

Energy Security ~ I

India is the world's third-largest energy consuming country, thanks to rising incomes and improving standards of living. Indeed, energy use has doubled since 2000, with 80 per cent of demand still met by coal, oil and solid biomass. More elaborately, coal is the country's top energy source with a share of 46 per cent in 2021, followed by oil (23 per cent) and biomass (21 per cent)



Energy is essential for development, and sustainable energy is essential for sustainable development - Tim Wirth

The vision of modern India encapsulates the concept of 'smart cities' to address the phenomenally rapid urbanization of our nation. In 2015, the government of India launched the National Smart Cities Mission to promote an urban renewal and retrofitting program with the mission to develop smart cities across the country, making them citizen-friendly and sustainable.

It has been estimated that by 2050 India's urban communities are expected to rise to a humongous 50 per cent of the population. Most importantly, about 66 per cent of the world's population would then be living in urban areas.

Urbanization accompanied by infrastructural development, housing, entertainment, commercial and business activities and industrialization have resulted in manifold increase in energy consumption in India.

A recent survey suggests that 13 per cent of the country's population live sans grid-based electricity. Moreover, supply of electricity in rural areas seems irregular. It is also estimated that by 2050 cities worldwide would consume two-thirds of global energy and contribute up to 80 per cent of global greenhouse gas emission. Therefore, we have a long way to go to ensure basic necessities and quality of life to citizens. This, indeed, is a wake-up call.

At the beginning of the 21st century, about 80 per cent of the world's energy supply was derived from fossil fuels such as coal, petroleum, and natural gas. But such fuels are finite resources; most estimates suggest that proven reservoirs of oil are large enough to meet global demands at least until the middle of the current century.

This apart, combustion of these fuels has a number of negative environmental consequences. Fossil fuel power plants emit air pollutants such as sulfur dioxide, particulate matters, nitrogen oxides, carbon monoxide, and many toxic chemicals. Furthermore, the burning of these fuels releases a large chunk of greenhouse gases, mainly carbon dioxide, that blanket the Earth and

trap the sun's heat.

Indeed, fossil fuels are by far the largest contributor to global climate change, accounting for over 75 per cent of global greenhouse emissions and nearly 90 per cent of all CO₂ emissions.

India's coal-based power sector accounts for approximately 2.5 per cent of global greenhouse gas (GHG) emissions, one-third of India's GHG emissions, and around 50 per cent of country's fuel related emissions. The science is clear: to avoid the worst impacts of climate change, emissions need to be reduced by almost half by 2030 and reach net-zero by 2050.

In 2000, world leaders congregated at the United Nations and unanimously committed themselves to fight poverty and hunger, gender inequality, environmental degradation, and HIV/AIDS, while improving access to education, health care and clean water, all by 2025. Although none of the eight MDGs specifically address energy, access to sustainable and clean energy contributes directly to achieving all MDGs.

Its importance was acknowledged later, in 2005. SDG 7.1 aims to ensure universal access to affordable, reliable and modern energy services by 2030. However, at the UN High Plenary Meeting held in 2010, a follow-up resolution to the outcome of the Millennium Summit was adopted. In that outcome, several issues relating to energy access, security, clean and renewable energy, etc. were set forth, emphasizing the importance of energy for sustainable development.

It is estimated that India's population is set to rise to 1.515 billion in 2030 from 1.414 billion in 2022 and, at the current rate of growth, urban population in India is also estimated to reach a staggering 60 crore by 2030.

India has become the world's most populous country and combined with the twin forces of urbanization and industrialization, this underpins rapid growth of energy demand, which rises by more than 3 per cent per year in the Stated Policies Scenario (STEPS) from 2021 to 2030,

the International Energy Agency (IEA) mentioned in its report entitled World Energy Outlook 2022.

India is the world's third-largest energy consuming country, thanks to rising incomes and improving standards of living. Indeed, energy use has doubled since 2000, with 80 per cent of demand still met by coal, oil and solid biomass.

More elaborately, coal is the country's top energy source with a share of 46 per cent in 2021, followed by oil (23 per cent) and biomass (21 per cent). Natural gas covers 6 per cent and primary electricity (hydro, nuclear, solar, and wind) merely 4 per cent. The Indian energy sector has been characterized by low per capita commercial energy consumption, skewed distribution of primary energy sources, high energy intensity, distorted energy pricing and huge levels of environmental pollution.

The United Nations Climate Change Conference, more commonly referred to as COP 26, took the centre-stage of deliberation. India pledged to cut down its total projected carbon emission by one billion tonnes by 2030, and achieve net-zero carbon emission by 2070. The key dimension in India's climate policy is the role of energy in improving social development.

About 80 per cent of the global population lives in countries that are net-importers of fossil fuels. Consequently they are vulnerable to geopolitical shocks and crises.

In contrast, renewable energy, also called alternative energy sources are available in all countries, and their potential is yet to be fully harnessed.

Such usable energy is derived from replenishable sources such as the Sun (solar energy), wind (wind power), rivers (hydroelectric power), hot springs (geothermal energy), tides (tidal power) and biomass (biofuels). The first and most important benefit of using renewable energy is in its name - it is renewable.

It means that it will be renewed. It means that it will not run out. Ever. While fossil fuels will run out in 40-60 years, the Sun will always shine, the wind will always blow, and the Earth will always have geothermal energy.

Most renewable energy sources are considered sustainable based on their ability to generate clean, reliable energy for the future. The International Renewable Energy Agency (IRENA) estimates that 90 per cent of the world's electricity can and should come from renewable energy.

In the words of Mark Z. Jacobson: "A large scale wind, water and solar energy system can reliably supply the world's needs, significantly benefiting climate, air quality, water quality, ecology and energy security."

In a country like ours, where there is abundance of sunlight contributing nearly 3,000 hours of sunshine every year, solar energy has the potential to meet a major part of our future energy needs.

The National Institute of Solar Energy has assessed India's solar potential to be about 750 GW assuming 3 per cent of the waste land area to be covered by the Solar PV module.

The government accordingly made an ambitious plan to achieve a target of 100 GW from solar energy by 2022. Its long-term energy target is to reach 500 GW of non-fossil capacity by 2030, with solar power accounting for around 280 GW.

Figures detailing the performance of India's solar sector portray a meteoric rise. A report by a think tank, Ember, released on 22 September 2022, states that 9.8 GW of solar power was installed between January and August 2022, up by 22 per cent on 2021.

Solar share of all new renewable capacity rose from 85 per cent during the same period in 2021 to 89 per cent.

While solar energy can be a boon for the Indian energy sector as an alternative source of power generation, there are many challenges that the sector faces: lack of R&D and modern development facilities, lack of land, lack of awareness amongst general public, etc.

(To Be Concluded)



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Indraprastha Gas Ltd announces Q1 results

Indraprastha Gas Limited (IGL), the largest CNG distribution company of the country, operating City Gas Distribution (CGD) networks across 30 districts in eleven geographical areas across four states of Delhi, Uttar Pradesh, Haryana and Rajasthan announced its financial results on July 23, 2023 for the first quarter of FY'24, while continuing the growth momentum. As per the unaudited Q1 results announced by the company for the quarter ending June 2023, IGL registered an overall sales volume growth of 4% over the corresponding quarter in the last fiscal, with the average daily sale going up from 7.89 mmscmd to 8.20 mmscmd. Product wise, both CNG and PNG recorded sales volume growth of 4% in the quarter as compared to corresponding quarter last year. Accordingly, the total gross sales value during the quarter has moved to Rs 3742.32 crore as compared to Rs 3518.93 crore during the first quarter of FY'24, thereby showing a growth of 6%.



**LPG cylinder
carrier vessel was
ceremonially launched
at GSL**

LPG Cylinder Carrier Vessel being built for Port Shipping & Aviation, Administration Union Territory (UT) of Lakshadweep, second in a series of two vessels, was launched on July 14, 2023, at Goa Shipyard(GSL), Bindu Abraham, AGM performed the honors for launching the vessel in presence of Shri B K Upadhyay, CMD, GSL, Capt Jagmohan, Director (CPP&BD), Sunil Bagl, Director (Finance) & senior officials of GSL and dignitaries. GSL has signed a contract with Port Shipping & Aviation, Administration Union Territory (UT) of Lakshadweep for building two LPG cylinder carrier vessels. The vessel launch is intended to transport LPG cylinders or 60 tons of packed petroleum products from mainland to Lakshadweep. The vessel is capable to operate at speed of 11Knots with an endurance of 10 days and can carry a complement of 18 personnel onboard.

Oil to scale higher

CRUDE CHECK. Hold on to crude oil longs

Akhil Nallamuthu

bl. research bureau

Crude oil prices were up for the fifth consecutive week. The Brent crude futures on the Intercontinental Exchange (ICE) was up 4.6 per cent as it ended the week at \$84.4 a barrel. The MCX crude oil futures (August contract) gained 4.5 per cent as it closed at ₹6,579 per barrel on Friday.

There are no signs of weakness, and the contract is set to scale higher. Supporting this bullishness is the potential tightening in supply in the global market after Russia and Saudi Arabia cut production for August. Also, the US Fed last week hinted that there might not be a recession, boosting the sentiment.

Technically too, the bull trend is intact, and the price action indicates further upside.

MCX-CRUDE OIL (₹6,579)

The August futures of crude oil rallied sharply in the first half of the last week. Although the contract was largely sluggish in the latter half, it managed to close with a gain. There are no concrete bearish signals either.

Thus, the probability of crude oil futures moving up further is high. Substantiating this, there



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has been considerable long build-up over the last week as the cumulative Open Interest (OI) increased along with a rise in price. The OI went up to 10,465 contracts on July 28 as against 7,982 contracts on July 21.

From the current level, the nearest resistance is at ₹6,750, from where we might witness a corrective decline. But if the contract breaches ₹6,750, it could establish another leg of uptrend where the price might touch ₹7,000. In case the contract drops from the current level, it might fall back to ₹6,250.

Trade strategy: We recommended long positions at an average price of ₹6,140 with initial stop-loss at ₹5,900. Since the price has crossed over ₹6,500, the revised stop-loss would now be at ₹6,250. Hold these longs and exit at ₹6,725.

There's some untapped fuel here

OIL. Balanced portfolio, long-term prospects outweigh risks for Indian Oil Corporation

Nalinakanthi V
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Investors with a two-to-three year horizon and a moderate risk appetite can consider accumulating the stock of India's largest oil marketing company, Indian Oil Corporation. With a refining capacity of about 70 million tonnes and network of over 58,000 retail outlets, IOCL is the country's largest retailer of petrol and diesel. The company's business segments include refining and marketing of petroleum products, manufacturing and marketing of petrochemicals and construction and operation of crude oil and gas pipelines. Its valuation which factors fuel pricing risks, FY23 dividend yield of 3.1 per cent (highlights its ability to pay dividend even in a tough year) are positives.

The stock is available at a cheap valuation of 5.5 times trailing twelve-month earnings, primarily due to concerns on retail fuel prices. While higher crude prices are traditionally good for refiners as it helps them earn higher margins on refining business, the marketing business' fortunes depend on the ability of the company to pass on higher prices to retail customers.

For instance, in April-June 2022 when crude prices topped \$100 levels, the company reported record refining margins. However, the entire profit was eroded due to record marketing losses, as the government chose to keep prices unchanged, due to inflation risk. That said, we believe that the company's prospects over the next three-five years will improve with government initiatives such as Ethanol blending programme, which can

● ACCUMULATE
IOCL ₹95.15

WHY

- Largest oil marketing player
- Efficient refining business
- Long-term growth prospects intact

reduce the risk due to crude price volatility. Also, planned expansion in the renewable energy space will help de-risk the business in the long run. We believe the company to be a good long-term investment bet.

4 FACTORS IN FAVOUR

First, IOCL, is the country's largest retailer of petrol and diesel with sales of 95.6 million tonnes in FY23, of which 90 million tonnes was in the home market while the balance was exported. The company is among one of the most efficient oil refiners in the country, with healthy refining margins and operates eight refineries with a capacity of over 70 million tonnes of crude oil. The company also owns and operates a network of crude oil and gas pipeline with a throughput of 94.56 million tonnes of crude and 21.69 million metric standard cubic metres of gas.

In FY23, the petroleum products segment, which includes refining, marketing of petroleum products, accounted for over 94 per cent of the company's total revenue of ₹950,924 crore, while the petrochemicals segment accounted for 2.3 per cent of the revenue. The balance 4 per cent included revenue from sales of gas, exploration of oil and gas, cryogenic and solar and wind power.

Second, IOCL has managed to sustain refining margins reasonably well during up and down crude cycles. For instance, in the October-December 2022 quarter, when crude fell from \$100-plus levels to about \$88 levels, the company still reported health GRM of \$21 per bbl, as compared to \$15.92 per bbl for BPCL.

Similarly in Q1FY23, when crude prices hit an all-time high, the company recorded an impressive refining margin of \$30 per bbl, much higher than \$27.5 per bbl for BPCL. Further, its operating performance has been superior to peers, even during exceptional years such as FY20, when it delivered 3 per cent margin, while BPCL reported 2 per cent operating profit margin. In FY23, which was a very volatile year with crude swinging between \$70-120 per barrel, indeed a very challenging year for marketing companies due to inability to pass on cost increases to customers, the company managed to clock 4 per cent operating profit margin, as compared to 2 per cent for BPCL, its closest peer.

Third, though the company has debt of ₹1.48-lakh crore, equal to its shareholders' funds, only 40 per cent of it is long term debt, while the balance is working capital loans. Further, the company's investment book,

Financial & operating performance

₹ crore	FY19	FY20	FY21	FY22	FY23
Revenue	528,158	483,763	363,950	589,336	841,756
EBITDA	35,262	16,053	39,929	46,619	30,699
Operating profit margin	7%	3%	11%	8%	4%

GRM healthy despite crude price correction

\$/bbl	Q4FY22	Q1FY23	Q2FY23	Q3FY23	Q4FY23
Gross refining margin	12.03	31.51	25.49	21.08	15.3
Avg Brent crude price (\$/ bbl)	100.8	113.8	100.7	88.7	81.06

which is valued at ₹52,190 crore, as of FY23, is almost 37 per cent of the company's market cap of ₹1.4-lakh crore.

Four, IOCL is investing in renewables business to increase its capacity to 3GW by 2025 from the current 239 MW, through a collaboration with NTPC. By 2030, the company aspires to have a renewable energy capacity of 35 GW and bio-fuels capacity of 0.6 million tonnes, which will be expanded to 4 million tonnes by 2030. All of these will likely be funded through ₹22,000-crore rights issue, which was recently approved by the board, subject to regulatory approvals. In addition to these, the company plans to set up 10,000 charging stations for electric vehicles. All

these will help minimise the risk of crude price volatility in the long run.

RECENT PERFORMANCE

In Q1FY24, the company reported 11 per cent decline in revenue, due to drop in crude prices and realisation on downstream products, year on year. In Q1FY24, it posted operating profit of ₹15,785 crore versus loss of ₹5,824 crore, thanks to the improved marketing margins, last year. While long-term prospects remain intact, short-term performance is contingent on the company's ability to pass on fuel price increases to end customers.

