Management Discussion and Analysis

1. INDUSTRY DEVELOPMENTS

GLOBAL POWER SECTOR

Just as the world was on the mend post multiple waves of COVID, the Russia-Ukraine conflict induced a trail of irreversible economic, social and political effects. Global inflation touched an all-time high of >8% with many developed economies witnessing double digit inflation figures for the first time in many decades. This led the central banks across the globe to simultaneously hike interest rates in a bid to tame inflation. Repercussions of the conflict were also visible in disrupted trade relations and spiralling energy prices resulting in severe global energy crunch leading to significant diversion from the otherwise chartered growth paths. While the ramifications were evident all over the world, Europe was hit the hardest. As Europe braved an unprecedented energy crisis, people worldwide realised the importance of self-reliance for energy and consequentially, countries advanced their climate goals. This turbocharged the growth momentum of renewables and green sources. As supply chain disruptions and rise in commodity prices posed a temporary retardant to this growth story, bulk of low-carbon investments were directed towards building resilient supply ecosystems along with renewable capacities. Having weathered the storm in 2022, this year the economies will be seen establishing their redefined pathways.

Unprecedented Energy Crisis

The Russia Ukraine conflict that begun in February, 2022 triggered seismic repercussions for the entire world. It disrupted demand and supply equations, strained long-standing trading relationships and impacted the energy sector in an irreversible way, with Europe specifically witnessing a never-seen-before energy crisis. Reduction in fuel supply led to rolling blackouts, and factories being shut, thus triggering possibilities of a deep recession. The continent's biggest fertiliser makers, steel producers and aluminum smelters had to cut production as power and gas prices skyrocketed to at least four times than historical norms and rendered them uncompetitive in the global market. This prompted thoughts about relocating energy intensive industries from Europe to other regions having cheaper supply of energy.

Subsequently, government officials urged citizens to curb energy use and warned about possible rationing of electricity supply, rattling companies ranging from car manufacturers to cement makers. As it scrambled to maintain its energy security situation, European nations resorted to re-igniting coal power plants despite their commitments of shunning them. The United Kingdom, Austria, Poland, the Netherlands and Greece restarted their closed coal plants and greenlighted operations of coal mines.

Relief came into the European countries in the winters as they experienced warmer temperatures that curtailed demand for heating and consequently allowed utilities to fill natural gas storage sites to the brim, providing a buffer against lower pipelined supplies and driving heating fuel prices lower.

China too grappled with energy crisis, however, triggered by reasons distinctly disparate. Intense heat waves led to dropping of water levels of rivers to historical lows, thereby, restricting energy production by hydropower plants to only half of what they were generating during the same time a year ago. Furthermore, tighter restrictions on coal mining emanating out of the commitments towards achieving climate goals caused limited supply which led to soaring coal prices resulting in lower electricity generation. These supply constraints, in turn, forced severe restrictions on power usage, leading to imposition of comprehensive restrictions, first on industrial power consumption followed by rationing of electricity in residential blocks. The Chinese manufacturers (accounting for ~29%

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of global manufacturing output) struggled to keep operations up and running, having a contagion effect on the global supply chain.

Climate Goals Reinforced

While countries grappled with unprecedented energy crisis, redirecting them to fall back on coal for their energy security needs, the transition towards renewable energy continued at an accelerated pace. Nations across the globe enacted several measures to meet their targets. In The European Union (EU), the policymakers became more committed to the bloc's so-called Green Deal, the flagship climate policy that includes a massive package of laws to meet a target of zeroing-out greenhouse gas emissions by mid-century. On the other hand, United States passed the landmark federal law of "Inflation Reduction Act" (IRA) aimed at addressing climate change and energy security issues. Under IRA, $ 386 billion had been pledged for the energy and climate sector with a view to spur growth in the renewable equipment sector and reduce its dependency on China. Australia, one of the biggest emitters per capita, passed a legislation enshrining a pledge to slash carbon emissions by 43% by 2030 and to achieve Net-Zero by 2050. Other countries in Asia and Middle East too planned to accelerate the use of renewables and achieve Net-Zero by 2050-2060. The year 2022 also hosted the global climate summit-COP27 which on similar lines, bolstered commitment towards climate change goals. It witnessed increased engagement from the private sector, alongside nations, towards continuing focus on innovation in climate technology in order to achieve the emission reductions required to limit global warming to well below 2°C.

Renewables Growth on Track

Renewables continued to remain the centre stage of climate commitments across the globe. This segment received maximum investment of $ 495 billion (up 17% year over year) out of total pie of $ 1.11 trillion among all the low carbon energy investments made in 2022 and continued to grow despite the persistence of geopolitical issues. By the end of 2022, renewables generation capacity reached 3,372 GW, growing by 10% from the previous year. Renewable power growth for the next five years is expected to be driven by Europe, China, the United States and India, which are all implementing policies and introducing regulatory and market reforms more quickly than previously planned to combat the energy crisis. As per IEA, renewables are set to account for over 90% of global electricity capacity expansion over the next five year period till 2027.

Green Hydrogen (H_2) Gaining Ground

Green H_2 that was at a very nascent stage, is seen to be gaining traction as an alternate form of clean energy technology with an increasing number of countries investing in this technology. This sector derived its momentum from the sharp rise in policy support for hydrogen projects from countries across the globe. As of September, 2022, 34 countries worldwide released their H_2 strategy which entailed a total commitment of $ 126 billion. US committed at least $ 13 billion for clean H_2 producers under its Inflation Reduction Act, while European Union's RE Power EU is working around introducing the long-awaited carbon contract for difference system to bridge the gap between fossil fuels and clean. Considerable progress was also seen in terms of hydrogen technology application. The first fleet of hydrogen fuel cell trains started operating in Germany, while globally more than 100 pilot and demonstration projects for using hydrogen and its derivatives in shipping were underway, prompting major companies to sign strategic partnerships to secure the supply of these fuels. During 2022, over 393 deals related to hydrogen were closed, representing a significant increase compared to 277 deals registered in 2021.

Nuclear and SMRs see Traction

Following the Fukushima accident, global nuclear power generation had remained flat for a decade but is now gaining traction due to the need for energy security and increased push for decarbonisation. Countries like the United Kingdom, France, China, and Poland have recently announced energy strategies that include substantial roles for nuclear power. While Japan's Green Transformation (GX) programme provides a major funding boost for technologies which include nuclear, China is planning for a seven-fold surge in its nuclear generation capacity to grow to 400 GW by 2060. IEA's analysis suggests that for a secure and cost-effective transition to Net-Zero Emissions (NZE scenario), nuclear power generation capacity will have to double from 413 GW in early 2022 to 812 GW in 2050 which implies an increase in annual global investment in nuclear power from $ 30 billion during the 2010s to over $ 100 billion by 2030 and above $ 80 billion by 2050.

Given the constraints and safety concerns over large nuclear reactors, development of Small Modular Reactors (SMR) has received significant momentum in the recent past. SMRs are advanced modular factory-built nuclear reactors which can be assembled at site to have capacity of up to 300 MW. They are being seen as an ideal complement to the intermittent renewable energy sources in the future zero-carbon/low-carbon electricity systems. However, the technological developments and cost economics for SMR are still in early stages and the successful long-term deployment of SMRs hinges on strong support from policy makers and regulators. Having realised the potential and deemed benefits of this novel technology, countries are working towards establishing and leveraging it. Presently, more than 80 SMR designs are under different phases of development across about 20 odd countries including the US, Russia, South Korea and Canada.

Electric Vehicles Adoption on the Rise

With focus on advancing sustainable and energy-efficient transportation, governments across the world have introduced various schemes to incentivise EV purchase over conventional vehicles. In tandem with the trend of 2021, EV sales continued to soar in 2022 with sale of more than 10 million (Source:IEA) EVs globally, increasing by more than 50% as compared to 2021. To keep up with the pace of electric vehicles sale, EV charging installations too grew by 55% to 2.7 million charging points till 2022 (Source:IEA). Tailwinds included government support in the form of incentives and subsidies including tax credits, purchase incentives, and infrastructure investments. Additionally, the year saw the introduction of many new EV models by a range of automakers which helped increase awareness among consumers and garner more interest in EVs. To make the most

of this growth momentum, numerous players have entered the EV ecosystem and are positioning themselves to extract value from the upcoming opportunities.

Digitalisation Bolstering Net-Zero journey

While the year 2021 saw utilities using digitalisation to strengthen their core businesses, the following year witnessed the emergence of new trends. Utilities focused more on developing internal capabilities and partnering with startups to build digitalisation ecosystem than outright purchasing and outsourcing, alongside building and monetising new revenue streams. In the journey of achieving Net-Zero, digitalisation is also aiding companies to reduce Scope 2 and 3 emissions.

INDIAN POWER SECTOR

In the year 2022, when countries across the globe were struggling to keep up their economic growth trajectory amidst persistent inflation and rising interest rates, India's economy continued to grow, posting the strongest growth amongst developing nations. India came across as a bright spot posting a GDP growth of 6.8% (Source: IMF

World Economic Outlook Projections, April 2023) in FY23, driven by domestic led growth. Power demand being closely associated with GDP, also followed the growth path, rising by ~10% (132 BU's) in FY23. The revival of economic activities coupled with an intense heat wave witnessed in Q1 FY23, led to a sudden surge in power demand. Peak demand touched a record high of 216 GW in the month of April, 2022, and supply was stressed with this sharp rise in demand owing to shortage of coal supplies and non-availability of rakes among other challenges. This resulted in significant energy crisis, having repercussions on electricity prices which shot to as high as ₹ 20/unit in April, 2022. CERC intervened and reduced ceiling prices from ₹ 20/unit to ₹ 12/unit in order to protect consumer interests. Parallelly, the government initiated some immediate and long-term measures to avert this crisis and avoid any such crisis in the future. In response, it directed all state Gencos to import at least 10% of their requirement of coal for blending purpose to address issues of domestic coal supply shortages. The government also planned to set up 29 Pumped Storage Hydropower (PSH) projects with a total capacity of 33,240 MW in a phased manner to meet the growing demand for power in the future, especially to make intermittent renewable power firm. The power crisis that brought to the fore the dependency on thermal power, saw renewed interest of players in thermal assets. Several PSUs and private players alike went into acquiring stressed thermal assets. In addition, all plants using imported coal were asked to run at full capacity under the emergency directions of the government under Section 11 of the Electricity Act, 2003.

The distribution sector showed signs of improvement on the back of several reforms initiated by the government to ensure financial discipline of Discoms. According to Ministry of Power, the AT&C losses reduced from 22% in FY21 to 17% in FY22 and similarly, the difference between the average cost of supply and average realisable revenue reduced from ₹ 0.69/kWh in FY21 to ₹ 0.22/kWh in FY22. On the privatisation front, while the overall progress remained slow, some development was seen in the UT of Puducherry wherein the government issued bids to privatise Electricity Department of Puducherry. This followed privatisation of power distribution entities of Dadra and Nagar Haveli and Daman and Diu (DNHDD) and Chandigarh in January, 2022 and April, 2022 respectively.

The push for renewables continued in line with the government's target of achieving 500 GW of installed electricity capacity from non-fossil sources by 2030, aided through a slew of measures and schemes announced during the year. The government released new renewable purchase obligation (RPO) targets by creating an exclusive category of wind energy to boost the segment and also released guidelines for the second tranche of Productivity-Linked Incentive (PLI) scheme worth ₹ 19,500 crore for solar manufacturing. However, growth trajectory was marred by increase in the cost of polysilicon and supply chain disruptions emanating from China resulting in almost a 40% increase in the price of solar PV modules. Since September, 2022, owing to drop in polysilicon prices, there has been a gradual reduction in the module prices which boded well for the solar developers.

In another boost to clean energy, India's drive towards electric vehicles got a push further as EV industry reached the milestone of one-million-unit sales in 2022. EVs accounted for 4.7% (vs 1.7% last year) of overall auto sales, driven by high individual and Business to Business(B2B) purchases supported by FAME II and developments in charging infrastructure. The sector, though faced setbacks during the year due to a series of accidents and battery fires, resulting in strict actions by the Ministry of Road Transportation and Highways. The ministry issued warning that any electric vehicle (EV) Company found to be negligent in its manufacturing process would face heavy penalties and would have to order immediate recall of all defective vehicles. In response, Ola, Okinawa and Pure had to recall nearly 7,000 e-two wheelers.

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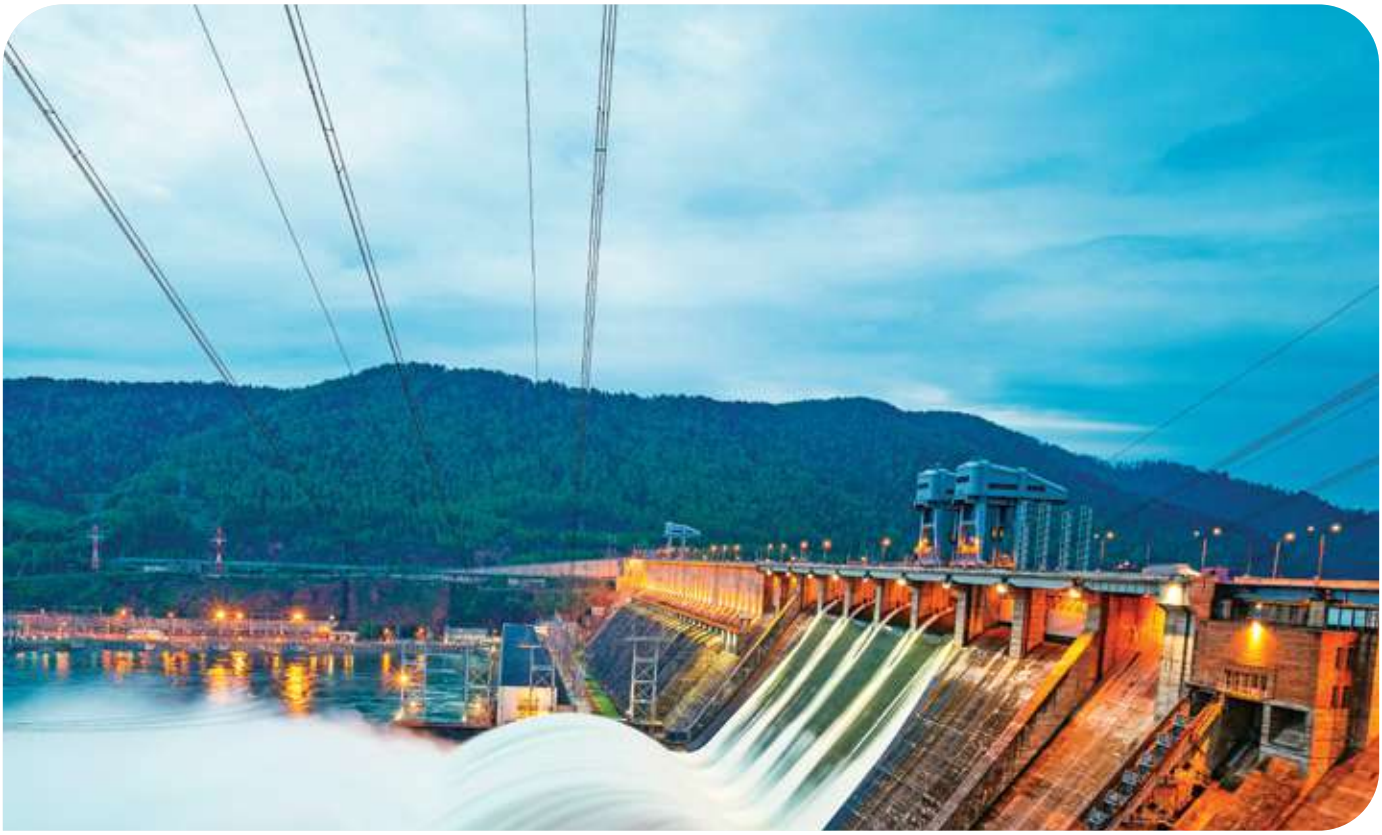
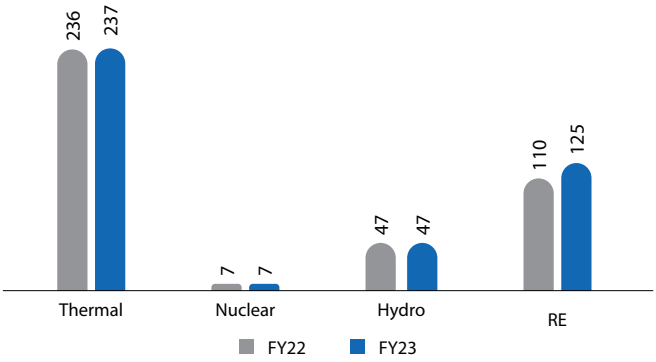


Generation

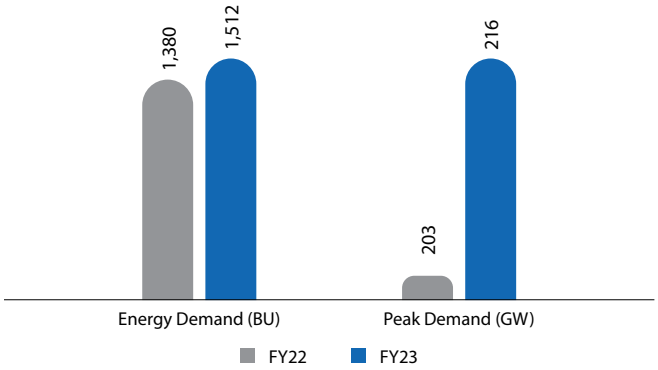
India's installed generation capacity stands at 416 GW as on March 31, 2023, with capacity addition of close to 17 GW in FY23. The capacity additions in FY23 happened, majorly in the renewables segment, led by solar. Renewables accounted for more than 90% share of the capacity addition in FY23, continuing a similar trend from the previous year. Solar contributed to more than 75% of the total capacity addition in FY23.

Installed Capacity (GW)



Source: CEA

Electricity Demand



Source: CEA

Thermal Generation

The early onset of summer coupled with reviving economic activity led to unforeseen spike in power demand in the early months of FY23. The supply could not keep pace with the spike and this electricity crunch, amongst other factors, was driven by domestic coal supply shortage and rake unavailability at a time when international coal prices were at record high levels. All India thermal plant capacity below critical level of coal stock in April, 2021 was 49 GW which

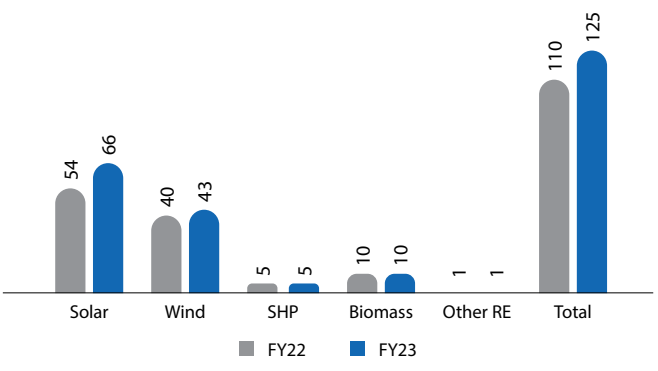
increased to 118 GW in April, 2022 indicating the severity of the crisis. The coal offtake in April, 2022 (61.81 MT) had also from March, 2022 (65.36 MT). Government immediately undertook prompt measures viz. cancelling few passenger trains to allow faster movement of coal carriages. Consequentially, offtake improved to 66.27 MT in May, 2022. In response to this crisis situation, many private players exhibited their interest in acquiring stressed thermal assets. Within a span of six months, close to 2 GW of thermal capacity was acquired by various independent power producers. The state governments, on the other hand, announced plans of setting up new thermal capacities. Haryana approved setting up of a new 900 MW thermal plant at Yamuna Nagar. The states of Telangana and Tamil Nadu too announced to have thermal capacities (4 GW Yadadri and 800 MW unit of North Chennai respectively).

In the wake of this energy crisis, hydropower including pumped storage projects too received renewed attention as visible from the various policy announcements by both the central and state governments. While the Union government revised the hydro power policy and released separate RPO targets for hydro power, it is also exploring the option of handing over 29 under-construction hydroelectric projects totalling 30 GW amounting to ₹ 27 lakh crore in the North-eastern Region from private players to central entities in a bid to hasten the execution process.

Renewable Generation

The focus on renewable energy sector has led to steady growth of India's renewable energy capacity over the years. The total installed renewable energy capacity of the country has been on the rise from 12% in FY12 to 30% in FY23 (Source:CEA), after having crossed the 100 GW mark for first time in FY22. Solar has been the mainstay of renewables growth in India over the past decade. Its share in total RE installed capacity has risen from 4% in FY12 to more than 50% in FY23 and its share in India's total installed capacity has increased from 0.5% to 16% during the same period.

Installed Capacity (GW)



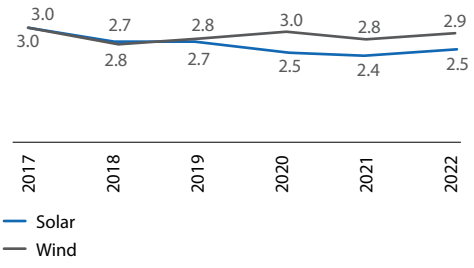
Source:CEA

In the journey towards clean energy transition, government and private entities have increasingly committed to their Net-Zero goals and have announced ambitious plans to achieve it by 2040-2050, with some even vowing to reach the target by as early as 2030. In line with this, the government continued to support the renewables sector by announcing a slew of measures in 2022. The Green Open Access (OA) Policy by the Central Government announced in June, 2022 was amongst the major policy announcements gaining traction though, state-level hurdles, such as delayed approval of projects, withdrawal of waivers on various charges for OA projects and increased penalties for power schedule deviation continue to affect the market. Concerned about the slow uptake of solar rooftop, MNRE administered another extension of deadline for achieving rooftop solar target of 40 GW from 2022 to 2026 along with a series of measures viz. new and simplified calculations for Central Financial Assistance (CFA), freedom to choose the vendors for rooftop installation, launch of portal for registration and tracking, etc. to improve rooftop penetration in residential sector.

In terms of the RE capacity mix, there has been more traction towards complex tenders which require a combination of wind, solar and energy storage that cater to more flexible and round-the-clock power. Interest in offshore wind is also seen to be developing and to explore development of expertise on offshore wind and related ports and infrastructure, MNRE issued a draft tender for selection of developers to lease seabed areas in Gulf of Mannar (near Tamil Nadu coast) for development of 4 GW offshore wind projects.

The total auctioned capacity for renewables just crossed 10 GW in 2022, falling by nearly 46% from the record high of 19.1 GW in 2021. Both wind and solar auction tariffs rose in 2022 on account of high capital cost and rising interest rates. The cost of solar projects saw a sharper rise as increasing global prices accompanied by India's import taxes on modules and depreciation of rupee versus US Dollars added to the rising costs.

Annualised Tariff (₹/kWh)



Source: BNEF

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To reduce import dependency of solar modules and promote indigenisation and integrated manufacturing of solar modules in India, the Centre proposed a scheme of ₹ 1,000 crore to invite private companies to set up manufacturing zones for power and renewable energy (RE) equipment. Further, the Budget 2022 also announced increase in total outlay under PLI scheme for Solar PV Manufacturing by ₹ 19,500 crore to ₹ 24,000 crore and in parallel, MNRE expanded the list of module manufacturer under ALMM to almost 55 manufacturers with total domestic capacity of 14 GW to address issues of module supply shortages.

Distribution

Green shoots of improvement in the power distribution segment were visible during the year backed by some notable measures implemented by government for this sector. The implementation of Late Payment Surcharge and Related Matters Rules, 2022 led to bringing discipline in payment arrangements with the ability of the generation companies to regulate power supply to distribution companies in case they default on their monthly payments. In August, 2022, as many as 11 states — Tamil Nadu, Telangana, Madhya Pradesh, Mizoram, Jharkhand, Bihar, Rajasthan, Andhra Pradesh, Maharashtra, Karnataka and Chhattisgarh — were barred from buying and selling on power exchange platforms for non-payment of dues to power Gencos resulting in 80% reduction of overall dues.

In July 2021, the Revamped Distribution Sector Scheme (RDSS) was approved with an outlay of over ₹ 3 lakh crore for a period of five years from FY22 to FY26. The scheme aims at providing financial assistance to Discoms for modernisation and strengthening of distribution infrastructure, with focus on improving the reliability and quality of supply to end-consumers. Last year, Centre approved assistance of more than ₹ 1.6 lakh crore for 12 states and the Union Territory of Jammu and Kashmir for implementing measures such as installing smart meters, reducing distribution losses, and reducing gap between cost of supply and revenue realisation. Government also introduced an interest-free instalment scheme to assist Discoms clear more than ₹ 1 lakh crore dues to the Gencos. This helped the Gencos to tie-up fuel for running the power plants at full capacity to meet the rising demand. The Discoms were given flexibility to pay the outstanding amount in 48 instalments.

Transmission

As a significant step towards successfully achieving the planned non-fossil fuel-based capacity of 500 GW by 2030, government unveiled a plan to facilitate seamless integration of renewables with the existing and upcoming state and central transmission systems in the high RE potential zones across Ladakh, Rajasthan, Gujarat, Andhra Pradesh and offshore wind farms in Tamil Nadu and Gujarat. The length of the transmission lines and sub-station capacity planned under Inter State Transmission System for integration of additional wind and solar capacity by 2030 has been estimated as 50,890 Ckt. km. and 4,33,575 MVA respectively at an estimated cost of ₹ 2,44,200 crore. The present total transmission lines and substation capacity is 4.71 lakh Ckt. km. and 11.80 lakh MVA (as of

March, 2023), respectively, reflecting an increase of 14,625 Ckt. km. and 75,902 MVA over the previous year. With the additional inter-regional transmission corridors under implementation/planned, the cumulative inter-regional transmission capacity is likely to be about 1,50,000 MW in 2030. The aforesaid planning will boost the private sector participation in power transmission sector through tariff based competitive bidding (TBCB). As of March, 2023, 72 transmission projects have been awarded through TBCB, out of which, 44 have been commissioned, 24 are under construction, and the rest have been stalled / scrapped.

Electric Vehicle

India's electric vehicle (EV) sales crossed 1 million units in 2022 (Source: Vahan Dashboard), growing significantly by >200% Y-o-Y. The robust growth in sales of EV was primarily driven by state subsidies and incentives provided under FAME II, rise in product supply and high cost of gasoline, diesel and compressed natural gas. The year also witnessed record investment of more than $ 1 billion for the first time in this sector. With increase in number of electric vehicles, the Union Ministry of Road Transport and Highways (MoRTH) identified about 700 locations along the Golden Quadrilateral Highway, and along East-West and North-South corridors, and greenfield expressways to develop wayside centres equipped with various types of charging points for EVs. To facilitate setting up and running the charging stations in a profitable way, various business models including PPP

and revenue sharing models have been proposed. Government is also exploring possibilities of having ToD (Time of the Day) tariff to boost usage of public chargers.

Furthermore, the Union Budget 2023 placed a special focus on the car scrapping policy for ICE vehicles, presenting a big opportunity for fleet modernisation. As the key to success of this sector lies in competitive battery prices, the Government, other than strong policy support for EVs is also focusing on strengthening local supply chains for batteries by subsidising production cost under performance-linked incentive (PLI) scheme.

Power Trading

Around 190 billion units (BUs) of electricity was traded in the short-term power market during FY23, as compared to a total of 184 BUs traded during FY22. Out of this, around 42% of trading had taken place through power exchange(s). Due to high competition amongst power traders, trading margins are under immense pressure. The market is concentrated with 8 larger players with the remaining traders operating in regional pockets, largely for trading their own power.

At ~ ₹ 5.94 per unit, the average clearing price for Day Ahead Market (DAM) in FY23 increased by nearly 35% as compared to the previous fiscal. The increase in DAM prices is largely attributable to the combined effect of surge in overall demand, increase in international coal and gas, and shortage in supply of domestic coal, especially during monsoons. The prices being discovered in the tenders floated by Discoms for the upcoming months of 2023 remain high, being in the range of ₹ 8-11/kWh.

Regulatory and Policy Developments

During the last year, several developments fostering a new growth and direction to the Indian Power sector have seen the light of the day, including promulgation of Late Payment Surcharge (LPSC) Rules, Green Open Access Rules, Ancillary Services regulations, thoroughly revised Deviation Settlement Mechanism Regulations, new Over-the-Counter platform, apart from a major push for storage energy systems in the regulatory framework. Some of the key announcements by the government during the year included the following

- **Invocation of Section 11 by the Ministry of Power –** Section 11 of the Electricity Act, 2003, states that under extraordinary circumstances, the government can ask power generating companies to operate and maintain output in accordance with directions given by it. The Government invoked Section 11 twice (May, 2022 and February, 2023) within a period of nine months to address the increase in peak electricity demand. All imported coal-based power plants were directed to operate at full capacity. Directions were also issued to domestic coal-based plants for ensuring adequate fuel stock through blending with imported coal for meeting the anticipated high demand.

- **Electricity Act (Amendment) Bill 2022 (draft) –** Key features include:

  (i) Introduction of multiple distribution licensee operating in a given area of supply;

  (ii) Penalties for non-compliance of RPO and strengthening hands of Forum of Regulators (FoR);

  (iii) Functions and responsibilities of NLDC made more comprehensive;

  (iv) Changes in eligibility criteria for selection of Chairman and Members of the Central / State Regulatory Commissions. The changes broadly aim to bring competition and accountability in the distribution sector. The Bill was tabled in Parliament during the monsoon session and has been referred to the Parliament Standing Committee on Energy. Proposed changes are positive for the overall power sector.

- **Electricity (Amendment) Rules 2022 by MoP –** Key features include:

  (i) Uniform RE Tariff from common pool for supply to End procurers

  (ii) Multiple modes of utilisation of energy storage (standalone, complementary with distribution, generation, transmission)

  (iii) Automatic recovery of fuel and power purchase cost through Fuel and Power Purchase Adjustment Surcharge (FPPAS)

  (iv) Resource adequacy requirement made mandatory

  (v) Consumption by a subsidiary of a Company which is an existing captive user also admissible as captive consumption by the captive user.

  These are positive developments as these would promote

  - closing of purchase contracts between DISCOMs and intermediary entities like SECI;
  - RE grid integration through deployment of storage;
  - timely cost recovery by DISCOMs;

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- demand fulfillment through proper planning process;
- greater deployment of RE by C&I consumers.

- **Energy Conservation (Amendment) Act 2022 –** Includes the following:
  - (i) Mandatory use of non-fossil sources, including Green Hydrogen, Green Ammonia, Biomass and Ethanol for energy and feedstock
  - (ii) Introduces the concept of Carbon Market
  - (iii) Brings large residential buildings within the fold of Energy Conservation regime and enhance the scope of Energy Conservation Building Code (ECBC)
  - (iv) Empowers the SERCs to make regulations for smooth discharge of its functions
  - (v) Introduction of 'Energy Auditor' responsible for ascertaining energy consumption.
- **RE Open Access Rules 2022 by MoP –** The rules provide mechanism for procurement of RE by Commercial and Industrial consumers. It also provides for Banking mechanism (minimum monthly). This was followed by establishment of a Green Energy Open Access Portal (single window for Open Access application processing) and issuing a list of applicable charges. Furthermore, the rules stipulated issuing of green certificates to consumers if they consume green power. States will have to follow up with commensurate state level regulations. A Model Open Access Regulations was prepared by Forum of Regulators for guidance and adoption of the State Commissions.
- **Electricity (Late Payment Surcharge and Related Matters) (LPS) Rules 2022 –** MoP notified the Electricity (Late Payment Surcharge and Related Matters) Rules, 2022 which served as a critical intervention to strengthen the regulatory provisions for recovery of outstanding dues of Gencos, Transcos and trading licensees from Discoms. LPS is to be paid by Discom on the outstanding amount after the due date at the base rate, applicable for the first month of default. The LPS rate for successive months of default to increase by 0.5% for every month of delay, subject to maximum cap. Total outstanding dues including LPS as on June 3, 2022 is to be re-scheduled

and the due date of the payment to be re-determined in terms of notified monthly instalments. The rules include regulation of short-term open access to defaulting entities after default trigger date and regulation of medium term and long-term access for recurring defaults. Further, generators were given the opportunity to sell power outside, in case of continued default by Discoms. The mechanism (operationalised through the PRAAPTI Portal) has been able to infuse some level of payment discipline in Discoms.

- **Distribution of Electricity License (Additional Requirements of Capital Adequacy, Creditworthiness and Code of Conduct) (Amendment) Rules, 2022 –** Rule defines 'Minimum Area of Supply' for electricity distribution Minimum area shall cover either of following:

  (i) Area falling within a Municipal Corporation as defined in article 243Q of the Constitution;

  (ii) Three adjoining revenue districts;

  (iii) A smaller area as may be notified by the appropriate government.

- **CERC General Network Access (GNA) Regulations 2022 –** These Regulations redefine the methodology for connectivity and access to the inter-state grid. Under these regulations, the Transmission charges shall be borne only by buyer entities and Transmission charges waiver has been granted for procurement of RE to the extent of RE power scheduled. These Regulations are expected to promote the growth of power markets.

- **CEA (Flexible Operation of Coal based Thermal Power Generating Units) Regulations, 2023 –** The regulation stipulates coal based thermal power generating units (central/ state-owned, IPPs) should be capable of providing flexible operation to support the grid in managing intermittent RE power and all units must have flexibility to operate with minimum power level of 40% as per the phasing plan to be notified by the CEA. However, plants have to achieve 55% levels within a period of one year from the notification of regulations. The regulations also provide minimum ramp rate capability at different levels of operation. While regulations are critical from the grid security point of view, there is opportunity provided to generators to approach the CEA for any difficulties in adhering to the conditions, wherein CEA may give relaxation on case-to-case basis.

- **Flexibility Scheme for Thermal/Hydro with RE Bundling –** MoP issued bidding guidelines for thermal/hydro generators for RE procurement to supply bundled power to Discoms under the existing PPA. The objective of the scheme is to bundle cheaper RE with costly thermal power, promote energy transition and enable beneficiary Discoms achieve renewable purchase obligations (RPOs) at least cost. The RE power is to be provided at tariff less than Energy Charge Rate and net Savings, if any, to be shared between generator and procurers. The scheme provides new business opportunity for RE developers and may help in bringing down the overall cost for end consumer.

- **National Green Hydrogen Mission 2023 Issued by MNRE –** The mission envisages a target of 125 GW RE addition, in order to produce five million metric tonnes (MMT) of Green Hydrogen by 2030. It also provides for waiver of interstate transmission charges for RE used for Green Hydrogen production.

- **Blueprint of National Carbon Market by BEE –** Provides a phase wise approach for creating a framework for Voluntary Carbon Market (VCM) in India. To be created with Perform, Achieve and Trade programme as the base, keeping basic structure same with updated policy and market rules.

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2. TATA POWER BUSINESS PORTFOLIO, OPPORTUNITIES AND OUTLOOK

The Company's generation business operates under various business models across Divisions in the domestic as well as international markets with the PPA / Fixed Tariff model contributing to the largest share of the generation segment. The following is a summary of the different business models under which various generation assets of the Company operate:

Model	Returns	Project	Capacity (MW)	% Overall Capacity
Regulated Tariff	Regulated Return on Equity (ROE)	Mumbai operations (Trombay and Hydro), Maithon, Jojobera (Unit No 2 and 3), TPDDL-Rithala	2,775	19.67
PPA / Fixed Tariff (Renewables)	Feed In Tariff + Bid Driven	Wind and Solar Projects (Domestic), TPTCL, TPDDL	3,927	27.83
PPA / Fixed Tariff (Bid / Others)	Bilateral Agreement + Bid Driven	Jojobera (Unit 1and 4), Mundra, Itezhi-Tezhi Hydro, Georgia Hydro, Kalinganagar-IEL-40 MW	4,685	33.21
Captive	Bilateral Captive Agreement	IEL (Unit 5, PH6, KPO), CKP (Indonesia)	497	3.52
Merchant	Market Driven	Haldia, Dagachhu	246	1.74
Under Platform Management	PPA Based	Prayagraj	1,980	14.03
Total			**14,110**	**100**

The Company had significantly expanded its footprint in the power distribution business through the PPP model and is present in the following areas.

Model	Returns	Distribution Area / Entity	No. of Customers (in mn)
Distribution Licensee	Regulated Return on Equity (ROE)	Mumbai Distribution	0.76
Public-Private-Partnership (PPP)	Regulated + Bid conditions driven	TPDDL, TPCODL, TPWODL, TPSODL and TPNODL	12.02
Distribution Franchisee (DF)	Input energy growth and investment driven	TPADL	0.16
Total			**12.94**

The Indian market continues to remain the primary focus of business for the Company. Currently, the domestic market accounts for more than 96% of its generation capacity. As highlighted earlier, the Company has plans in place to grow in the areas of renewable generation, transmission, distribution and new and service-led businesses.

THERMAL AND HYDRO GENERATION

In line with its intent of achieving carbon net zero before 2045, the Company plans to limit its exposure to coal-based projects and does not intend to expand its existing portfolio, offsetting the generated carbon dioxide (CO_2) storage, etc. to achieve Net-Zero emission of greenhouse gases. The Company is promoting carbon neutrality, which will not only reduce carbon emissions constantly, but also decrease the concentration of air pollutants, thus improving air quality. The Company does not have any greenfield or brownfield expansion plans in the near term but would continue to maintain the existing thermal and hydro operations in a sustainable manner. The Company will, however, be evaluating inorganic opportunities that might come up in hydro power generation assets. The Company has added 67.5 MW in Waste Heat Recovery (WHR) based portfolio through its JV, Industrial Energy Limited (IEL) with Tata Steel Limited (Tata Steel).

Additionally, the Company is evaluating growth opportunities in services for thermal and hydro plants by leveraging the technical and operation expertise.

CONSUMER BUSINESSES

The Company has major plans to scale up consumer businesses such as rooftop solar, EV charging, solar pumps, microgrids, energy efficiency solutions and home automation.

The rising fuel costs and growing climate change awareness is pushing individuals to go for greener mobility options provided by electric vehicles (EVs). The Government has also been actively promoting EV adoption through subsidies. As a result, EV sales are increasing at a high pace breakneck speed in India. With growing EV adoption, the Company is pioneering through its next-gen EV charging solutions which plans to cover segment of home, workplace, fleet, and captive charging (including e-Bus charging)

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through different model and approaches. It is also actively evaluating opportunities in the electric 3-wheeler and 2-wheeler charging market. During the year, the Company undertook several initiatives to promote EV charging solutions such as Tata Power EZ Charge mobile based application are hosting high-capacity chargers. The Company has entered into new collaborations with several Government and private bodies for EV charging solutions. These include The Indian Army, The Indian Navy, The Indian Airforce, Starbucks, The Park Hotels, IHCL, NAREDCO, Airports Authority of India- Ranchi and Kolkata, Tata Communication, Gujarat Gas, GAIL, State Bank of India, Kolte Patil, Puri Group, TRIL, ICICI Bank, Bridgestone and India Post. As of March 31, 2023, Tata Power had installed 38,500+ home chargers and 3,700+ public and semi-public charging points. Apart from these, the Company has also energised 234 bus charging points in Mumbai, Delhi and Ahmedabad.

In the space of rooftop solar, the Company has presence in more than 275 districts of India and has rolled out differentiated value-added services with its offerings across segments (residential, commercial and industrial, including corporates, owners, MSMEs, institutions and small commercial establishments). The Company has recognised the opportunities arising in rooftop solar and is developing new offerings and models to enhance its adoption among consumers, including financing solutions, extending the EPC model, recurring revenue model and also other value-added offerings.

Millions of farmers nationwide still rely on electricity from the grid or diesel gen-sets for irrigation. However, when erratic supply leads to delays and economic stress, the Company's solar water pumps provide farmers with a more reliable and cost-effective options. Till FY23, the Company has installed over 97,000 solar pumps across the nation which are helping farmers reduce dependency on fuel pumps and the maintenance cost that are linked to conventional irrigation systems.

The Company has installed 196 microgrids till March, 2023 and are evaluating numerous approaches and models for scaling up the business. It has been successful in benefiting a rural consumer base of around 20,000 consumers. As a part of value-added services, the Company has launched a mobile app and EMI scheme for new connections and provides energy efficient appliances.

The Company has identified eight business-wide Strategic Business Objectives (SBO) for a focused approach towards capitalising the opportunities. You may refer to page no. 48 of the Integrated Report for a detailed explanation of these SBOs along with goals and action plans to achieve these objectives.

3. BUSINESS PERFORMANCE

Consolidated operations of the Company can be categorised into four segments: Generation, Transmission and Distribution, Renewables and Others. Report on the performance and financial position of each of the subsidiaries, JVs and associate companies has been provided in Form AOC-1.

The Company's business performance in FY23 was mainly influenced by lower losses in Mundra plant (operation under Ministry of Power guidelines), higher profits from JV Companies, reduction in AT&C losses across all the four Odisha Discoms, capacity addition in renewables and stable operational performance across all businesses partially offset by higher loss in Tata Projects. A sizeable portfolio of the Company's business under the regulated framework provides a steady and reliable source for its finances. Also, the Company's portfolio is suitably structured to capitalise on favourable market conditions for market-linked businesses in its portfolio.

Highlights of the operational performance of key entities are listed below:

RENEWABLES

RE GENERATING COMPANIES (3,917 MW)

Type of Entity: Subsidiary [Tata Power Renewable Energy Limited (TPREL), Walwhan Renewable Energy Limited (WREL), TP Wind Power Limited, TP Saurya Limited, Tata Power Green Limited, Chirasthayee Saurya Limited, TP Kirnali Limited and Captive Cos (21 Nos)]

Particulars	FY23	FY22
Sales (MUs)	7,093	5,188
Revenue from Operations (in ₹ crore)	3,207	2,873
PAT (in ₹ crore)	592	603

The Company's higher sales were due to addition of 527 MW solar capacity during the year.

PAT for the year is lower on account of one-time impact in previous year of ₹ 182 crore pertaining to favourable tariff order, and compensations offset by additional capacity commissioned.

At the end of FY23, total renewable capacity was 6,571 MW including 2,654 MW of projects under various stages of implementation. The total operational capacity is 3,917 MW, which includes 2,989 MW of solar and 928 MW of wind capacity.

TATA POWER SOLAR SYSTEMS LIMITED – TPSSL

Type of entity: Wholly-owned subsidiary of TPREL

Particulars	FY23	FY22
Revenue from Operations (in ₹ crore)	6,876	8,506
PAT (in ₹ crore)	222	161

TPSSL continues to demonstrate strong delivery driven by growing demand for renewable power in the country and maintain its growth momentum, despite several external market challenges that have impacted the renewables business in India during FY23.

During the year, the revenue is lower on account of lower execution of large utility scale projects due to extension of timelines. However, the Company saw significant growth in the rooftop solar and group captive domain. This enabled the Company to improve margins as compared to previous year.

The Company has an open order book in excess of 4 GW amounting to more than ₹ 17,000 crore pertaining to large scale utility scale projects as on March 31, 2023.

TP SOLAR LIMITED - TPSL

Type of Entity: Wholly-owned subsidiary of TPREL

The Company has signed a MOU with the Tamil Nadu Government for setting up a 4 GW Solar Cell and 4 GW Solar Module manufacturing plant in Tirunelveli district. The plant will integrate Mono-PERC (Passivated Emitter and Rear Cell) Bifacial Technology with future n-Type technology of Tunnel Oxide Passivated Contacts (TOPCON) and will produce High Wattage Modules with industry-leading efficiencies. For the smooth navigation of equipment, the facility will implement Autonomous Mobile Robots (AMR) which use lasers and cameras for transporting parts. Another highlight of the technological advancement in the plant will be the implementation of Industry 4.0 standards - a fully interconnected factory comprising smart manufacturing tools and technologies. The Company has received the Letter of Award (LoA) for availing incentives of ₹ 383 crore for setting up 4 GW of cells and 4 GW modules manufacturing unit under the PLI Scheme (Tranche II).

TP RENEWABLE MICROGRID LIMITED – TPRMG

Type of entity: Wholly-owned subsidiary

Particulars	FY23	FY22
Revenue from Operations (in ₹ crore)	7	3
PAT (in ₹ crore)	(14)	(17)

TPRMG has been alleviating economic and energy poverty through access to clean, affordable, reliable and quality power supply by setting up microgrids in rural villages of Bihar (three districts) and Uttar Pradesh (seven districts). As of March 31, 2023, the Company has commissioned 196 microgrids with an installed capacity of 5.88 MW, serving around 20,000 rural consumers.

The Company has been at the forefront of adopting new technologies for creating social impact and economic growth in rural communities.

The Company has successfully rolled out a pilot project in the field of energy storage systems (Redox Flow Batteries), deployment of alternate technology to replace Diesel-based standby supply at microgrids by rolling out Bio-CNG Plant using cow dung as a raw material for producing biomethane gas, which is then used for generating electricity. Further, new modular, compact, resilient and scalable Inverter technologies have been deployed during the year, with the

Management Discussion and Analysis

intention of further scale-up in the next financial year. There has been a significant shift in Microgrid plant design to mitigate the risk of theft and flood by using a pre-assembled fabricated enclosed structure with a self-propelled natural air circulation system. The Company has now enhanced in-house developed remote data monitoring and controlling system in place.

The customer interface has been further automated and integrated, which entails the linkage of digital payment gateways to automated switching on of the electric supply to consumer premises. Various value-added services have been rolled out during the year to enhance the profitability of the consumer's business. The flagship "DG to MG" conversion programme has been a great success wherein energy efficient motors and pumps (running on Microgrid Supply) were provided on equal monthly instalments to village level entrepreneurs. On Tata Founder's Day, the Company rolled out another path-breaking programme, "Less is More", wherein energy efficient machines and appliances will be made available to rural micro enterprises at an affordable rate and powered by Microgrid supply. SIDBI has financially supported these programmes to encourage 1,000 rural village level entrepreneurs to use green power supply from Microgrids. Similarly, a collaboration with SIDBI, TPCDT and Usha International has been reached to encourage women entrepreneurs to use green power supply from Microgrids for sustainable living through a skilling and production approach.

TATA POWER HYDROS (447 MW)

Type of entity: Division

Particulars	FY23	FY22
Sales (MUs)*	1,550	1,566

*Includes sales to Company's Distribution Division.

During the year, generation were marginally lower with respect to FY22. Availability for the year was 98.44% as against 98.77% in previous year. Auxiliary Power Consumption (APC) continued to reduce through various energy conservation measures under sustainability initiatives and six-sigma projects.

MUNDRA, COAL AND RELATED INFRASTRUCTURE COMPANIES

MUNDRA THERMAL PLANT (4,150 MW)

Type of entity: Division

Particulars	FY23	FY22
Sales (MUs)	10,744	8,361

Mundra plant has operated under Section 11 of the Electricity Act, 2003 issued by the Ministry of Power (MoP) for the period from May 6, 2022 to December 31, 2022 which has resulted in increase in sales volume.

Mundra Plant continues to engage with the procuring states to find a solution for long-term commercial viability of the plant and the supplementary PPA is in discussion with procurers. Further, it is also making efforts to reduce losses through initiatives like sourcing of low-cost coal from other geographies and increasing blending of low calorific value coal.

COAL AND INFRASTRUCTURE COMPANIES

The Company, through its subsidiary, holds a 30% stake in PT Kaltim Prima Coal (KPC) which is a strategic asset to hedge imported coal price exposure at Mundra and form an important part of the supply chain for its coal off-take requirements. In addition, the Company also holds through its subsidiary, 26% stake in PT Baramulti Suksessarana Tbk (BSSR) and PT Antang Gunung Meratus (AGM).

The Company have signed an agreement in earlier year to sell its 30% stake in PT Arutmin Indonesia and associated companies in coal trading and infrastructure. The aggregate consideration for the stake is $ 401 million, subject to certain closing adjustments and restructuring actions. The Company received $ 369 million till March, 2023, and it is expected to receive the balance amount in next year.

PT KALTIM PRIMA COAL, INDONESIA

Particulars	FY23	FY22
Coal Production (million tonnes)	50.1	52.9

KPC's coal production was impacted due to incessant heavy rainfall during the second half of the financial year. The coal price realisation for the year was at $ 140.1/tonne as compared to $ 85.2/tonne in the previous year.

PT BARAMULTI SUKSESSARANA TBK, AND PT ANTANG GUNUNG MERATUS, INDONESIA

Particulars	FY23	FY22
Coal production (million tonnes)	17.9	13.3

Coal production has increased to cater to higher demand from the Chinese and Indian market for low Calorific Value (CV) coal. The coal price realisation for the year was at $ 68.3/tonne as compared to $ 55.6/tonne in the previous year.

PT NUSA TAMBANG PRATAMA, INDONESIA (Infrastructure Company)

Particulars	FY23	FY22
Revenue from Operations* (in ₹ crore)	620	815
PAT* (in ₹ crore)	242	466

*figures are on 100% basis. The Company's share is 30%.

PAT is lower mainly due to fair valuation loss (notional) on transfer of Arutmin assets to PT Mitratama Perkas (PTMP) as part of Arutmin coal asset sale, offset by higher tonnage of coal handled during the year due to acquisition of Bengalone port.

TRUST ENERGY RESOURCES PTE. LIMITED – TERPL

Type of entity: Wholly-owned subsidiary of Tata Power International Pte. Limited (TPIPL)

Particulars	FY23	FY22
Revenue from Operations (in ₹ crore)	650	538
PAT (in ₹ crore)	55	8

Revenue and PAT for FY23 has increased on account of higher margin due to increase in average bunker price of shipments.

THERMAL GENERATION

MAITHON POWER LIMITED - MPL (1,050 MW)

Type of entity: Subsidiary (Tata Power: 74%, DVC: 26%)

Particulars	FY23	FY22
Sales (MUs)	7,455	7,215
Revenue from Operations (in ₹ crore)	3,029	2,782
PAT (in ₹ crore)	345	281

Profit for the FY23 is higher mainly due to improvement in operational parameter, higher performance linked incentives, compensation received under Reserves Regulation Ancillary Services (RRAS) and Security Constrained Economic Dispatch (SCED) scheme and Automatic Generation Control (AGC) and one-time impact in previous year of truing-up order issued by Central Electricity Regulation Commission (CERC).

MPL maintained its strong financial position as evident from the ratings given by CARE and CRISIL for the long-term facilities (CARE AA Stable and CRISIL AA Stable) and short-term (CRISIL A1+) bank facilities.

The construction work for setting up of the flue gas desulphurisation (FGD) is expected to complete as per the agreed timelines.

INDUSTRIAL ENERGY LIMITED - IEL (483 MW)

Type of entity: Subsidiary (Tata Power: 74%, Tata Steel: 26%) (Joint Venture under Ind AS)

Particulars	FY23	FY22
Generation Sales (MUs)	2,980	2,999
Revenue from Operations (in ₹ crore)	339	300
PAT (in ₹ crore)	116	121

*figures are on 100% basis. The Company's share is 74%.

IEL operates a 120 MW tolling coal-based plant in Jojobera. It also operates a 120 MW co-generation plant (Powerhouse #6) in Jamshedpur, inside the Tata Steel plant, which is based on blast furnace and coke oven gas. During the year, the Company has commissioned third unit of co-generation plant at Kalinganagar, Odisha, post which all the three units of 67.5 MW each are under operation by deploying production gases from Tata Steel's plant.

PAT for the year is lower due to write off of non-transferrable portion of CPP-2, partial shutdown of Unit 5 of Jamshedpur for maintenance and higher deferred tax on account of commissioning of TG-III partially offset by higher O&M entitlement escalation.

The Company is in advanced stage of executing Domjuri Solar Plant (15 MW) for Tata Steel's green energy efforts.

TROMBAY (930 MW)

Type of entity: Division

Particulars	FY23	FY22
Sales (MUs)*	4,474	5,153

*Includes sales to Company's Distribution Division.

The station has achieved an availability of 93.1% in FY23 as compared to last year's availability of 92.1%. Lower generation in FY23 is mainly due to reserve shutdown of Unit 7 and major annual overhauling of Unit 5. Trombay plant had undertaken several initiatives to improve operational efficiencies and reducing store inventory.

JOJOBERA (428 MW)

Type of entity: Division

Particulars	FY23	FY22
Sales (MUs)	2,816	2,814

Jojobera plant achieved availability of 94.7% in FY23 as compared to last year's availability of 96.0%.

HALDIA (120 MW)

Type of entity: Division

Particulars	FY23	FY22
Sales (MUs)	862	792

During the year, PLF has improved to 95% as compared to previous year level of 87% on account of several operational improvement measures such as reduction in specific steam consumption by enhancing boiler and turbine cycle performance.

TRANSMISSION

MUMBAI TRANSMISSION

Type of entity: Division

Particulars	FY23	FY22
Grid Availability (%)	99.9	99.9

The transmission assets, which are a part of the Mumbai licence area, had a grid availability of 99.9% in FY23 as against the MERC norm of 98%. Transmission Division operates in the city of Mumbai and MMR region, extending up to hydro generating stations in Raigad district of Maharashtra. This utility has 30 receiving stations with more than 10,000 MVA transformation capacity and more than 1,200 Ckt Km of transmission network. Transmission network comprising of 220 kV/110 kV overhead lines, underground cables and hybrid lines catering to 70% of the power need of Mumbai.

Transmission Division is maintaining highest supply availability of 99.99% to consumers by various inhouse developed interventions with use of modern technologies such as AI and Robotics.

POWERLINKS TRANSMISSION LIMITED – PTL

Type of entity: Subsidiary (Tata Power: 51%, PGCIL: 49%) (Joint Venture under Ind AS)

Particulars	FY23	FY22
Revenue from Operations (in ₹ crore)	129	139
PAT (in ₹ crore)	81	91

*figures are on 100% basis. The Company's share is 51%.

The average availability of the lines was maintained at same level as in previous year (i.e., 99.96%).

Management Discussion and Analysis

Revenue for the year is lower mainly due to recovery of way leave charges from beneficiaries in FY22. PAT is lower mainly due to impact of favourable tariff order in FY22.

DISTRIBUTION

MUMBAI DISTRIBUTION

Type of entity: Division

The highlights of the Mumbai Distribution Division are as follows:

Particulars	FY23	FY22
Sales (MUs)	5,462	4,851
Consumer Base (Nos.)	7,63,787	7,47,458

Mumbai Distribution has added about 16,300 customers in FY23. Sales increased by 13% during the year mainly due to increase in demand and addition of new consumers.

Some key highlights of the Mumbai Distribution Division, including certain initiatives to improve customer experience, are:

- 18,000+ consumers opted for green power tariff with annualised consumption of 235 MUs.
- 55% of total consumers have opted for e-bill.
- Achieved a benchmark of 88% digital bill payment by its consumers.
- Maintained global benchmark level reliability and operational parameters.
- 75,000 smart meters installed under Smart Meter rollout project in Mumbai.
- Three patents granted to Tata Power Mumbai Distribution for:
  - Voice Assisted Switchgear for Safe RMU operation.
  - Network management application SPINe-Spatial Patrolling Interface.
  - Certificate of registration of Design for Ferrule Design for Cable repair.
- Mumbai Distribution inaugurated the first ever 'Divyang' Customer Relation Centre in India; reiterates its efforts towards fostering diversity and inclusion.
- 550+ EV chargers installed in societies across Mumbai.

Key Customer Centric Initiatives:

- Jan Jagruti Abhiyan focussed on customer safety- 100+ sessions around Mumbai and connected with approximately 5,000+ roadside and slum dwellers.
- Milan Customer Connect Camps covering more than 100 societies.
- New connections through WhatsApp services / missed call.
- Special counter for senior citizen and specially-abled customers.
- To help consumers in smooth processing of name change application - 'Naam Badlav Pakhwada' was launched wherein 10,000+ queries were addressed and 3,000+ applications were processed. Annual change of name – 25,000+.
- Unique Group captive offering to Corporate Housing Society- reached out to more than 700 societies across Mumbai.
- Demand Response programme was conducted on March 10, 2023 where in 24,788 consumers participated with total load curtailment of 14.58 MW. Total incentive from the above programme will be shared with participated consumers through electricity bills.
- UJALA-Braille Electricity Supplementary Bills launched for Visually Impaired Consumers.
- Mumbai Distribution inaugurated operations of 24 EV cars and 32 e-bikes which is deployed in the O&M operation activities and to resolve consumer complains.

National/International Awards/paper publication:

- Creating a Sustainability and Clean Energy Awareness Campaign for Utility Customers in Mumbai has been accepted for DISTRIBUTECH International 2023.
- Technical paper on Meter Data Analytics got selected for presentation in Metering India 2022 seminar.
- Green energy solutions for Mumbai consumers have been accepted for Power Green International 2023.
- Technical paper on KYEC (Know Your Electricity Consumption) published in Springer magazine.
- ISUW Gold award for "Emerging Innovation in Electric Mobility Domain - EV and Charging Technology/Solution Providers".
- Awarded A rating under integrated rating study conducted by the Power Ministry.
- Won three awards at International Convention on Quality Control (ICQC) and six awards at National Convention on Quality Control (NCQC).

TATA POWER DELHI DISTRIBUTION LIMITED – TPDDL

Type of entity: Subsidiary (Tata Power: 51%, Government of National Capital Territory (NCT) of Delhi: 49%)

Particulars	FY23	FY22
Sales (MUs)	9,945	8,787
Revenue from Operations (in ₹ crore)	9,594	7,978
PAT (in ₹ crore)	440	439

In FY23, TPDDL had a registered customer base of 19.59 lakh as compared to 18.82 lakh in last financial year. The AT&C losses for the year stood at 6.35% as against 6.80% last year. TPDDL has achieved all-time high billing efficiency of 93.65%.

TPDDL successfully met peak load of 2,228 MW in FY23 as against 2,106 MW in FY22 with 100% system availability at 66/33 kV.

TPDDL able to reduce the System Average Interruption Frequency Index (SAIFI) to a level of 10.6 against 14.1 in the previous year, which is an improvement of 25% through the dedicated system improvement and maintenance approach for Policy Management (PM) feeders. The System Average Interruption Duration Index (SAIDI) also improved from 13.21 to 12.18 hours.

Key Achievements and highlights are as below:

- TPDDL is the 1st Indian Utility to be positioned among Top 25 Utilities (consecutive for five year since 2018) among 94 utilities across 39 countries in Smart Grid Index 2022 Benchmarking conducted by SP Power.
- TPDDL signed MoU with Gridspertise – subsidiary of Enel Group to work in collaboration for 2 pilot projects: Hybrid PLC (Programmable Logic Controller) technology Smart meter and Quantum Edge Device (QED) for enhancing grid intelligence.
- Scale up of reliability improvement initiatives such as IoT (Internet of Things) based LV (Low Voltage) Automation at 50 locations, installation of 262 units of high-speed fuse for fault isolation.
- Smart Ring Main Unit (RMU), high resolution sensors and cloud applications for LV automation have been developed and are being used for real time monitoring and rapid restoration.
- Use of Robotics Process Automation (RPA) technology for Duplicate Notification checking and Dues Verification by the commercial teams.
- TPDDL has a total net metering cumulative capacity of 51.3 MWp compared to 46.8 MWp in last year.
- Digital Payment Index increased to 87% in FY23 compared to 84% in last year.

TP AJMER DISTRIBUTION LIMITED – TPADL

Type of entity: Wholly-owned Subsidiary

Particulars	FY23	FY22
Sales (MUs)	548	488
Revenue from Operation (in ₹ crore)	418	431
PAT (in ₹ crore)	2.62	(0.34)

TPADL has been operating as a franchisee for the supply and distribution of power in Ajmer city over the past six years. The total area under the franchisee was around 190 sq km. The total consumer base in FY23 is 1.61 lakh and total peak demand is 94.47 MW, which has reduced by 4% compared to last year.

In FY23, PAT is higher mainly due to higher billing efficiency and lower finance charges as compared to previous year.

For enhancing customer-centricity and reliability, various initiatives were implemented, resulting in improvement in business performance and reduction in AT&C loss to 8% in FY23 from 9.5% in the last year. Further reduction in provisional billing from 1.2% in previous year to 0.7% in FY23 and increase in digital payment to 74% in FY23 compared to 55% in FY22.

TP CENTRAL ODISHA DISTRIBUTION LIMITED – TPCODL

Type of entity: Subsidiary (Tata Power: 51%, GRIDCO: 49%)

Particulars	FY23	FY22
Sales (MUs)	7,639	6,722
Revenue from Operations (in ₹ crore)	4,791	4,070
PAT (in ₹ crore)	13	29

In FY23, TPCODL has a registered consumer base of 30.76 lakh spanning over an area of 29,354 sq km in central part of Odisha. The AT&C Loss (including past arrears) stood at 21.0% as against 26.7% in the previous year.

TPCODL achieved the System Average Interruption Duration Index (SAIDI) to a level of 138 hours and System Average Interruption Frequency Index (SAIFI) of 341.

PAT for the year has decreased mainly due to higher provision for debtors based on Expected Credit Loss policy of the Company offset by reduction in AT&C losses.

Key initiatives undertaken by TPCODL are as under:

- 1,01,836 new connections with a load of 312.25 MW have been energised during FY23.
- Booked theft load of 109 MW and recovered ₹ 42 crore during FY23.
- 204 sub-stations are being remotely monitored out of which 150 sub-stations are controlled from Central Power System Control Centre (PSCC) Bhubaneswar. This has resulted in the unmanning of 82 sub-stations during FY23.
- PSCC has been made operational in 22 areas for better monitoring of non-automated sub-stations. Works related to 33 kV and 11 kV are carried out through Permit to Work (PTM) through the Suraksha Kavach application. All breakdown related trippings, and outage planning are entered into the application for near real time information.
- 2.4 lakh defective and mechanical single-phase meters have been replaced in FY23. This has led to an overall meter replacement of 8.5 lakh meters.
- 1,116 'Gaon Chalo' programmes and 55 Resident Welfare Associations (RWA) meets were conducted to reach out to rural customers. Various Pay and Win scheme introduced to enhance digital payment. 17 Customer Care Centre (CCC) have been introduced across various Divisions. Mobile cash collection van introduced.

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- Eight trolley mounted mobile sub-stations have been introduced to mitigate any emergency.
- Rebar Lacing Pole has been tested at CPRI Bengaluru and can withstand 300 km/ hr. It is lighter and cheaper than H Pole which can be now used for Disaster Resilient network.

TP NORTHERN ODISHA DISTRIBUTION LIMITED – TPNODL

Type of entity: Subsidiary (Tata Power: 51%, GRIDCO: 49%)

Particulars	FY23	FY22
Sales (MUs)	5,415	4,392
Revenue from Operations (in ₹ crore)	3,356	2,722
PAT (in ₹ crore)	116	74

In FY23, TPNODL had a registered customer base of 20.41 lakh, spanning across an area of 27,920 sq km in northern parts of Odisha. The AT&C Loss (including past arrears) stood at 11.4% as against 23.1% in the previous year.

TPNODL achieved the System Average Interruption Duration Index (SAIDI) to a level of 378 hours and System Average Interruption Frequency Index (SAIFI) of 621.

PAT has increased during the year mainly due to reduction in AT&C losses.

Key initiatives undertaken by TPNODL are as under:

- Launched 50 PDS linked Anubhav Kendra – a one stop experience centre for rural consumers service delivery integrated with PDS centres (Ration Shops), across all subdivisions.
- Launched 16 state-of-the-art Customer Care Centres across each of the Division – for one window solution for all services to Urban Consumers.
- Successful operation of Bluetooth (BLE) Metering and Drone based meter reading for inaccessible Agricultural Lift Irrigation Consumers.
- Launched an online mobile application for faster resolution of supply related complaints.
- Launched AI enabled optical character recognition-based meter reading.
- Integration with telecom sectors (Airtel Payment Bank) and Fintech sector (Spice Money) for increasing payment avenues.
- Launched 'My TATA Power' App with Consumer Referral Programme for enhancing digital payments.
- Onsite power transformer overhauling under "NAVIKARAN" project resulting in reduction in PTR failure by 77% (from 30 to 7) within one year time.
- Remote operation of 46 Primary Substation (PSS) and unmanned 10 PSS at micro-SCADA.
- Launched four Mobile Health Centre for CSR activities.
- Launched two vocational training centres, 15 women learning centres, 30 special coaching centres for economically weaker student for community development.
- 302 women self-help Groups engaged in billing and collection activities serving over two lakh consumers.
- Setting up of Energy Clubs in 100 schools across the country.
- Reduction of carbon footprint by deploying 'e-bikes' for all project engineers across the Company.

Awards

- Won Gold Award for 'Excellence in Change Management' at The Economic Times Human Capital Awards Forum - Recognising excellence in Human Capital.
- Won 'Innovative Project of the Year Award' at Business Leader of the Year 20th Global Edition and 5th India Edition.
- Winner of the 'CII Award' at 35th State Level Convention on Quality Circle 2022, Bhubaneswar.
- Won 7 'GOLD' and 2 'SILVER' Awards in Chapter Convention on Quality Concepts 2022, Bhubaneswar.
- Won Excellence Award in Quality Circle Forum of India 2022 – Aurangabad.
- 'CSR Leadership Award' at Bhubaneswar Leadership Awards 2022.
- 'Odisha CSR Excellence Award 2022' at Odisha CSR Forum, Bhubaneswar.
- '2nd Prize' at Safety Conclave, Mumbai, for best safety process and innovative approach in safety.
- 'Focused CEO of the Year Award' at The Economic Times Human Capital Awards Forum.
- 'CEO with Marketing Orientation Award', World Marketing Congress, Mumbai 2022.

TP SOUTHERN ODISHA DISTRIBUTION LIMITED – TPSODL

Type of entity: Subsidiary (Tata Power: 51%, GRIDCO: 49%)

Particulars	FY23	FY22
Sales (MUs)	3,156	3,021
Revenue from Operations (in ₹ crore)	2,059	1,689
PAT (in ₹ crore)	33	69

In FY23, TPSODL had a registered customer base of 22.65 lakh, spanning across an area of 48,751 sq km in the southern part of Odisha. The AT&C Loss (including past arrears) for the year stood at 22.8% as against 32.5% in the previous year.

PAT for the year has decreased mainly due to higher provision for debtors based on Expected Credit Loss policy of the Company offset by reduction in AT&C losses.

TPSODL achieved the System Average Interruption Duration Index (SAIDI) is 127 hours and System Average Interruption Frequency Index (SAIFI) is 225.

Key initiatives undertaken by TPSODL are as under:

- 1.46 lakh single phase and 8,596 three-phase defective meters were replaced.
- 35 digital payment avenues made available to the consumers.
- 19,764 smart meters installed for government consumers.
- SCADA in 100 PSS, 50-seater call centre and GIS made operational.
- Achieved reduction in energy theft through enforcement activities: 54 MW of load booked.
- 176 MW of new load added during the year.

TP WESTERN ODISHA DISTRIBUTION LIMITED – TPWODL

Type of entity: Subsidiary (Tata Power: 51%, GRIDCO: 49%)

Particulars	FY23	FY22
Sales (MUs)	10,610	7,493
Revenue from Operations (in ₹ crore)	6,254	4,243
PAT (in ₹ crore)	91	64

In FY23, TPWODL had a registered customer base of 26.73 lakh. It has a vast distribution area in the western part of Odisha covering 48,373 sq km across nine revenue districts. The AT&C Loss (including past arrears) for the year stood at 18.3% as against 27.7% in the previous year.

System Average Interruption Duration Index (SAIDI) is measured to 332 hours whereas System Average Interruption Frequency Index (SAIFI) is 467.

Key initiatives undertaken by TPWODL are as under:

- Established Power System Control Centre (PSCC) for complete remote monitoring of the distribution network for any abnormalities and helps in taking corrective measures within the stipulated time frame.
- "My Tata Power – Consumer App" mobile application launched to digitally empower 1.5 Lakh electricity consumers to generate their electricity bills online and instantly pay option and get a chance to get a rebate of 4%.
- Basic SCADA System was implemented to control and monitor the 33 kv and 11 kv network. Total 115 PSS are operated through PSCC.
- 24x7 call centre was established for three (3) languages (Odia, Hindi and English) IVRS, and auto-forwarding of complaints and acknowledgement over SMS.
- Exclusive E-Care Centre has been set up for responding to consumer queries, requests, complaints, and grievances through e-mails, letters, and social media.
- Interactive Voice Response System (IVRS) was developed for capturing mobile numbers and E-mail ids to improve consumer reachability and other service-related communications.
- Additional load of 452 MVA added.
- 3,50,340 man-hours safety training provided and created safety practice in 17 Divisions.
- Constructed 684 DTR fencing for public safety and elephant corridor.
- Enforcement load of 103 MW was booked and recovered ₹ 23 crore.

TATA POWER TRADING COMPANY LIMITED - TPTCL

Type of entity: Wholly-owned subsidiary

Particulars	FY23	FY22
Traded (MUs)	19,070	19,433
Revenue from Operations (in ₹ crore)	405	374
PAT (in ₹ crore)	21	55

PAT is lower than previous year mainly due to loss incurred on fixed price contract. The Company has no long-term or short-term borrowings and can be termed as a debt free Company.

OTHER BUSINESSES

In FY23, Services Division of T&D worked on assignments in diverse geographies in India and abroad. T&D Services added large scale implementation projects in India which include receiving sub-station project for BEST, Mumbai and Electrical Infrastructure Development Project at Jammu and Kashmir. In international assignments, the Company is providing management and technical services in Mozambique, Benin and Tajikistan.

CONSUMER BUSINESSES - ELECTRIC VEHICLE (EV) CHARGING

The Company has made a significant i mpact i n d eveloping E V ecosystem to encourage EV adoption in the country. The Company is committed to playing a key role along with other stakeholders in achieving the national goal of transition to electric mobility. Tata Power EZ Charge has partnered with leading OEMs like Tata Motors, Morris Garages India, Jaguar Land Rover, Hyundai Motor for developing EV charging infrastructure at their dealership locations. Along with this, it also provides home charging installation services to Tata Motors and other OEMs. The Company has installed 38,500+ home chargers in the country. Furthermore, the Company has a current energised base of 3,700+ public and semi-public charging points and is present in more than 350+ cities and covering more than 150 highways. The Company has partnered with various government and private organisations such as The Indian Army, The Indian Navy, The Indian Air Force, Starbucks, The Park Hotels, IHCL, NAREDCO, The Airports Authority of India - Ranchi and Kolkata, Tata Communications, Gujarat Gas, GAIL, State Bank of India, Kolte Patil, Puri Group, TRIL, ICICI Bank, Bridgestone, India Post and many more.

Management Discussion and Analysis

The Company is also providing charging infrastructure for other business use cases like buses and fleets. The Company has deployed 234 bus charging points in Mumbai, Delhi and Ahmedabad and have signed up with leading EV fleet operators in the country.

CONSUMER BUSINESSES - HOME AUTOMATION (HA)

The Company has launched IoT based smart energy management home automation solutions last year and in this financial year, it has extended its product range by introducing two new product categories – Modular Touch switches for premium customer segment and Energy efficient products like motion sensors and sensor based dimmable LED lights for commercial and residential customers. These energy efficient lighting solutions have a potential of savings on the electricity bill. In addition to this, the existing product range of retrofittable convertor switches has also been extended with introduction of Fan controllers and LED Dimmers. During the year, the business started manufacturing products in India for reducing dependency on product imports. The Company primarily focused on on-boarding exclusive channel partners who have experience in the automation industry to ramp up the business and customer services (40+ exclusive channel partners out of 108 CP's). For benefitting Mumbai and Delhi distribution customers, an automated demand response (ADR) programme has been implemented in collaboration with Imperial College of London. Under this programme, distribution customers are incentivised for participating in the programme for peak load management using home automation device which is first of its kind in India for residential customers. The Company has also collaborated with various OEMs of air conditioners for developing retrofittable solution to convert existing conventional air conditioners into smart air conditioners which can be controlled through mobile app and voice command. Under new innovations, the Company has filed two patents for protecting IP related to timer based automatic shutdown of power appliances as per user's requirement to save wastage of electricity mainly useful for air conditioners, geysers and EV chargers and second one related to retrofittable Wi-Fi based IR module for smart air conditioners. The annual sale of FY23 was 24,185 units.

INTERNATIONAL BUSINESSES

Dagachhu Hydro Power Corporation Limited – DHPC (126 MW)

Type of entity: Associate (Tata Power 26%, DGPC and Affiliates: 74%)

Particulars	FY23	FY22
Sales (MUs)	421	587
Revenue from Operations (in ₹ crore)	159	184
PAT (in ₹ crore)	7	34

*figures are on 100% basis. The Company's share is 26%

ADJARISTSQALI NETHERLANDS B.V. (ABV)

Type of entity: Joint Venture (TPIPL: 50%, Clean Energy Invest: 50%)

Adjaristsqali Georgia LLC (AGL) is wholly-owned subsidiary of ABV. AGL has developed a 187 MW hydropower project (Shuakhevi and Skhalta projects) on the Adjaristsqali River and its tributaries in Georgia. This is one of the largest infrastructure investments in Georgia. Investment in ABV is shown as 'assets held for sale'.

Digital Initiatives

The Company is focusing on taking digital technologies and solutions to next level of maturity by deploying new use cases to cover different aspects of business. All of these has led to a significant increase in digitalisation across the Company.

Some of the key initiatives taken up by the Company across business/ functions during the year are as follows:

Initiatives for Business Growth:

- Enabled the EV platform with new booking / cancellation facility, customer review, RFID card-based charging, additional payment channels for customers, etc. Also, added features for housing society and home accounts.
- New features added for rooftop platform, like channel partner account statement, tracking of leads, smartruck app for sales force integration for shipment tracking, monitoring and management of the entire field sales team.
- Mobile app and consumption analytics launched for home automation customers with dashboard, developed for call centre agents to resolve customer queries quickly.
- Central Control Room for Renewable Assets (CCRA) and analytics developed inhouse which will provide real time monitoring of key operational parameters like plant availability and capacity utilisation factors, alerts and notification, assets performance and comparison, trend analysis and energy simulation and anomaly detection.

Initiatives to Enhance Customer Experience:

- Unified Customer Platform (web and mobile) being launched, enables following features for consumers across Distribution, Rooftop Solar, EV and Smart Energy Solution businesses which will provide appliance wise consumption disaggregation, personalised insights, quick links for frequently used services, chatbot and live webchat.
- Demand Response Events are being organised for Smart Meter consumers and automatic meter reading enabled consumers for maintaining the stability of the power system by reducing or shifting peak load and also helping the consumers to reduce their energy cost.

Initiatives to Enhance Operational Efficiency (Asset Performance and Digitalisation of Processes):

The Company has deployed analytic applications developed in-house with features as mentioned below.

- **Haldia Generation Prediction:** To predict generation values based on flue gas exit temperature on day ahead basis for scheduling in power markets.
- **Combustion Optimisation:** To improve combustion quality by potential bad factors and corelation with key boiler parameters.

- **Auxiliary Power Consumption Reduction (APC):** Real-time data monitoring and analysis of equipment in different operational zone to achieve APC at benchmark level.
- **Video Analytics of Coal Conveyor:** AI-ML Analytics Model to enhance the operational efficiency of coal conveyor system through video analytics.

Initiatives to Enhance Employee Productivity:

- **Robotic Process automation (RPA) –** The Company has deployed software technology that makes it easy to build, deploy, and manage software robots that emulate human actions interacting with digital systems and software. This has been introduced in Payroll function in HR, wherein 17 payroll processes have been automated and Accounts Payable Function in Finance. This has helped to improve employee productivity, accuracy and effectiveness of internal audit controls.
- **Employee Mobile App:** Single mobile app available for employees that enables to fetch information and carry out various tasks on mobility.
- **Do Green App:** Mobile app to enable employees to contribute towards the organisational goal of carbon reduction.
- **Stakeholder Suraksha App:** Has improved safety awareness in vendors/contractor workforce, which in turn has led to improve the safe working environment and safety indices of the plant.

Management Discussion and Analysis

4. FINANCIAL PERFORMANCE – STANDALONE

The Company recorded a profit after tax of ₹ 3,268 crore during the financial year ended March 31, 2023 (PAT was ₹ 2,783 crore in FY22). Both the basic and the diluted earnings per share were at ₹ 10.22 for FY23 as against ₹ 8.61 in FY22.

The analysis of major items of the Standalone Financial Statements is shown below.

REVENUE

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Revenue from Operations	17,728	11,108	6,620	60
Regulatory Deferral Balances including Deferred Tax Recoverable/(Payable)	1,120	134	986	736
Total	**18,848**	**11,242**	**7,606**	**68**

The increase in revenue is mainly due to higher generation in Mundra plant and increase in fuel cost due to higher coal price.

OTHER INCOME

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Interest Income	141	250	(109)	(44)
Dividend Income	3,895	2,640	1,255	48
Gain/(Loss) on Investments	14	8	6	75
Other Non-operating Income	35	89	(54)	(61)
Total	**4,085**	**2,987**	**1,098**	**37**

The increase in Other Income is mainly due to higher dividend income from foreign subsidiary.

COST OF POWER PURCHASED AND COST OF FUEL

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Cost of Power Purchased	1,395	798	597	75
Cost of Fuel	12,024	6,569	5,455	83

Cost of power purchased was higher on account of increase in power purchase price. Cost of fuel was higher mainly due to higher generation in Mundra plant and increase in coal prices.

TRANSMISSION CHARGES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Transmission Charges	260	259	1	0.4

Transmission charges is in line with PY.

EMPLOYEE BENEFIT EXPENSES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Employee Benefit Expenses	746	738	8	1

Employee benefit expenses are higher mainly due to normal increment offset by transfer of employees to subsidiary companies on sale of business.

FINANCE COSTS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Finance Costs	2,227	2,189	38	2

Finance costs has increased mainly due to increase in interest rates.

DEPRECIATION AND AMORTISATION

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Depreciation and Amortisation	1,167	1,134	33	3

Depreciation has increase due to higher capitalisation in Mumbai operation offset by sale of renewable assets to subsidiary companies.

OPERATIONS AND OTHER EXPENSES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Repairs and maintenance	492	479	13	3
Others	1,199	718	481	67
Total	**1,691**	**1,197**	**494**	**41**

Repairs and maintenance expenses are higher mainly due to normal repairs work. Other expenses are higher due to compensation for shortfall in shipment pertaining to Mundra plant as per contract and higher forex loss.

EXCEPTIONAL ITEMS - CONTINUED OPERATION

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Gain on sale of assets and Investment in subsidiary	688	1,519	(831)	(55)
Provision for impairment of investments	Nil	(107)	107	(100)
Total	**688**	**1,412**	**(724)**	**(51)**

Gain on sale of assets and investment in subsidiary

During the year, the Company has sold its wind assets, rooftop projects, and equity investment in Tata Power Solar Systems Ltd., Tata Power Green Energy Ltd., TP Saurya Ltd., TP Kirnali Solar Ltd., TP Solapur Solar Ltd., TP Akkalkot Renewable Ltd., TP Solapur Saurya Ltd., TP Roofurja Renewable Ltd. and Supa Windfarm Ltd. to TPREL and Electric Vehicle (EV) charging business to TP Solapur Ltd. at a total consideration of ₹ 1,257 crore and recognised net profit of ₹ 688 crore in the financial results.

During the previous year, the Company has sold its investment in Trust Energy Resources Pte. Limited, a wholly-owned subsidiary of the Company to Tata Power International Pte. Limited (TPIPL), another wholly-owned subsidiary of the Company for a consideration of ₹ 2,127 crore ($ 286 million) and recognised a profit amounting to ₹ 1,519 crore in the financial results.

Provision for impairment of investments

During the previous year, the Company has reassessed the recoverability of its investment in Adjaristsqali Netherlands B.V. (ABV), held through its wholly-owned subsidiary TPIPL based on the current operational performance and accordingly has recognised an impairment provision of ₹ 107 crore in the financial results.

EXCEPTIONAL ITEMS- DISCONTINUED OPERATION (Strategic Engineering Division)

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Impairment loss on remeasurement to fair value	Nil	(468)	468	(100)

During the earlier year, the Company had sold its Strategic Engineering Division to Tata Advanced Systems Ltd (TASL). During the previous year, Company has reassessed the fair value of the contingent consideration receivable and recognised an impairment loss of ₹ 468 crore in the financial results.

TAX EXPENSES / (CREDIT) FOR CONTINUED OPERATIONS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Current Tax in Respect of Earlier Year	(30)	(105)	75	(71)
Deferred Tax	984	(9)	993	(11,033)
Deferred Tax Relating to Earlier Year	(111)	(739)	628	(85)
Remeasurement of Deferred Tax on Account of New Tax Regime (net)	Nil	360	(360)	(100)
Total	**843**	**(493)**	**1,336**	**(271)**

Current Tax in respect of earlier

During the year, the Company has received two favourable orders in respect of disallowances under Section 14A of the Income Tax Act and accordingly, the Company has reversed provisions created in the earlier years amounting to ₹ 30 crore.

During the previous year, subsequent to the merger of the erstwhile Coastal Gujarat Power Limited (Mundra) with the Company with effect from April 1, 2020, the Company has reassessed its provision for current taxes and has written back an amount of ₹ 105 crore.

Deferred Tax

During the year, the Company has reversed the Deferred Tax assets amounting to ₹ 984 crore created in previous year on account of utilisation of unabsorbed depreciation due to higher profit.

Deferred Tax Relating to Earlier Year

The Company has reassessed the recoverability of unabsorbed depreciation and brought forward tax losses and has recognised deferred tax asset amounting to ₹ 111 crore during the current year and in the previous year, the Company has recognised Deferred Tax

Management Discussion and Analysis

assets amounting to ₹ 969 crore and has written off deferred tax asset on capital losses amounting to ₹ 230 crore.

Remeasurement of Deferred Tax on Account of New Tax Regime (net)

During the previous year, the Company has transitioned to the new tax regime effective April 1, 2020, and accordingly, the Company had remeasured its tax balances and reversed the deferred tax asset amounting to ₹ 360 crore.

PROPERTY, PLANT AND EQUIPMENT, INVESTMENT PROPERTY AND INTANGIBLE ASSETS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Property, Plant and Equipment	20,778	20,875	(97)	(0.46)
Right of Use Assets	2,921	2,834	87	3
Intangible Assets	22	37	(15)	(41)
Capital Work-in-Progress	1,273	965	308	32
Total	**24,994**	**24,711**	**283**	**1%**

The above assets have increased due to increased capex spending offset by sale of renewable assets and depreciation and amortisation in FY23.

NON-CURRENT INVESTMENTS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Investment in Subsidiary, JV and Associate	10,765	9,543	1,222	13
Statutory Investments	128	124	4	3
Others	1,172	1,044	128	12
Total	**12,065**	**10,711**	**1,354**	**13**

Non-current Investments increased mainly due to infusion of additional investments in TPREL as per agreed structure with investors, increase in fair value of investment in Tata International Limited offset by sale of investments in renewable business to TPREL.

CURRENT INVESTMENTS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Mutual Funds (Unquoted)	64	68	(4)	(6)

Current Investment is lower mainly due to redemption of investment in mutual funds during the year.

TRADE RECEIVABLES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	Nil	Nil	Nil	Nil
Current	1,904	1,027	877	85
Total	**1,904**	**1,027**	**877**	**85**

Increase in Trade Receivables is mainly due to higher billing in Mundra Plant on account of higher generation and lower recovery of dues from BEST in Mumbai Operations.

LOANS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	3	453	(450)	(99)
Current	Nil	1,328	(1,328)	(100)
Total	**3**	**1,781**	**(1,778)**	**(100)**

Decrease in loans is mainly due to repayment of loans given to subsidiary companies.

FINANCE LEASE RECEIVABLES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	475	521	(46)	(9)
Current	50	43	7	16
Total	**525**	**564**	**(39)**	**(7)**

Finance Lease Receivables reduced due to recovery of lease rentals and transfer of EV Business segment to TP Solapur during the year.

OTHER FINANCIAL ASSETS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	78	97	(19)	(20)
Current	505	1,987	(1,482)	(75)
Total	**583**	**2,084**	**(1,501)**	**(72)**

Other Financial Assets decreased mainly due to lower dividend receivable from Overseas SPV's.

OTHER ASSETS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	1,848	1,649	199	12
Current	246	213	33	15
Total	**2,094**	**1,862**	**232**	**12**

Other Assets increased mainly due to increase in recoverable from consumers in Mumbai Regulated Business and increase in capital advances in Mundra, Jojobera and SRA Projects.

ASSETS CLASSIFIED AS HELD FOR SALE

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Land	298	302	(4)	(1)
Building	Nil	1	(1)	(100)
Investments	276	276	Nil	Nil
Loan and other receivables (including interest accrued)	22	22	Nil	Nil
Total	**596**	**601**	**(5)**	**(1)**

Assets held for sale reduced mainly due to reclassification of Land and Building to Property, Plant and Equipment.

LIABILITY CLASSIFIED AS HELD FOR SALE

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Other Liabilities	114	114	Nil	Nil
Total	**114**	**114**	**Nil**	**Nil**

This liability pertains to advance received towards sale of Dehrand Land.

REGULATORY DEFERRAL ACCOUNT – ASSET

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Regulatory Deferral – Asset	1,913	726	1,187	164

Regulatory Deferral Assets pertains to regulatory receivables in the Mumbai Distribution Business. The same has increased mainly due to increase in power purchase costs.

TOTAL EQUITY

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Equity Share Capital	320	320	Nil	Nil
Other Equity	13,380	10,560	2,820	27
Total Equity	**13,700**	**10,880**	**2,820**	**26**

Total Equity has increased mainly due to higher dividend from Overseas SPVs and gain on sale of renewable assets and EV Charging business to TPREL and TP Solapur.

BORROWINGS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	11,272	18,088	(6,816)	(38)
Current	10,593	6,620	3,973	60
Total	**21,865**	**24,708**	**(2,843)**	**(12)**

Borrowing decreased due to repayment of borrowings from higher dividend income received from Overseas SPV.

LEASE LIABILITY

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	2,736	2,555	181	7
Current	318	304	14	5
Total	**3,054**	**2,859**	**195**	**7**

Lease Liability has increased mainly due to remeasurement of future lease liabilities on account of change in CERC Index pertaining to Mundra Plant.

TRADE PAYABLES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Current	1,985	4,080	(2,095)	(51)

Trade payable decreased mainly on account of payment for fuel in the Mundra Plant and Mumbai Regulated Business.

OTHER FINANCIAL LIABILITIES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	134	13	121	931
Current	4,682	2,761	1,921	70
Total	**4,816**	**2,774**	**2,042**	**74**

Other Financial Liabilities increased mainly due to higher supplier credit facilities availed pertaining to payable for fuel for Mundra Plant and Mumbai Generation Business.

OTHER LIABILITIES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	859	757	102	13
Current	661	555	106	19
Total	**1,520**	**1,312**	**208**	**16**

Other Liabilities increased mainly due to increase in deferred revenue liability pertaining to Mundra Plant.

PROVISIONS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	286	274	12	4
Current	18	45	(27)	(60)
Total	**304**	**319**	**(15)**	**(5)**

Decrease in Provision is mainly due to transfer of employee on sale of business to TPREL and TP Solapur during the year.

TAX ASSETS/(LIABILITY)

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-Current Tax Assets	611	338	273	81
Deferred Tax Assets	Nil	250	(250)	(100)
Deferred Tax Liabilities	(617)	Nil	(617)	NA
Current Tax Liabilities	(198)	(108)	(90)	83
Total	**(204)**	**480**	**(684)**	**(143)**

During the year, the Company has reversed the deferred tax assets amounting to ₹ 984 crore created in previous year on account of utilisation of unabsorbed depreciation due to higher profit during the year.

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Further, the Company has reassessed the recoverability of unabsorbed depreciation and brought forward tax losses and has recognised deferred tax assets amounting to ₹ 111 crore during the current year.

In the previous year, post-merger of Coastal Gujarat Power Limited with the Company and the Company reassessed the recoverability of unabsorbed depreciation and brought forward tax losses and accordingly recognised deferred tax assets amounting to ₹ 969 crore and has written off deferred tax asset on capital losses amounting to ₹ 230 crore.

5. FINANCIAL PERFORMANCE- CONSOLIDATED

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Revenue from Operations*	56,033	42,576	13,457	32
Depreciation and Amortisation	3,439	3,122	317	10
Finance Cost	4,372	3,859	513	13
Exceptional Items	Nil	(618)	618	(100)
Profit Before Taxes	5,457	2,535	2,922	115
Profit for the year	**3,810**	**2,156**	**1,654**	**77**

*Includes Regulatory Income/ (Expenses)

- Revenue from Operation increased primarily due to higher generation in Mundra plant as the plant operated under Ministry of Power guidelines, higher sales across the distribution business and increase in capacity addition in Renewable business.
- Depreciation increased primarily due to increased capitalisation.
- Finance Cost were higher mainly due to higher capitalisation and increase in interest rate.
- Exceptional items in FY22 included impairment of Georgia assets and reversal of contingent consideration in Strategic Engineering Division (SED).

PROPERTY, PLANT AND EQUIPMENT, INVESTMENT PROPERTY AND INTANGIBLE ASSETS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Property, plant and equipment	54,525	50,503	4,022	8
Right to use assets	3,982	3,662	320	9
Intangible Assets	1,381	1,366	15	1
Capital Work-in-Progress	5,376	4,635	741	16
Total	**65,264**	**60,166**	**5,098**	**8**

The above assets increased mainly on account of increased spending in Renewables business, increase capitalisation in Odisha Discoms, TPDDL and Mumbai Regulated Business.

GOODWILL

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Goodwill	1,858	1,858	Nil	Nil

There is no movement in Goodwill during the year.

NON-CURRENT INVESTMENTS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Investments in Joint Ventures and Associates	14,219	12,580	1,639	13
Statutory Investments	128	124	4	3
Others	1,173	1,046	127	12
Total	**15,520**	**13,750**	**1,770**	**13**

Increase in Non-current investment is mainly due to higher profits from JV Companies and acquisition of stressed transmission assets i.e., NRSS and SEUPPTCL through Resurgent Platform during the year.

CURRENT INVESTMENTS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Statutory Investments	64	56	8	14
Investments in Mutual Funds	1,086	355	731	206
Total	**1,150**	**411**	**739**	**180**

Current Investments are higher mainly due to higher investment in mutual fund in TPREL, WREL, TPWODL and TPTCL.

TRADE RECEIVABLES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	360	686	(326)	(48)
Current	6,952	5,980	972	16
Total	**7,312**	**6,666**	**646**	**10**

Increase in Trade Receivables was mainly due to increase in receivable in Mundra and Mumbai Generation Business.

LOANS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	3	3	Nil	Nil
Current	12	9	3	33
Total	**15**	**12**	**3**	**25**

There is no major movement in loan during the year.

FINANCE LEASE RECEIVABLES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	567	589	(22)	(4)
Current	55	47	8	17
Total	**622**	**636**	**(14)**	**(2)**

There is no major movement in the Finance Lease Receivables during the year.

OTHER FINANCIAL ASSETS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	1,727	1,685	42	2
Current	688	501	187	37
Total	**2,415**	**2,186**	**229**	**10**

Non-current Financial Assets has increased mainly due to increase in security deposits in Odisha Discoms. Current Financial assets has increased mainly due to increase in deposit with maturity less than 12 months in TPREL and increase in fair value of derivative contracts in TPSSL.

OTHER ASSETS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	2,532	1,850	682	37
Current	1,329	1,480	(151)	(10)
Total	**3,861**	**3,330**	**531**	**16**

Non-current Assets increased mainly due to increase in recoverable from consumers in Mumbai Regulated Business and increase in capital advances in TPSL on account of new manufacturing plant and in TP Saurya on account of capacity addition. Current Assets decreased mainly due to reduction in power banking receivable in TPDDL.

ASSETS/(LIABILITY) CLASSIFIED AS HELD FOR SALE

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Assets Classified as Held for Sale	3,300	3,047	253	8
(Less): Liability Classified as Held for Sale	(114)	(114)	Nil	Nil
Total (Net)	**3,186**	**2,933**	**253**	**9**

Increase in Assets classified as held for sale is mainly due to movement in foreign exchange rate.

REGULATORY DEFERRAL ACCOUNT – ASSET/ (LIABILITY)

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Regulatory Deferral – Asset	8,433	6,811	1,622	24
Less: Regulatory Deferral – Liability	(1,235)	(635)	(600)	94
Total Regulatory Deferral – Asset (Net)	**7,198**	**6,176**	**1,022**	**17**

Regulatory Deferral Assets (Net) pertains to regulatory receivables in TPDDL, Odisha Discoms and Mumbai Distribution Business. This has increased in Delhi Discom and Mumbai Discom offset by reduction in Odisha Discoms.

TOTAL EQUITY

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Equity Share Capital	320	320	Nil	Nil
Other Equity	28,468	22,122	6,346	29
Total	**28,788**	**22,442**	**6,346**	**28**

Total equity of the Company has increased mainly due to higher profit during the year and gain recognised on dilution of stake in TPREL.

BORROWINGS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	30,708	32,730	(2,022)	(6)
Current	18,266	14,860	3,406	23
Total	**48,974**	**47,590**	**1,384**	**3**

Increase in Borrowing is mainly due to funding for growth projects in Renewables and T&D business.

LEASE LIABILITY

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	3,511	3,208	303	9
Current	438	397	41	10
Total	**3,949**	**3,605**	**344**	**10**

Lease Liability has increased due to remeasurement of future lease liabilities on account of change in CERC Index pertaining to Mundra Plant during the year.

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TRADE PAYABLES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Current	7,407	10,460	(3,053)	(29)

Trade Payable decreased mainly in TPSSL on account of payment to vendors for execution of solar EPC projects, decrease in Mundra and Mumbai Generation business on account of fuel supplier payments offset by higher power purchase creditors in TPWODL.

OTHER FINANCIAL LIABILITIES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	1,410	1,157	253	22
Current	13,151	9,632	3,519	37
Total	**14,561**	**10,789**	**3,772**	**35**

Other Non-Current financial liabilities have increased mainly due to increase in retention money for capital supplies for FGD projects in Mundra, MPL and Jojobera and increase in security deposits from consumers in Odisha Discoms.

Other Current Financial Liabilities have increased mainly due to higher supplier's credit facilities availed pertaining to payable for fuel in Mundra and Mumbai Generation and higher advance received from sale of investments in PT Arutmin, a coal JV Company.

OTHER LIABILITIES

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	9,848	8,139	1,709	21
Current	4,188	2,779	1,409	51
Total	**14,036**	**10,918**	**3,118**	**29**

Other Non-Current liabilities has increased mainly due to increase in deferred revenue on account of service line contribution and deferred revenue grant pertaining to Odisha Discoms.

Other Current Liabilities has increased mainly due to increase in advances from customers in TPSSL.

PROVISIONS

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current	1,420	1,218	202	17
Current	311	345	(34)	(10)
Total	**1,731**	**1,563**	**168**	**11**

Non-Current Provision has increased mainly due to the increase in provision for employee benefits in Odisha Discoms.

TAX ASSETS/(LIABILITIES)

(in ₹ crore)

Particulars	FY23	FY22	Change	% Change
Non-current Tax Assets	739	521	218	42
Deferred Tax Assets	253	335	(82)	(24)
Current Tax Assets	1	Nil	1	NA
Non-current Tax Liabilities	Nil	(3)	3	(100)
Current Tax Liabilities	(218)	(147)	(71)	48
Deferred Tax Liabilities (Net)	(1,919)	(1,033)	(886)	86
Total (Net)	**(1,144)**	**(327)**	**(817)**	**250**

During the year, the Company has reversed the deferred tax assets amounting to ₹ 984 crore created in previous year on account of utilisation of unabsorbed depreciation due to higher profit.

Further, the Company has reassessed the recoverability of unabsorbed depreciation and brought forward tax losses and has recognised deferred tax assets amounting to ₹ 111 crore during the current year.

In the previous year, post-merger of Coastal Gujarat Power Limited with the Company and the Company reassessed the recoverability of unabsorbed depreciation and brought forward tax losses and accordingly recognised deferred tax assets amounting to ₹ 969 crore and has written off deferred tax asset on capital losses amounting to ₹ 230 crore.