets, Entertainment etc. are being developed along the highways. The Company has bagged total of 45 WSA sites, including 14 prestigious sites on Delhi -Mumbai access-controlled expressway. In addition to this, the Company has tied up with 49 NHAI sites with various WSA concessionaires to set up the fuel/gas stations. Presently, we are operating our fuel stations at 25 WSA sites and plan to bid aggressively for more such sites in the future.

The Company has been adapting to the evolving customer expectations by investing in modernization and automation of

its retail outlets and loyalty-based offerings to deliver superior user experience and enhance brand loyalty. Digital initiatives are another important driver of customer experience in present times and the Company is bringing on board analytics-based queue management, mobile-based loyalty, contactless payments, hyperlocal marketing among many others. The Company has successfully launched its Integrated Transaction Processing Server (ITPS), a unified solution for receiving payments and awarding loyalty points to the valued customers at retail outlets. The ITPS boasts of having more than 12 Lakh transactions per day, expanding the scope from customer satisfaction to customer delight.

Enhancement and differentiation of products and services is another imperative for the Company to maintain its leadership position. The focus is on offering sustainable and alternative fuels and targeting non-fuel revenue sources. Backed by efforts of its R&D Division, the Company has launched several high performance and environment-friendly fuels and products like XP-95, XP-100, XtraGreen diesel, Green combo lubricants and 'Chhotu' (5 kg) and 'Munna' (2 kg) LPG cylinders in the last couple of years. These have received overwhelming response from customers. The expanse of high-performance petrol brand XP-95 Petrol has scaled up sizeably and it is being delivered in more than 9,700 retail outlets. The outreach of premium XP100 petrol almost doubled in a year to around 200 retail outlets. XtraGreen diesel, an environment-friendly fuel that offers 5-7% fuel economy benefits and is amongst the cleanest diesel fuels globally available, is being delivered at more than 4,900 retail outlets of the Company across the country. IndianOil also scripted a new chapter in the Make in India saga by introducing AVGAS100 LL, in September 2022. Previously, pilot training schools and defence establishment in India relied on imports for this specialised aviation fuel. Moreover, during the year, we shipped a batch of AVGAS100 LL to Papua New Guinea, enabling the country to transition from being an importer to an exporter of this fuel.

The Company envisages transforming its 36,000 plus and growing retail network to complete energy solutions outlets. It is supplying E10 Petrol and has begun supplying E20 petrol at many of its retail outlets. At present, the Company is dispensing E20 petrol from close to 340 of its retail outlets and is rapidly extending E20 petrol availability across its network. The Company is in full readiness to meet the stipulated timelines for the nationwide E20 Petrol roll-out. It is setting up LNG fuel stations along the Golden Quadrilateral and recently commissioned the first of these at Sriperumbudur, Tamil Nadu. With more than 5,400 EV charging stations at present, the Company plans to expand its reach to about a third of its network during 2023-24. Besides, it is also focusing on the novel battery-swapping model with a steady rise of this facility at its retail outlets, which promises a quick turnover, given the huge base of two & three-wheelers in the country.

Beyond the domestic market, the Company has been catering to markets in the neighbourhood and has been establishing tie-ups. Over the long term, it plans captive overseas markets, and to enter newer geographies like Africa and South-east Asia and create Regional Hubs.

**5,400**  
EV charging stations

## Strengthening the Core Through Integration and Diversification

The vagaries of the energy markets, coupled with the uncertainty associated with the ongoing energy transition, make it imperative to not only make the core robust but also resilient. And, in this regard fortification of its core business through integration and diversification has been a key tenet of the Company's growth strategy.

### Research & Development

**IndianOil R&D Centre is the hub of innovation** and plays a key role in the Company's efforts towards '**Atmanirbhar Bharat' (Self Reliance)** by developing cost-effective, environmentally & socially responsible technology solutions, both in the core areas of expertise such as Lubricant, Refining, Petrochemicals and Pipeline and in the sunrise areas such as Solar Energy, Hydrogen, Energy Storage, Battery research, CCU Technologies, Bio-Energy & Nanotechnology to provide the Company with a Competitive edge and pave growth path for the future.

The state-of-the-art R&D facilities located on a sprawling 65-acre campus in Faridabad on the outskirts of the National Capital. An impressive array of most advanced equipment is available to experienced researchers and scientists round-the-clock. IndianOil's R&D has filed 1,646 patents till March 31, 2023, out of which 1,554 are effective patents. IndianOil is the first Indian Oil & Gas company to cross the milestone of 1,500 patents filed which is the recognition of decades of pioneering work in field of lubricants formulation, refinery processes, pipeline transportation/ maintenance and alternative fuel technologies. IndianOil with its consistent efforts has also achieved the status of refining technology exporter by licensing the INDMAX technology to the Pancevo Refinery of Naftna Industrija Srbije (NIS) in Serbia.

To further expand its footprint and facilitate transformation to an integrated energy company, IndianOil is setting up the world's largest net-zero (power & water) new campus at Faridabad with GRIHA-5 star rating, LEED platinum standards. The second campus, titled IndianOil Technology Development & Deployment Centre, is slated for commissioning in 2023-24. The R&D center is also driving IndianOil's Start-up scheme and fostering a culture of innovation within and outside the organization. The latest innovation being the commercial launch of Surya Nutan Solar cooker which is a stationary, rechargeable, and always kitchen-connected indoor cooking solution that collects energy from the sun and stores it in a scientifically proven thermal battery for use in cooking. Therefore, it is not dependent on grid electricity.

### Exploration & Production

In the context of highly volatile international oil and gas prices, integrating into the upstream business proves to be a valuable strategy for sustaining profitability. By combining upstream activities with refining operations, the Company aims to improve supply chain efficiency, diversify revenue streams, and maintain strategic control. Additionally, in the present geopolitical landscape, ensuring a secure supply of oil and gas has become increasingly crucial in addressing national energy security concerns.

The Company has, over the years, built a sizeable portfolio of E&P assets consisting of 18 domestic and 11 overseas blocks. The production from upstream assets increased to over 4 MMT of oil equivalent, which is 5% of the crude requirement of the refineries. The Company targets to increase its upstream integration ratio from 5% at present to 10% by 2030 (~11 MMT), primarily through investment in domestic assets, while also tapping suitable overseas opportunities, especially in producing oil & gas blocks.

### Petrochemicals

India's per capita polymer consumption currently stands at 12 kg, which is significantly lower than that of China (82 kg) and the US (93 kg). This disparity presents a substantial opportunity for expansion and scaling within the sector, that will expand further with the rising GDP.

The petrochemicals are known to have strong synergies with the core refining business and this has significantly contributed to the bottom-line of the Company. In the context of the ongoing energy transition, the significance of integrating downstream into petrochemicals becomes even more pronounced. By integrating into petrochemicals, the Company plans to effectively capture both volume and value growth opportunities, while also optimizing refinery utilization during periods of reduced fuel demand. This strategic integration enables a comprehensive approach to leverage the potential benefits of the petrochemical sector in terms of growth and overall refinery performance.

The Company, therefore, is clear that all refinery expansions will have petrochemical integration as an integral part with the dual objective of value addition and risk mitigation. As a long-term strategy, we aim to enhance the Company's Petrochemical Intensity Index (PII) to 15% by 2030 from almost 5% currently. This will de-risk the refinery operations and boost the bottom-line. The Company's petrochemicals strategy is primarily based on utilization of captive feedstock and will be bolstered by investments in specialty chemicals and entry into emerging areas of compounding.

In March 2023, in a momentous leap, IndianOil's Board has accorded 'Stage-I' approval for setting up a Petrochemical Complex at Paradip, Odisha, at an estimated cost of over ₹ 61,000 Crore. This mega project will be the largest-ever investment of IndianOil at a single location and shall significantly improve the Petrochemical Intensity Index of the company. It shall be a growth driver in making the Company a major player in the Petrochemical industry while strengthening India's self-reliance in the petrochemical sector. The Project is a mega-scale investment by IndianOil in the state of Odisha and will generate huge economic and social benefits for the country in general and Odisha state, in particular. More importantly, this mega project is aligned with Hon'ble Prime Minister's vision of Purvodaya, which aims to accelerate the development trajectory and socio-economic prosperity in Eastern India. As a major milestone, 2200 acres of land for the project have already been approved by the Government of Odisha out of which 800 acres has already been notified. The project will generate a multiplier effect for the local economy, and the extensive incentives

package from the Government of Odisha for this project will go a long way in strengthening this symbiotic relationship. This mega-project, along with other significant ones on the anvil like the Panipat Naphtha Cracker Phase II expansion, Styrene Unit at Panipat and PVC Project at Gujarat Refinery will be a significant leap in IndianOil's journey of excellence.

### Bio-fuel Integration

The global trend of incorporating bio-fuels into refineries is gaining momentum and is gaining impetus from policy interventions such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA). At home, the amendments to the National Policy on Bio-fuels-2018 have given an impetus to a wide range of alternate feedstock for use in ethanol and bio-diesel production.

The Company is already blending bio-fuels at its refineries and is supplying E10 Petrol across its network and also supplying E20 Petrol at increasingly many outlets. The refinery feed globally is expected to get diversified to include bio-based feedstocks, to produce renewable fuels, known for their low carbon footprint and can serve as domestic resources that can be seamlessly integrated into refinery operations. In India, there is policy support for bio-fuels, presenting a unique opportunity for the Company to establish its refineries as centres for advanced bio-fuel generation such as 2G, 3G ethanol and Sustainable Aviation Fuel (SAF).

The Company has set up **Asia's first 2G Ethanol Plant** based on Paddy straw feedstock at Panipat having 3 Crore litres per annum capacity. It would use 2,20,000 MT / annum of feedstock and lead to reduction of ~3 Lakh tonnes of GHG emission (equivalent to replacing over 63,000 cars annually from roads of country). The plant was dedicated to the nation on August 10, 2022 by the Prime Minister of India.

In another first, IndianOil has set up **World's first Refinery off gas to ethanol (3G ethanol)** producing plant of 4.2 Crore litres per annum capacity at Panipat. IndianOil is the first Oil Refining Company in the world which has adopted this technology. This would lead to mitigation of ~1.8 Lakh tonnes of GHG emission / annum.

Additionally, the Company is collaborating with global technology leaders like LanzaJet, and Praj for setting up Sustainable Aviation Fuel (SAF) plants. IndianOil plans to set up an 86.8 TMTPA capacity SAF Plant at Panipat, based on LanzaJet Alcohol to Jet (ATJ) Technology. The Plant will use 3G Ethanol as feedstock providing additional carbon benefits. IndianOil has also signed an MoU with Praj to set up a 10 TPD capacity SAF demo plant in Pune and progressively scale it up to a 500 TPD capacity commercial plant by 2035.

### Natural Gas

Increasing the share of gas in the energy mix is crucial to the decarbonisation of the Indian economy. The government of India plans to increase Natural Gas share in India's primary energy from 6.5% to 15%. A supportive policy environment and bold reforms have invigorated investment in this sector. In India, natural gas demand is expected to grow robustly on account of policy impetus, coupled with rising domestic production and LNG imports.

# 20%

Share in RLNG market

The Corporation is invested across the natural gas value chain in the country and envisages an enhanced role in India's growing gas economy. It is a major player in the LNG business in India, accounting for 20% share in the RLNG market in the country. The Company targets a leadership position in the RLNG market with 28% share by increasing its sales from around 4.5 MMT at present to 20 MMT by 2030 through massive scale-up in infrastructure with the help of ongoing and planned investments. In line with this, the Company aims to expand its gas infrastructure and strengthen its supply chain by putting up new LNG terminals and gas pipelines. The participation in development of new infrastructure has been planned through multiple routes viz. booking of capacities in the upcoming LNG terminals, setting up of LNG terminals and laying of gas pipelines by the Company itself or through the JVC route in addition to building CGD networks. The Company is looking at expanding its Ennore terminal from 5 to 10 MMTPA and has also booked capacity in the Jafrabad and the Dhamra terminals. It has been aggressively expanding its CGD network, both through its JV companies and on a standalone basis. During the 9<sup>th</sup>, 10<sup>th</sup> & 11<sup>th</sup> PNGRB bidding rounds, IndianOil on standalone basis bagged 26 Gas. At present, the Company along with its 2 JV Companies, is present in 49 GAs and 105 Districts spread across 21 States and UTs, making it one of the major CGD players in the country, reaching 20.6% of Population, covering 12.3% of area and meeting 15.2% of total CGD demand of the country.

Alongside, to ensure affordable supplies and insulate from price shocks, during the year, the Company continued to be in touch with various LNG suppliers for securing long term LNG through new contracts and renewal of existing contracts. In this respect Company has established long term LNG supply of around 2 MMTPA combined from ADNOC & TotalEnergies. These efforts for securing long term supply shall further strengthen IndianOil's vision to be the 'Energy of India' and align to Government's vision to increase the share of gas in its energy mix to 15% by 2030.

The Company's endeavours continue to secure opportunities in domestic gas auctions that keep coming from time to time and its access to domestic gas is getting enhanced. Recently, the Company successfully bid tenders for procurement of domestic gas, with a combined volume of over 5 MMSCMD.

### Transformation to a Holistic Energy Solutions Provider

The Company is constantly on the quest to provide energy solutions to the nation through new, sustainable, and smarter ways to meet the energy transition challenges. On a standalone basis, the Company, along with its JVs and subsidiaries, is already operating in new energy areas. It is also forging synergistic alliances with other players to meet its growth targets. In line with India's Vision to be Net-Zero by 2070, the Company has laid out its Net-Zero plans as well, aiming to achieve it by 2046 (Scope 1 & Scope 2 emissions).

The Company recently announced its intention to pursue green initiatives at an altogether different scale and as a first step envisages the consolidation of all its existing green assets under one entity. It has set ambitious targets for its green portfolio for 2030 & 2050. The Company intends to expand its green portfolio beyond its own 2046 target requirement, with a much larger role in contributing to the nation's Net-Zero 2070 target.

From accounting for 9% of India's energy basket today, the Company plans a massive scale-up, aiming to account for a 1/8<sup>th</sup> share in the Indian energy basket by 2050.

In terms of components of the Company's 2050 portfolio, it sees a reduction in the share of oil to 46.3% from 92% at present and an enlarged share of natural gas at 27.4% from 8% currently. It is also looking at an enhanced share of renewables/clean energy solutions to 26.3%. The Company is not only transforming its energy basket from being oil-centric to a more holistic and diversified one but is also emboldening its role as India's prime energy supplier.

### Expanding Renewable Portfolio

The Company plans to build a renewable portfolio of 31 GW by 2030 and 200 GW by 2050. To expand this energy portfolio, the Company is collaborating with other public and private energy companies working in the space of clean energy technologies. In this regard it has formed a JV with NTPC Green Energy Limited, is exploring opportunities with respect to the potential collaboration through JV (50:50) with SJVN (Sutlej Jal Vidyut Nigam) Limited. The Company is also considering to spin off a new Wholly Owned Subsidiary (WoS), through which it will consolidate its green assets. Further to these initiatives, IndianOil has approached states of Rajasthan, Gujarat, Karnataka, Tamilnadu, Andhra Pradesh for setting up GW scale RE projects and initial discussions have been initiated with Rajasthan, Gujarat, Karnataka.

### Compressed Bio-gas (CBG)

CBG is produced from organic waste and is an alternative to compressed natural gas (CNG). The overall lifecycle of greenhouse gas savings of bio-methane, compared to natural gas, is typically high - at 80 to 85%. Given its merits, CBG is going to be an important component of the Company's green portfolio and is also likely to help in greening its operations as it works towards its Net-Zero 2046 target.

The Company has constructed a cattle dung-based CBG plant at Hingonia Cattle Rehabilitation Centre (HCRC) of Jaipur, another plant in Gorakhpur based on mixed waste agri-corp residue has also been completed and another is being set up in Gwalior and is exploring setting up of 30 CBG Plants across India. The Government of Uttar Pradesh has introduced the Uttar Pradesh State Bio-Energy Policy-2022 providing various enablers and facilitation for setting up CBG Plants in the State. IndianOil is planning to set up of 14 CBG plants in Uttar Pradesh with total capacity for processing of about 700 TMTPA of biomass & waste for producing about 50 TMTPA CBG.

## Hydrogen

The National Green Hydrogen Mission, approved recently by the Government, envisages making India a leading producer and supplier of Green Hydrogen in the world and creating export opportunities for Green Hydrogen and its derivatives by including a slew of incentives.

In line with the Government's National Green Hydrogen Mission, the Company is pursuing plans for hydrogen production across various hues, including utilizing renewable power to generate green hydrogen at its locations. IndianOil plans to set up 10 KTA (~ 85 MW) of Green Hydrogen plant at Panipat. IndianOil's Board has approved the formation of joint ventures with ReNew and L&T to develop (including construction) green hydrogen production assets and associated renewable assets. Another JV with L&T has been approved, which will manufacture and sell electrolyzers. Additionally, the Company's R&D is working in the different areas of the hydrogen value chain such as bio-methane to hydrogen, bio-mass gasification to hydrogen, and electrolyzer technologies and fuel cells.

## EV Charging and Battery Technology

The transition to electric vehicles is a promising global strategy for decarbonizing the transport sector. The EV market in India is expected to grow at a CAGR of 44% and is expected to hit 6.34 Million units of annual sales by 2027. The Company is crafting an ambitious blueprint in the electric mobility arena.

In addition to setting up charging stations and pushing for the battery-swapping model, the Company, through its JV IOC Phinergy Private Limited (IOP), is working on the niche Aluminium-Air battery technology. This has the potential to provide a viable and affordable e-mobility solution, based on domestically available and abundant raw material (aluminium). The technology has been successfully demonstrated in India as an energy back-up solution at the telecom sites of a leading Indian telecom tower operator. Currently, IOP is collaborating with leading automobile OEMs and aluminium suppliers for the development of logistics infrastructure. IOP has plans to commercialize the Al-Air battery technology in India, which includes manufacturing of the battery in India and setting up of the logistics infrastructure.

For propagating green mobility, IndianOil Board has recently approved the formation of a joint venture company for battery swapping business in India as a Private Limited Company with a 50:50 collaboration between IndianOil and Sun Mobility Pte. Ltd. Singapore (SMS). Sun Mobility is a global leader in providing energy infrastructure and services to the transportation sector enabling electric vehicles to be charged in a faster, cheaper, and more convenient way; thereby, making mass migration to a sustainable, pollution-free future possible. IndianOil would be infusing equity in the JV to the tune of ₹ 1,800 Crore till the financial year 2026-27. The Board has also accorded approval for an investment of ₹ 640 Crore in IOCL Singapore Pte. Ltd. Singapore (a Wholly Owned Subsidiary of IndianOil) for the acquisition of Preference Shares and Warrants of Sun Mobility Pte. Ltd. Singapore.

Availability of adequate charging infrastructure is a pre-requisite for growth in the EV penetration. The Company has been the leading Oil Marketing Companies in terms of installation of EV charging infrastructure with close to 5500 charging stations and targets increasing this to 10,000 in near future. Battery swapping

model holds high potential in developing country markets like India with large and growing electric two-wheeler and three-wheeler populations, the Company here again leads the industry with 76 battery swapping stations already under its folds.

## Other Businesses

The Company is exploring opportunities outside energy business areas too. Diversification is a risk-reduction strategy to help expand into new markets and industries and achieve greater profitability.

## Cryogenics

Envisaged growth in the share of natural gas from the present 6.5% in the primary energy mix to 15%, offers a huge potential for growth in LNG, which uses cryogenics-based transportation. Furthermore, cryogenics is expected to play a crucial role in supporting varied applications of hydrogen since the liquefaction of hydrogen for storage requires sub-zero temperatures. The energy transition is, therefore, expected to be a spur for cryogenic vessels and cylinders. Cryogenics is amongst the sunrise industries of the ongoing energy transition.

The Company has a small but significant cryogenics portfolio, which it plans to nurture to seize the growth opportunities in the area. The Cryogenics group of the Company is a pioneer in its field, having over 40 years of experience in the design and production of state-of-the-art vacuum super-insulated Cryogenic Storage & Transport Vessels. IndianOil has been supplying LNG through Cryogenic Road Tankers since 2007.

Anticipating high growth potential in the Cryogenic segment, especially in LNG, Liquid Oxygen & Liquid Nitrogen, the Company is setting up a new Cryogenics manufacturing facility at Nasik. Spread over an area of around 50 Acres the new state of the art facility will emerge as a major player offering a wide range of product and customised solutions in Cryogenics. With this new facility, installed capacity of Cryogenic vessels would be enhanced from 35 vessels per annum to 480 Nos per annum with production range extending up to 250 KL from existing 127 KL. Further to this, LNG fuel tanks, Liquid cylinders & Microbulk systems, ISO tanks and Dispensing systems would be added to the product portfolio.

## Explosives

The Company's Explosives group has been actively pursuing business opportunities in the Industrial Explosives business in India. At present coal mining sector is the main customer for its explosives business. There is a preponderance of coal in India's energy mix and with the growing energy demand of the country, the coal sector is expected to continue playing a major role in the future as well.

The Company's first bulk explosives plant of 30 KTA capacity in western India was commissioned in Western Coalfields Ltd (WCL) at Umrer, near Nagpur. Another Bulk explosive plant at Basundhara (Odisha) has been constructed and is ready for commissioning. IndianOil would be setting up a 30 KTA Bulk Explosives Plant at the Singareni Collieries Company Ltd. (SCCL) premises at Mandamarri (Telangana). Also, a long-term Contract has been executed with Neyveli Lignite Corporation India Ltd. (NLCIL), Neyveli, Tamil Nadu. With this, the Company will be able to expand its footprint for the first time in the bulk explosives business in southern India. The Company holds a leadership position in the bulk explosives

business in the country and is actively scaling up its presence, the Company also envisages entry into the packed explosives, a high-growth segment, through suitable collaborations.

## Innovative Financing Solutions

The company has incorporated a wholly owned subsidiary IOC Global Capital Management IFSC Limited (IGCMIL) in International Financial Services Centre (IFSC) at Gujarat International Finance Tec-City (GIFT City), Special Economic Zone (SEZ) Area. This company shall operate as a Finance Company predominantly in the areas of Global Treasury Centre, Trade Financing and Global Financing. It shall undertake financial services primarily in respect of IOCL Group companies that are currently carried out outside India by overseas financial institutions and overseas branches/subsidiaries of Indian financial institutions. It shall also be providing platform to carry out operations of our foreign companies as well as future inbound and outbound investments of Indian Oil. New innovative business structures shall be created through IGCMIL to source funds and provide a better and efficient investment structure in place for fuelling the growth of group companies.

## RISKS & CONCERNS

Organizations across the board are facing an exceptionally challenging risk landscape due to a series of disruptions, which began with the Covid-19 pandemic. Last year the Russia-Ukraine conflict triggered a fresh wave of crisis, disrupting commodity markets. This, in turn, led to a host of problems like surging global inflation, trade wars, capital outflows from emerging markets, energy security breaches, and social unrest in many parts of the world. Alongside, the rising global temperatures and the global push towards Net-Zero have added to the complexity of the situation.

The crisis of 2022 brought back energy security into focus. IndianOil as the flagship energy supplier to the country understands its responsibility of ensuring energy security, for which the Company is committed to enhancing the ability of its refineries to process a wider array of opportunity crudes and strategically diversifying its supply sources. In 2022-23, 36 new grades were included in the Company's crude basket and now the crude basket contains 247 grades from different regions like Africa, the Middle East, the Americas, and Russia etc.

## FINANCIAL REVIEW

During 2022-23, the Company achieved a revenue of ₹. 9.35 Lakh Crore, which is the highest amongst the Indian corporate entities. The Company has also set a new record with the best-ever annual Gross Refining Margin of US\$ 19.52 per bbl. The Company recorded the highest annual sales volume in its history and the physical performance across most of the segments witnessed significant growth. The capital expenditure of ₹ 37,287.04 Crore during the year is the highest-ever incurred by the Company, which reflects its commitment to the development and expansion of energy infrastructure in the country.

The standalone financial performance of the Company and its various segments is summarised below:

Particulars	₹ in Crore		
	2022-23	2021-22	Variation
Revenue from Operations	9,34,953	7,28,445	2,06,508
EBITDA	28,487	47,568	(19,080)
PBT	9,698	31,733	(22,035)
	<b>8,242</b>	<b>24,184</b>	<b>(15,942)</b>

The Company is committed to effectively managing the risk matrix it faces with ever-growing resilience and proactiveness. The major risks identified by the businesses and functions are systematically addressed through mitigating action plans on a continuous basis. Risks are assessed and managed at various levels with a top-down and bottoms-up approach, covering the enterprise, the business units, the functions, the market share and projects.

The risks identified by the Company inter-alia include:

- Economic risks arising from international crude oil and products market fluctuations;
- Financial risks such as foreign exchange rate fluctuations, exposure to borrowings;
- Competition risks arising from competitors within the existing businesses and from new businesses such as alternative energy sources, electric mobility;
- Operational risks such as pilferages, labour unrest, unplanned shutdown of refineries;
- Security and fraud risks, including cyber-security, data leakage and physical security risks;
- Reputational risks such as brand value risk;
- Environmental risk arising from the impact on the environment from our business activities and increase in compliance cost in view of the emerging regulations;
- Compliance risks arising from tax disputes and litigation; and
- The risk of change in Government policies impacting profitability and ability to do business
- The energy transition offers opportunities but also comes with inherent risks, notably the potential for a disorderly transition. Such disorderliness can lead to insufficient future supplies, causing extreme price fluctuations and supply disruptions.

In addition to these, with ESG scrutiny on the rise, globally and in India, the Company has broadened its coverage of identified risks to include Environmental Impact in terms of the GHG emissions impact (SCOPE 1 & 2) and the water footprint.

Particulars	(₹ in Crore)		
	2022-23	2021-22	Variation
Cash Profit	20,101	35,190	(15,089)
Borrowings	1,32,495	1,10,799	2,1696
Revenue from Operations (Segment Wise)			
Petroleum	8,79,223	6,79,412	19,9811
Petrochemicals	22,259	28,091	(5,832)
Other Businesses*	33,471	20,942	12,529
EBIT (Segment Wise)			
Petroleum	12,276	26,919	(14,643)
Petrochemicals	(181)	4,685	(4,866)
Other Businesses*	1,729	1,328	401
Other un-allocable expenditure (Net of un-allocable income)	(2,806)	(3,629)	823

\*Other Business comprises Sale of Natural Gas, Explosives, Cryogenics, Wind& Solar Power and Oil & Gas E&P activities.

### Standalone Financial Performance

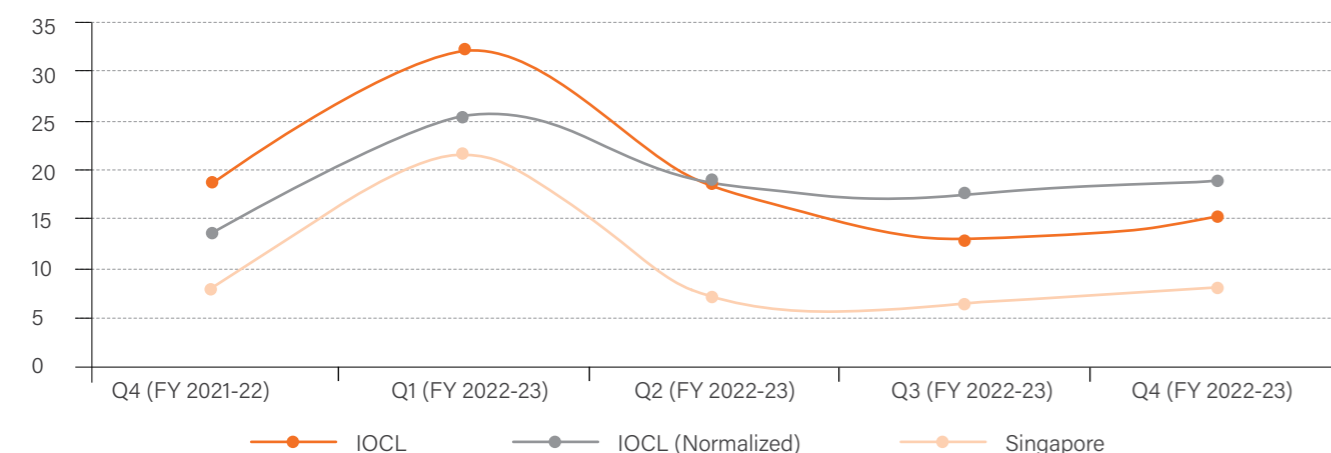
In 2022-23, the Revenue from Operations experienced a remarkable growth of more than 28%, reaching ₹ 9,34,953 Crore from ₹ 7,28,445 Crore in the previous year. The combination of higher prices and a greater sales volume contributed to the substantial growth in revenue during the year.

In 2022-23, the Company's EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) margin was at 3.05%, the Operating Profit margin was at 1.11%, and the Net Profit margin was at 0.88%. These figures show a decrease compared to the previous year in which the EBITDA margin was at 6.53%, the Operating Profit margin was at 4.42%, and the Net Profit margin was at 3.32%.

The Net Profit for 2022-23 was ₹ 8,242 Crore compared to ₹ 24,184 Crore last year. The decrease in EBITDA, Operating Profit and Net Profit margin is mainly on account of lower marketing &

petrochemicals margins and higher exchange losses during the year compared to last year. Due to lower profitability and increase in borrowings in comparison to the previous year, the Company's return on average capital employed experienced a decline from 15.44% to 6.19%. However, its efficiency to deploy its assets to produce the revenue improved from 2.03 times to 2.33 times as Revenue from Operations significantly increased in the year.

At the beginning of the year, crude prices were already at a higher level of about US\$ 103/bbl, which went further up to US\$ 122/bbl in June 2022 before softening and closing at about US\$ 78/bbl. The average HSD crack spread increased significantly from US\$ 10/bbl in the previous year to US\$ 35/bbl during the year with high volatility and the crack touched a high of US\$ 65/bbl in June 2022. Similarly, the average MS crack spread, which was about US\$ 11/bbl in the previous year, improved to US\$ 14/bbl during the year and touched a high of US\$ 40/bbl in June 2022. The quarter-wise movement in refining margins (in \$/bbl) is shown in the chart below:



The Singapore benchmark for refining margins improved during the year on account of the higher spread between international prices of petroleum products and crude. As can be seen from above chart, the Company's normalised refining margin (i.e. normalized GRM) during the year moved in tandem with the international margins. Normalised GRM of the Company increased from US\$

7.61/bbl in 2021-22 to US\$ 20.14/bbl in 2022-23 compared to the increase in the Singapore GRM from US\$ 4.99/bbl to US\$ 10.77/bbl. The inventory holding by the Company was high on account of inland refineries, due to which inventory gain/loss becomes significant during a fluctuating price scenario and hence, greater volatility was seen in reported margins.

The Current Ratio of the Company remained at the same level as the previous year, indicating a consistent balance between current assets and liabilities. Increase in borrowings led to a rise in the Company's Debt-to-Equity ratio from 0.84 times to 0.98 times. On account of lower marketing & petrochemical margins, higher exchange losses and increased finance cost compared to the previous year, profit for the current year reduced significantly, resulting in the deterioration of Interest Coverage Ratio from 8.25 times to 3.39 times. The debt service coverage ratio also experienced a significant decrease, dropping from 5.10 times to 1.30 times, primarily because of higher principal repayment of long-term borrowings and a lower profit for the year.

The inventory-holding period was about 43 days and Company's average collection period was 6 days. Both the Return on Equity (ROE) & the Return on Capital Employed (ROCE) were lower in the year. The ROE fell from 20.00% to 6.20%, while the ROCE decreased from 15.44% to 6.19%. The variation was primarily on account of the reduction in profitability due to suppressed margins and significant exchange losses in comparison to the previous year. Higher dividend receipt during the year turned out to be a key reason for increase in the Return on Investment (ROI) from 4.69% to 9.18%. The Company paid a final dividend of ₹ 3,305 Crore for the financial year 2021-22 during 2022-23. The Company's earnings per share (EPS) for the year 2022-23 stood at ₹ 5.98, but no interim dividend was declared during the year. However, the Board of Directors recommended a final dividend of ₹ 3.00 per equity share (face value: ₹ 10/- per equity share) for 2022-23, subject to approval by the members of the Company in the Annual General Meeting. Detailed financial indicators and ratios for the last five years are provided in the section 'Performance at a Glance' forming a part of the Annual Report.

### Group Financial Performance

The Group's Revenue from Operations for the year amounted to ₹ 9,51,410 Crore, depicting a significant increase compared to ₹ 7,36,716 Crore in the previous year. However, the Net Profit for the current year stood at ₹ 9,792 Crore, reflecting a decline from ₹ 25,102 Crore in the previous year mainly on account of factors which impacted the standalone performance of the Company. A detailed breakdown of the profit from standalone to group is provided in Note 46 of Consolidated Financial Statements.

The financial performance of the material subsidiaries, Joint Ventures and Associates is provided in Note 33A and 33B of the Consolidated Financial Statements. During the year Chennai Petroleum Corporation Limited, a subsidiary reported a profit of ₹ 3,531.53 Crore and a Total Comprehensive Income of ₹ 3,518.13 Crore. Another subsidiary, Lanka IOCL PLC reported a profit of Sri Lankan Rupee 376.95 Crore and a Total Comprehensive Income of Sri Lankan Rupee 381.44 Crore which, after adjustments as per IndAS, translates to a profit of ₹ 856.60 Crore and a Total Comprehensive Income of ₹ 928.08 Crore. Under Joint Ventures & Associates, Petronet LNG Limited achieved a profit of ₹ 3,325.82 Crore and a Total Comprehensive Income of ₹ 3,321.46 Crore and IndianOil Petronas Private Limited recorded a profit of ₹ 249.25 Crore and a Total Comprehensive Income of ₹ 249.04 Crore.

### INTERNAL CONTROL SYSTEMS - PROCESS EXCELLENCE

The Company has put in place an Internal Control System that ensures orderly and efficient conduct of business, including adherence to its policies, safeguarding its assets, prevention and detection of frauds and errors, accuracy and completeness of accounting and reporting. The same comprises various policies as well as detailed manuals, which cover almost all the aspects of the business. Organization-level controls, Operational-level controls, anti-fraud controls and general IT controls have been put in place to ensure that business operations are carried out efficiently, effectively and the chances of errors/fraud are minimised.

The internal processes and policies are reviewed from time to time to align them with the changing business requirements. The internal control systems are commensurate with the size and operations of the Company. It has an independent Internal Audit Department, headed by an Executive Director, who reports to the Chairman. The Department has officers from Finance as well as other technical functions. The audit assignments are carried out as per the Annual Audit Programme approved by the Chairman and the Audit Committee. The Internal Audit carries out extensive audits throughout the year covering every business process. The Statutory Auditors are also required to issue the Independent Auditor's Report on the Internal Financial Controls over Financial Reporting for the Company under Clause (i) of Sub-Section 3 of Section 143 of the Companies Act, 2013. The report issued thereupon is attached to the Standalone and Consolidated Financial Statements respectively. The Audit Committee carries out a detailed review of the Financial Statements and deliberations with the Internal Auditors and Statutory Auditors before the same is recommended to the Board for approval.

### Human Resources

IndianOil believes in holistic and meaningful employee engagements and the development of its human resources. The Company engages with the employees to tap their highest potential for the growth of its business. It assigns great importance to develop its human resources with a focus on its Core Values, which has been revitalized by adding a fifth value of "Nation First" to the existing values of Care, Innovation, Passion and Trust. It believes that the challenges surrounding the business environment can be mitigated by a workforce that is motivated, adaptive to change, innovative and fast in learning. Integrated HR practices through focused recruitment, career path and learning and development have contributed to the future readiness of the workforce. The Company has a structured and robust succession planning framework for the identification and development of talent for the leadership pipeline. The Company has not only groomed several visionary leaders who led and transformed the Company over the years but also groomed leaders for both the public and the private sectors.



## IR Climate - Collaborative Value

The industrial relations (IR) climate in the Company has traditionally been harmonious. A collaborative IR climate has been maintained in the Company over the years to always be ready for the challenges. The Company ensures that the changes in its business environment, strategy & business models, the resultant impact on the current business and the people, along with future plans are regularly shared with the collectives and their views and suggestions are taken into consideration. Regular structured meetings are held between the management and the collectives to discuss and deliberate on issues like productivity, welfare and the need to build a responsive and responsible organisation. The collectives have always steadfastly supported the management in overcoming challenges faced by the Company.

As of March 31, 2023, the employee strength of the Company was at 31,095, which comprised 18,485 executives and 12,610 non-executives, including 2,726 women employees.

## Other Information

The details regarding the Company's CSR programmes, environment protection and conservation initiatives, technology absorption and adoption efforts, forays into renewable energy and foreign exchange conservation, etc., and are provided in the Directors' Report and the Annexure.

## Cautionary Statement

The information and statements in the Management's Discussion & Analysis regarding the objectives, expectations or anticipations may be forward-looking within the meaning of applicable securities, laws and regulations. The actual results may differ materially from the expectations. The various critical factors that could influence the operations of the Company include global and domestic demand and supply conditions affecting the selling price of products, input availability and prices, changes in Government of India regulations/tax laws, economic developments within the country and factors such as litigation and industrial relations.