# CESC ESG REPORT
FY 2021-22

CESC LIMITED

RP-Sanjiv Goenka Group
Growing Legacies

# Content



## Message from the
# Chairman

> "Sustainability is the most recent addition to our Core Values. It has always been a driving force for ensuring long-term value creation and is deeply embedded into our way of doing business. This lays down the foundation of our strategies for Powering a Sustainable Future."

*Dear Stakeholders,*

For 123 years now, we have striven to light up every house and improve quality of life in the areas we serve. Electricity has been an enabling factor that drives different segments of our society to fulfil their purposes effectively and gives thrust to economic growth for a nation. Thus, through provision of electricity 24x7, we play a pivotal role in creating long term value for our society and Powering a Sustainable Future.

### Expanding to new geographies

We leverage our established strengths as a fully integrated power utility along with rich experience of managing distribution franchisees to expand our services to other geographies catering to diverse cultures. During this reporting year, we secured the highest bid for distribution of power to the city of Chandigarh. We are committed to providing Chandigarh with world-class customer experience at an optimized cost, through digitalization and technology as well as ensuring ease of doing business.

### Embarking on a journey to Power a Sustainable Future

'Sustainability' is the most recent addition to our Core Values. It has always been a driving force for ensuring long-term value creation and is deeply embedded into our way of doing business. This lays down the foundation of our strategies for Powering a Sustainable Future. As a responsible business, our business strategies are formulated taking into consideration your diverse viewpoints to positively impact our people, planet and society while generating profit.

### Care for our People

Our employees are one of the key pillars that drive our ambition of Powering a Sustainable Future. Their passion, dedication, and hard work has been the fundamental essence contributing to our business success. I take this opportunity to express my gratitude to them for the new heights we have accomplished over the period.

I take pride in announcing that CESC has been recognized as one of the Great Places to Work for the last three consecutive years by virtue of its unflinching determination for promoting a diverse and inclusive work environment and creating unique and fulfilling career opportunities. It also featured among 'India's 100 Best Companies to Work For' and 'India's Best Workplaces in Energy, Oil & Gas' by GPTW for 2021.

In our pursuit towards a more diverse and inclusive work environment, we are resolved to increase women participation in the workforce to 12% by 2030.

Safety of our people is of utmost priority for us at CESC. Even in extraordinary situations

such as the pandemic we have stood by them and their families to overcome the challenge. We have instituted a COVID-19 support policy to demonstrate solidarity through our actions.

### Strengthening our Communities

We believe that strong communities are the underpinning of a successful and responsible business. As a "Community Changemaker" we have deepened our engagements with our communities through multi-pronged interventions. We have bolstered our vision and thrust areas. By 2030, we will aim to increase the lives that are positively impacted through interventions in the areas of education, healthcare and creation of employment opportunities through skill development to at least 30,000.

### Responsibility towards our Planet

Our planet has finite resources. Rapid depletion of such natural assets puts the availability of the very resources that fuel our growth story at serious risk. Reshaping our business to operate viably within planetary boundaries is the next frontier that we must scale. We embrace the principle of 3R's – Reduce, Reuse and Recycle to preserve our natural resources and have started working closely with our value chain partners to make it more resilient, robust and responsible.

We have set stringent environmental standards for our generating stations. I am thrilled to announce that our generating stations at Haldia and Budge Budge have planted over 1 lakh trees, with 30% of the plant area in Haldia now under green cover.

We have already begun our voyage towards transforming the energy landscape to address the growing climate crisis and have embraced the 4D approach which encompasses digitalization, decarbonization, decentralization and disaster management. This journey was initiated through our flawless decision to not augment our existing thermal power capacity and solemnly align our operations to national commitments. We have plans in place to phase down fossil fuel consumption in every respect of our operations from electricity generation to movement of our operational fleet. All our offices, administrative buildings and substations will operate on green building principles to supplement the decarbonization process through energy efficiency measures.

We are leveraging our strengths to ensure reliability in our network keeping clean and green energy at the centre of our strategy. To achieve this objective, we are aggressively increasing our renewable energy storage capacity to accommodate the increase in renewable energy share in the energy mix. We are also in the process of commissioning our first micro grid to make our network not only green but also resilient. Further to build our resilience towards climate change we have put in place a robust disaster management plan.

Your role as a consumer will be equally important to us in achieving our climate change ambitions. Together we can and will overcome climate change.

I would like to conclude by saying that we have made significant progress in prioritizing key areas and are committed to identifying and leveraging opportunities that would lead to long term sustainable growth.

I thank all of you for your support that has helped us emerge strong particularly during these challenging times.

**Dr. Sanjiv Goenka**
(Chairman)





# Message from the Managing Director (Distribution)

> "Focusing on "Zero Downtime", we have integrated our technology solutions to develop a smart outage management system to detect HT outages in real-time and enable faster restoration of power."

*Dear Stakeholders,*

It gives me great pleasure to unveil our second ESG report that focuses on our journey of "Powering a Sustainable Future". You will be delighted to know that this journey has been tailored towards our ambition of providing Safe, Cost-Efficient, Low Carbon and Reliable Power by adopting the 4 D approach viz. Digitalization, Decarbonization, Decentralization & Disaster Management.

### Digitalization

Increasing Operational Efficiency and enhancing Customer Satisfaction has been our priority. We are providing an environment of trust, convenience and reliability through our Customer service offerings and adoption of cutting-edge technologies.

Over the last few years, Digital Service delivery to our Customers has taken a quantum leap. CESC has embraced various disruptive Technological Innovations to enhance Customer & Employee Experience (CX & EX). In addition to digital platforms like ChatBot and WhatsAppBot, a unique multilingual humanoid VoiceBot named "Aastha" embedded with AI/ML & NLL/NLP technologies has been launched during this reporting period, which is improving Customer Service delivery with near zero call wait time.

Adoption of various AI/ML technology-based applications has helped us predict HT Cable Faults, mitigating low voltage complaints, health indexing of transformers and sentiment analysis of social media platforms, which has significantly enhanced our Operational Efficiency and Customer experience. We are using XR (Extended Reality) including Augmented Reality/ Mixed Reality for remote troubleshooting, training on protection systems & enhancing safety. We have leveraged Robotic Process Automation (RPA) technology to fully automate manual & rule-based routine tasks in New Connection application processing and are planning to extend this to many other areas like Regional Reporting center & Regional Customer Contact Centres. Digital Twins including 3D modelling of sub-station are also being prepared for remote visualization and training.

Focusing on "Zero Downtime", we have integrated our technology solutions to develop a smart outage management system to detect HT outages in real-time and enable faster restoration of power. Adoption of several cutting-edge disruptive Industry 4.0, Sensor based IoT Technologies has helped us transform from Preventive to Predictive Maintenance, thus ensuring pristine health of our Network along with increased reliability of power. Several other disruptive technologies have also been adopted for maximizing network uptime such as Self-Healing network, Smart Pillar Boxes, drone-based monitoring and thermal imaging of transmission infrastructure, pan tilt motor mounted thermal cameras at outdoor substation, etc.

### Decarbonization

Frequent climatic disasters have prompted scientists to curb global temperature rise to 1.5-degree C. In this context, our decarbonization strategy focuses on improving energy efficiency in our operations, converting other forms of energy to clean electric energy applications, integrating renewable energy and Sustainable Distribution Loss reduction.

We are integrating Green energy into our Energy mix by procuring Renewable Energy from Power Exchange during import. We have already installed 315 kWh Battery Energy Storage System (BESS) in 2020-21 and planning to try out a Grid-Scale BESS in the near future. We have been studying the data which reflects its benefits towards Peak load management, Energy arbitrage, improved Quality of

Power to Consumers & Frequency management.

We have embarked on the #LiveFreeBreatheFree journey, where we are actively engaged in developing a clean environment for our city by co-creating electrical infrastructure for faster adoption of Electric Vehicles and are also in the process of transforming our captive fleet to EVs because they are zero-tail-pipe emissions and low in operating costs. We are also promoting Electric Cooking amongst our Consumers as it is a Safer, Cleaner and Affordable medium. All these efforts are being made by us towards “Powering a Sustainable future”.

CESC has sustained its Loss reduction trajectory by transforming to sustainable approach by adoption of cutting-edge innovative technologies and creating a pilfer-proof network through use of Theft Proof Pillar Boxes , Co-axial Cables & Smart Meter based Automated Remote surveillance cum Theft Prevention System. Our relentless efforts have led to significant reduction in T&D losses in FY 21-22 which we aim to reduce further and this has led us to become one of the most responsible players in the power industry.

By embracing Green building principles, we are able to optimize energy resources and increase use of renewable energy. We feel proud to mention seven of our buildings comprising of office spaces and substations are certified Green buildings, with Park Circus distribution station being the latest addition.

## Decentralization

Decentralization of electricity generation systems is expected to unfold disruptions that will impact multiple sectors and stakeholder groups, with clean and green energy at the centre of its transition. Distributed generation specifically distributed solar power generation is tipped as the future for scaling up renewable energy and will be a key contributor to meet the increasing share of demand.

We are in the advanced stage of commissioning our first Microgrid with 100 kWp Floating solar and 218 kWh Battery Energy Storage System (BESS). This concept is under evaluation and based on data & future requirements, it may be emulated to create a self-sustaining grid in case of grid failures.

## Disaster Management

Resilience has been the way for CESC to combat unprecedented challenges. With back-to-back cyclones over the last couple of years, the importance of grid resiliency under extreme weather events and the need for effective disaster management cannot be ignored by any means.

Like last year, we remained strong in overcoming the impacts of another Super Cyclone “Yaas” through the implementation of a Disaster Management plan that entails a 3-tier approach focused on communication & coordination, redundancy enhancement and resource augmentation to ensure adequacy of preparation. To impart network resilience and embed safety during climatic disasters, CESC has already converted substantial part of the concerned network with Aerial Bunched Cables (AB Cables) and have also introduced IoT-based “Water level Sensors” in road side Pillar Boxes for taking proactive public safety measures. We are committed to our efforts to reduce climate change impacts and bring agility in our supply chain in order to respond quickly during disasters through reliance on local suppliers.

I am delighted to inform you that CESC has received the prestigious Great Place to Work (GPTW) Certification for the third time in a row. We have also featured among ‘India’s 100 Best Companies to Work For’ and ‘India’s Best Workplaces in Energy, Oil & Gas’ by GPTW for 2021.

In addition to strong sustainable business performance, as a responsible company, we ensure supply of quality and reliable power to all our Consumers. In FY 2021-22, we continued to deliver significantly for our communities, who form an integral part of our ecosystem. We are investing in the holistic and sustainable development of the communities that we serve and created an environment of total trust, cooperation and mutual support to them. Despite challenging times, we have remained passionate & steadfast in our committed actions towards an all-round social development and fulfilment of our CSR responsibilities. We are continuously working towards fructification of our broader vision to grow with vigour for becoming an agile & futuristic Power Distribution Utility and our CSR initiatives have widened our scope in community development pertaining to the fields of education, child protection, women empowerment, healthcare, water & sanitation, livelihood generation & skill development. The idea is to couple business success with social progress in a way to create economic value for society.

It is our firm belief that our commitment to a sustainable business will not only accelerate our growth but also enable a positive societal impact for a better planet & its people. I would like to express my vote of thanks to all the stakeholders for their overwhelming support in “Powering a Sustainable Future”.

**Mr. D. Banerjee**
Managing Director
(Distribution)

# Message from the Managing Director (Generation)

“Advancement of renewable energy has its own set of challenges. Integration of renewable energy to the grid will involve large scale transformation of the energy and power infrastructure and a gestation period to build reliability of the network. It is during this gestation period that the thermal power generating stations will play a vital role in adjusting to the variations in renewable energy generation and the fluctuations in electricity demand.”

*Dear Stakeholders,*

We are pleased to share our second ESG report, which reflects yet another milestone in our journey. This report is a communication of our environmental, social and governance performance and provides insights on the future of our thermal power generating stations.

Climate change impacts have become profound and prevalent. The challenges it poses calls for urgent action. Today, climate change is part of the agenda for every government, business and civil society and the expectation from stakeholders is nothing less than Net Zero. India too is committed to achieving net zero emissions by 2070 and one of the key enablers of this journey is advancement of renewable energy.

Advancement of renewable energy has its own set of challenges. Integration of renewable energy to the grid will involve large scale transformation of the energy and power infrastructure and a gestation period to build reliability of the network. It is during this gestation period that the thermal power generating stations will play a vital role in adjusting to the variations in renewable energy generation and the fluctuations in electricity demand.

We reckon that the ongoing coal crisis is a threat to our business continuity. We are aiming to build resilience to this risk by exploring alternatives for partial substitution of fuel. We have begun trials for replacing coal with biomass in all our thermal power generating stations as per the directions of the Ministry of Power, which will enable us not only to mitigate the current crisis but also to align ourselves with the national commitment of phasing down coal in the long run. This intervention also enables us to be a part of a solution to prevent pollution from stubble burning.

In addition to leveraging innovative technologies to provide reliable and cost-effective energy to our consumers, we take the necessary steps to foster operational efficiency. Several process related optimization measures have already been taken at our generating stations leveraging data analytics and internet of things (IoT) based technologies in key areas such as operations, maintenance, safety and asset management. Our Asset Maintenance and Reliability Management system captures and analyses large amounts of data utilising cloud computing and big data analytics to visualize and optimise process parameters. While we have been progressively digitizing

our ecosystem, we are alive to the digital security threats and have taken suitable protective measures as per the guidelines issued by the Ministry of Power.

As part of our future plans to amplify the positive impacts on climate change, we have set a target to convert all our plant administrative buildings to certified green buildings and transform our operational fleet inside the plant by embracing green technologies such as Electric Vehicles.

As a responsible corporate citizen, we also take cognizance of our environmental and social impacts. We not only conform to the limiting values prescribed under statutory acts and rules, but also go beyond it. We identify and implement the latest technologies to reduce our resource footprint and abate pollution. By 2030 we aim towards achieving zero liquid discharge at all our generating stations that source freshwater and achieve specific water consumption below 2.25 m3/MWh against the maximum permissible national standard of 3.5 m3/MWh. We take pride to inform that Budge Budge Generating Station, having achieved specific water consumption of 2.04 m3/MWh continues to set new benchmarks for other generating stations.

We will also challenge ourselves to achieve zero waste to landfill in our operations through value added utilization of ash. Our generating stations continue to fulfil their promise of 100% ash utilization and innovate to find new applications for waste reduction. Extensive research, field and laboratory trials has established that partial substitution of natural river sand by bottom ash to an extent of upto 70% is possible in manufacturing of different grades of concrete for use in non-structural and structural applications. This novel method has resulted in higher levels of strength and durability in addition to significant cost benefits in raw material. The above method has been tried out successfully for road construction inside our generating stations.

We provide great emphasis on safety of our employees. In this regard one of our commitments is towards “Zero Incidents”. At CESC, we not only work to remove risks but walk the extra mile by trying and eliminating all potential safety hazards. We mitigate our risks through improvements in process, introduction of safer materials and enhanced personal protective equipment. During this reporting period we invested upon Virtual Reality (VR) training to prepare our workforce for real dangers, enhancing their safety and proficiency. Such measures justify CESC as one of the Great Places to Work.

I hereby thank all our stakeholders for their continued support and faith in us. We look forward to your feedback and valuable inputs. Through your support and our dedicated efforts, we are confident that we can achieve our ambition of Powering a Sustainable Future.

**Mr. R. Chowdhury**
Managing Director (Generation)

## Message from the
# Executive Director- HR & Admin

> “We believe that our human capital is the most precious assets. Their dedication and hard work have propelled our journey towards Powering a Sustainable Future. Thus, our belief of retaining our talent by providing unique and fulfilling career opportunities is essential for business continuity and unlocking new business opportunities. We feel proud to announce that this belief has translated into CESC once again being recognized as a Great Place to Work.”

*Dear Stakeholders,*

We, in CESC, consider our human capital as our most precious asset. Having an agile workforce is essential for the company to thrive in an ever-changing business environment. The dedication and hard work of our employees have propelled our journey towards powering a sustainable future. Thus, we believe that retaining our talent by providing unique and fulfilling career opportunities is essential for business continuity and unlocking new business opportunities. We feel proud to mention that this belief has translated into CESC being recognized as a Great Place to Work and one of India’s Best Companies to Work for by the renowned Great Place to Work® Institute (GPTW).

At CESC, we provide multiple avenues for growth and development of our employees to realize their potential and contribute to the advancement of the business. As part of our talent development practices, we launched project-focused cross-functional teams to help employees in lateral thinking and teamwork, while evolving innovative solutions to the business challenges. It is very essential to provide each talent with the right platform and medium to grow as a professional within the organization. Nurturing each employee and recognizing them for their efforts act as catalyst in helping employees experience a fulfilling professional career.

The induction programmes “Anneswan” and “Unmilon” have been instrumental in providing a smooth and memorable onboarding process and in inducing our culture and values amongst our new entrants. This has been a driving force for our sustainability journey through various innovations and has been creating future leaders of the organization.

CESC values the importance of diversity in the workforce and the consequent unique experiences and perspectives that add immense value to the organization, which in turn, enable us to generate long-term value for our stakeholders. CESC also believes in empowering women in the community by providing suitable opportunities of skill building through women-centric CSR activities. Our initiatives also aim at aiding social awareness and improvement across areas like health and sanitisation, energy efficiency, education, environment and community development.

Our multi-pronged employee engagement policies are focused on fostering togetherness and belonging, promoting health and fitness, and making not just our employees, but also their families, an integral part of the CESC community through initiatives like ‘Ankur Samman’, ‘Avishkar’ etc. The Open-Door policy followed by the leaders of the organization, regular Town hall meetings, Divisional and Unit Level Communication meetings, and platforms such as Coffee with MD, and Leadership Connect portal which is a digital touch point for employees, have been key enablers in making CESC an inclusive workplace where employees can freely ideate new solutions, express their thoughts, and resolve their challenges.

As part of the endeavour to safeguard our people from the Covid-19 pandemic, we undertook all possible measures including sanitisation, awareness and adherence to Covid appropriate behaviours, vaccination for all employees and extending necessary healthcare supports. We continue to provide employment support to the family members of our employees who die in harness including those who succumbed to Covid.

We place special attention on ensuring safety at our workplace. Our Safety Vision, Safety Principle, Safety Policy, and Safety Pledge articulates our resolve in this direction. Through the implementation of safe work procedures, promotion of a robust safety culture, and monitoring and controlling unsafe work conditions, we show our commitment towards achieving Zero Incidents at our workplace. As part of our environment conservation practices, we have waste recycling practices, rain water harvesting facilities in various office establishments and are converting our existing buildings into energy efficient ‘green buildings’ accredited by leading certification bodies. We have adopted digitisation and technology in a big way for improving our operations and services and focussed on people capability building through, workshops, seminars, e-learning and hands-on-training. We have put in place Apex Panel of Mentors and Innovation Council comprising of senior leaders and also organise Knowledge Carnival as a confluence of ideas for fostering a culture of innovation across the organization.

In this report, you will find more details about our journey as a company in the areas where we have made significant progress towards sustainable development. Looking ahead, sustainability will continue to be key to the way we do business and engage with communities.

**Gautam Ray**
Executive Director – HR & Admin

# About the Report

We at CESC Ltd. (from here on referred to as “CESC” or “we” or “us” or “our” or “The Company”), are pleased to present the second edition of our ESG report for the financial year 2021-22. The report published on annual basis aims to communicate our non-financial performance and information to all our internal and external stakeholders in a manner that is reliable, transparent, consistent and complete.

Our ESG report is guided by the principles and reporting framework of the Global Reporting Initiative (‘GRI’) Standards and adheres to the “In-Accordance – Core’ option. The report presents a clear representation of all the topics that are material to our value chain, generation, distribution activities and the initiatives undertaken to mitigate any risks arising from the material topics, and achievements attained in the reporting period.

All our material topics have been identified through exhaustive stakeholder consultation exercises. This includes considering all the opinions and insights of the external stakeholders who frequently interact with our various functions.

This report content include our distribution functions at Kolkata and Howrah (hereafter mentioned as ‘CESC Kolkata’), Malegaon Power Supply Limited (hereafter mentioned as ‘MPSL’), Noida Power Company Limited (hereafter mentioned as ‘NPCL’), CESC Rajasthan (includes Bharatpur Electricity Services Limited, Bikaner Electricity Supply and Kota Electricity Distribution Limited) and other operating generation stations (which includes Budge Budge Generating Station (hereafter mentioned as ‘BBGS’) and Southern Generating Station(hereafter referred to as ‘SGS’)), and subsidiary businesses namely Dhariwal Infrastructure Limited (hereafter mentioned as ‘DIL’), Haldia Energy Limited (hereafter referred to as ‘HEL’) and Crescent Power Limited (hereafter referred to as ‘CPL’) . In the report, MPSL, NPCL, CESC Rajasthan, DIL, HEL and CPL together are referred to as ‘CESC Subsidiaries’.

The theme of this year’s ESG report is “Powering a Sustainable Future”.

We encourage you to share your feedback and insights on the report to the contact point mentioned below. This shall help us in further strengthening our reporting initiatives.

Contact Point for clarification and additional information

**Mr. Jagdish Patra**

Company Secretary & Compliance officer

CESC Limited

Email: jagdish.patra@rpsg.in

Tel: 033-24870366





# About CESC

CESC is India’s first integrated electrical utility company, headquartered at Kolkata, West Bengal. We at CESC prioritize to supply safe, cost-efficient, low carbon and reliable power to residential, commercial, and industrial customers.

We are the sole distributor of electricity within an area of 567 sq. km. of Kolkata & Howrah and serve 3.4 million consumers, and commercial users. Our subsidiaries Noida Power Company Ltd, distributes power in Greater Noida, Uttar Pradesh with a license area of 335 sq. km. We also operate three Distribution Franchisee (DF) in Rajasthan at Kota, Bharatpur and Bikaner. It also won the Distribution Franchisee of Malegaon circle, close to Nashik in Maharashtra, which commenced operations in 2019-20.

Our 2,380 MW generating stations and a value chain comprising of 15,574 dedicated employees play a pivotal role in ensuring supply of reliable power across geographies such as West Bengal, Maharashtra, Tamil Nadu and Rajasthan.

# Our Vision

We will be a profitable consumer-oriented power utility consistent with global standards meeting the expectations of consumers, employees and other stake holders. We will achieve this vision by:

- Achieving efficiency of operations and further developing core competencies.
- Readjusting the business consistent with the changing environment, technologically and commercially.
- Maintaining a rewarding and stimulating organizational climate with people orientation.
- Reaffirming faith in the organization's ethics and Values developed in course of our long existence.
- Harnessing and developing our professional competence.
- Being responsive to social requirements.

# Our Mission

We will meet consumer's expectations continuously by providing safe, reliable and economic electricity through optimization of available resources. We will achieve this mission by:

- Accomplishing targeted performance in the key result areas of our business operations.
- Enhancing consumer satisfaction through value addition to service supported by a consumer feedback monitoring system.
- Improving work environment and helping employees for personal development and career satisfaction through an interactive approach.
- Being recognized as an ethical and environmentally responsive organization.

# Our Values

Our Group's shared Core Values are our fundamental beliefs upon which our organization is built upon. These Values guide our actions and behaviour, influencing the ways our people work. Our Group Core Values are:

- Execution Excellence
- Agility
- Risk-Taking
- Customer First
- Credibility
- Humaneness
- Sustainability

# The Power Value Chain

Power is a necessity for improving the quality of life of people and an important factor contributing to the economic growth of a nation. We at CESC, recognize our role and strive to fulfil the requirements of consumers at priority through our integrated power value chain network including generation and distribution of electrical energy.

## Power Distribution

Electricity consumption patterns are dependent on the individual characteristics of a location. This variation in electricity demand depends not only on seasonal variations and the period within the day but also whether the locality is a residential, commercial, industrial or a mixed community. Today, CESC along with its subsidiaries ensure continuous and reliable power to 4.1 million consumers by effectively planning and allocating electricity based on the load characteristics of the locality.

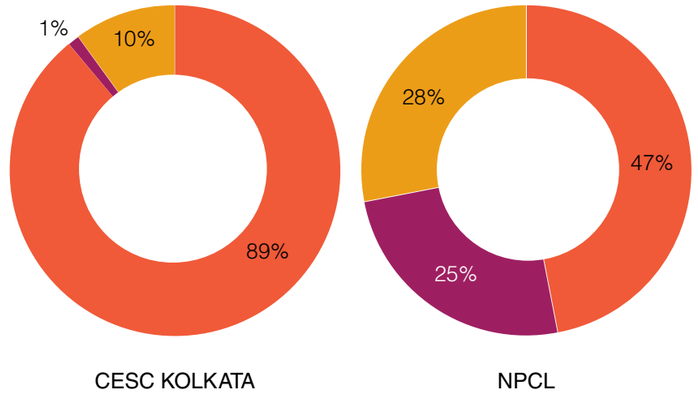
### Consumer Profile

- **84.84 %** Residential
- **2.20 %** Industrial
- **12.02 %** Commercial
- **0.94 %** Others

| Consumer Type | CESC Kolkata | MPSL | NPCL | CESC Rajasthan |
|---|---|---|---|---|
| Residential | 29,36,088 | 93,179 | 1,06,390 | 3,95,368 |
| Commercial | 4,19,370 | 9,005 | 5,073 | 66,729 |
| Industrial | 64,937 | 15,989 | 3,719 | 7,005 |
| Others | 29,829 | 1,862 | 2,571 | 4,687 |
| Total | 34,50,224 | 1,20,035 | 1,17,753 | 4,74,065 |

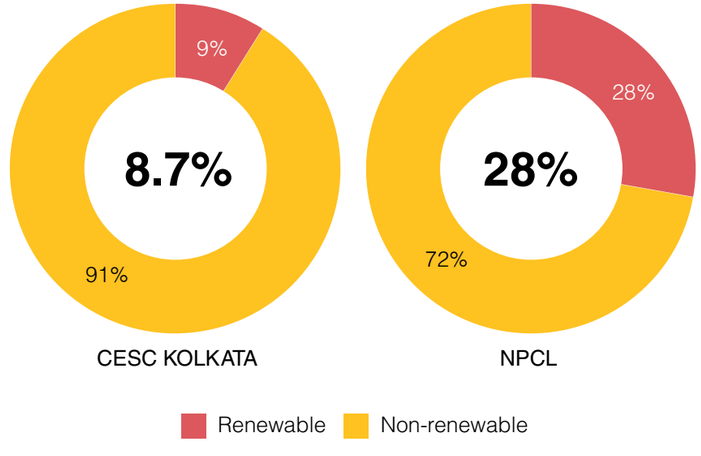
There has been a growing demand for electricity amidst growing urbanization and economic development. At CESC Kolkata and NPCL where we have license to trade, we overcome this challenge through our large power basket where the most affordable power is procured from own generating stations and the balance through various trading schemes. On the other hand, the distribution franchises CESC Rajasthan and MPSL, we are reliant on the regional DISCOM for power.

Distribution units supply electricity to 41,62,077 consumers through High Tension (HT) and Low-Tension (LT) lines that run 16,839 circuit km and 25,577 circuit km respectively.




| Distribution Unit City | State | Units delivered in FY 21-22 (in MU) | Underground (in CKM) | | Overhead (in CKM) | |
|---|---|---|---|---|---|---|
| | | | LT | HT | LT | HT |
| CESC, Kolkata | West Bengal | 10,279 | 8,208 | 9,031 | 5,748 | 481 |
| NPCL, Greater Noida | Uttar Pradesh | 2,338 | 1,889 | 1,672 | 1,528 | 2,109 |
| CESC Rajasthan, Kota | Rajasthan | 960 | 192 | 433 | 2546 | 776 |
| CESC Rajasthan, Bharatpur | Rajasthan | 255 | 64 | 150 | 846 | 289 |
| CESC Rajasthan, Bikaner | Rajasthan | 671 | 254 | 435 | 3371 | 977 |
| MPSL, Malegaon | Maharashtra | 740 | 4 | 13 | 927 | 473 |

In the licensed areas of Greater Noida and Kolkata we uphold our promise to our consumers of providing low carbon power by integrating renewable energy in the energy mix. Our renewable energy mix at CESC Kolkata and NPCL is 8.7% and 28% respectively.




## Power Generation

Our thermal assets form a distinctive part of our energy mix in the licensed areas of Kolkata and Greater Noida, and they strike balance between generation and consumption by adjusting to the variations in our renewable energy assets and the demand side fluctuations of electricity. At the generating stations, our promise to provide reliable and continuous power to the consumers is extended through flexible Power Load Factor (PLF) mechanism and long-term coal linkages. The table below showcases the contribution our generation assets to reliable power:

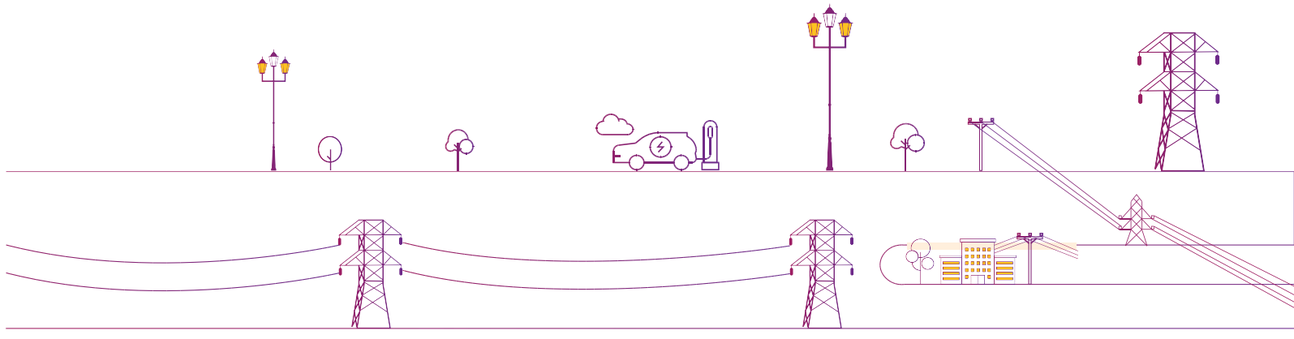
### Thermal Power Generation Stations

| Generation Unit | State | Installed Capacity (in MW) | Units Generated (In MU) | DISCOM |
|---|---|---|---|---|
| Budge Budge Generating Station, Kolkata | West Bengal | 3*250 | 5,562.02 | CESC, Kolkata |
| Southern Generating Station, Kolkata | West Bengal | 2*67.5 | 164.03 | CESC, Kolkata |
| Haldia Energy Limited, Haldia | West Bengal | 2*300 | 4,276.66 | CESC, Kolkata |
| Dhariwal Infrastructure Limited, Chandrapur | Maharashtra | 2*300 | 3,990.84 | NPCL, Greater Noida & TANGEDCO, Chennai |
| Crescent Power Limited, Asansol | West Bengal | 40 | 347.41 | CESC, Kolkata |
| Titagarh Generating Station, Kolkata* | West Bengal | 4*60 | 0 | CESC, Kolkata |

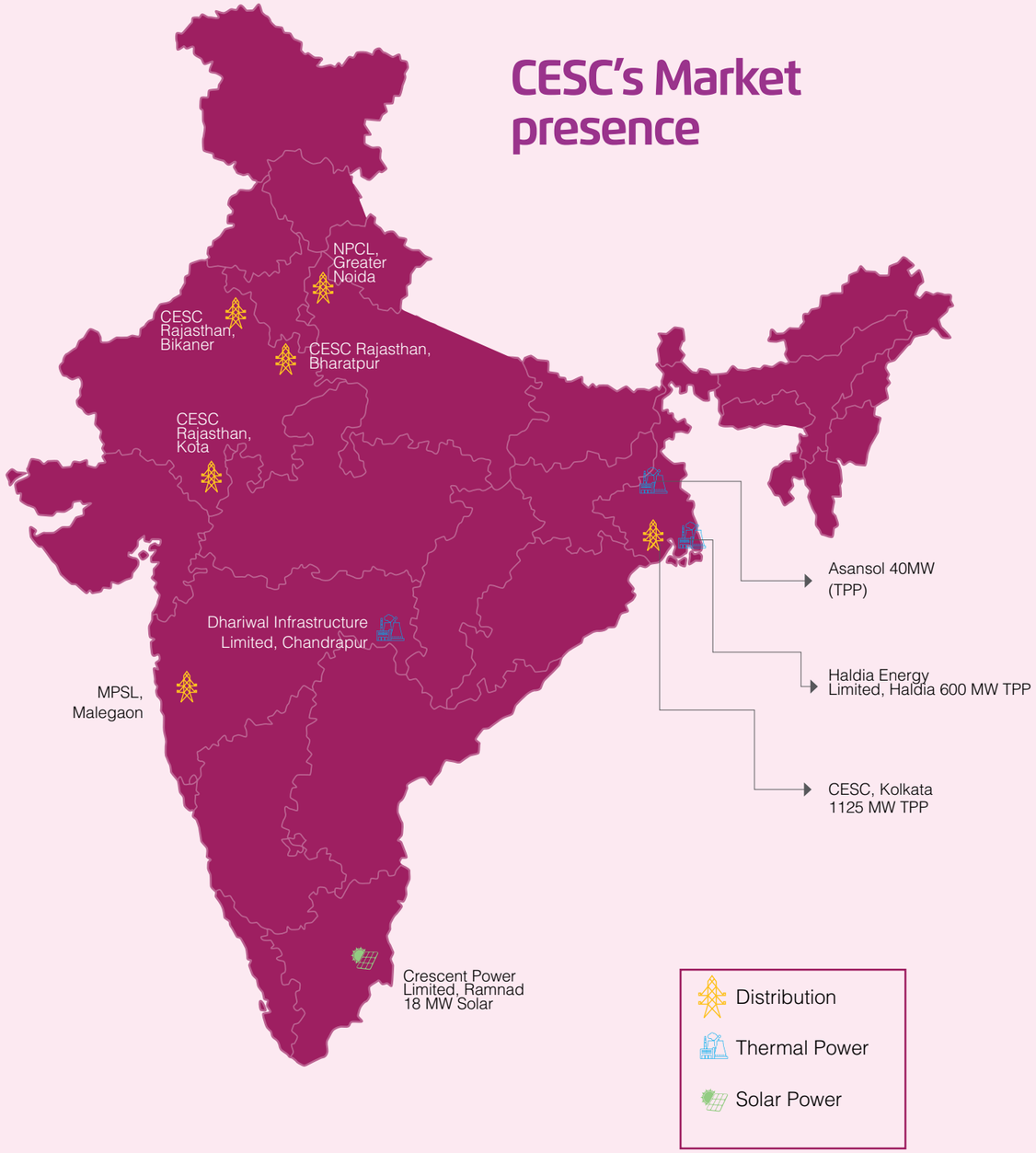
*Currently our thermal power asset at Titagarh is not operational and hence the reporting parameters are excluded from the coverage.

### Solar Power Generation Station

| Generation Unit | State | Installed Capacity (in MW) | Units Generated (In MU) | DISCOM |
|---|---|---|---|---|
| Crescent Power Limited, Ramnad | Tamil Nadu | 15 | 26.45 | TANGEDCO, Chennai |



# CESC's Market presence




# Management Systems

Management Systems are systematic frameworks designed to manage an organization's policies, procedures and processes and promote continual improvement within. The list of our management systems include: -

- ISO 9001:2015
- ISO 14001:2015
- ISO 45001:2018
- ISO 50001:2015
- ISO 27001:2013

# Memberships and Associations

We are an active member of various industry associations and platforms. As members of these associations, we engage with professional bodies and organizations to share our perspectives and keep ourselves in line with the latest industry trends. Our participation on these forums, help us implement sectoral best practices and strengthen our alignment with applicable standards. We are a part of the following industry associations.

- Confederation of Indian Industries (CII)
- The Associated Chambers of Commerce & Industry of India (ASSOCHAM)
- The Committee of International Council on Large Electric Systems, India (CIGRE)
- India Smart Grid Forum (ISGF)
- National Safety Council (NSC)
- Central Board of Irrigation &Power (CBIP)
- All India Management Association (AIMA)
- National HRD Network (NHRDN)
- Employers' Federation of India (EFI)
- Administrative Staff College of India (ASCI)
- Quality Circle Forum of India (QCFI)
- Council of Power Utility
- Bureau of Indian Standards (BIS)
- Institute of Electrical and Electronics Engineers (IEEE)
- Calcutta Management Association (CMA)
- British Council Limited (BCL)
- State Productivity Council

# Awards and Recognitions

Awards and recognitions not only serve as an endorsement of our commitment to the stakeholders we cater to but also boost the reputation of the organization. The major awards and recognitions received during the reporting period are given below.

## Innovation and Business Excellence

*QCFI Award, 2021*

- Best Distribution Company Award to promote "Consumer Awareness" at the IPPAI Power Awards 2022 for CESC
- ASSOCHAM Energy Meet Excellence Award 2022 for the Project "Push Alert: An In-house Vendor-Agnostic Solution for Real-time System Disturbance Analysis on Mobility Platform" in the category of "Innovation in Energy Solution" for CESC
- 2 Par Excellence Awards at the 46th International Convention on Quality Control Circles (ICQCC) 2021 organized by Quality Circle Forum of India teams from Substations and Testing on Kaizen Allied Concepts for CESC
- 7 Par Excellence Awards at the 35th National Convention on Quality Concepts (NCQC) 2021 for CESC
- Winner Award at IPPAI Power Awards 2022 for the project on "Implementation of Smart Pillar Box in LT Distribution System" in the "Techno commercial" category organized by Independent Power Producers Association of India (IPPAI) for CESC
- A.K.Dasgupta Memorial Trophy for "Organisational Excellence" for the Kaizen Case study on "Reduction of Flashover in Distribution Transformer in CESC" at Global Summit on Total Quality Management 2021 for CESC
- First Runner Up Award at CII's 9th Excellence Practice Competition 2021 for project on "Conversion of unauthorized user of electricity to authorized consumer in Tiljala - Topsia area" for CESC
- Second Runner Up Award at CII's 9th Excellence Practice Competition 2021 organized by Institute of Quality, Confederation of Indian Industries (CII) for project on "Significant OPEX reduction for annual maintenance of Distribution Asset (Automatic Power Control Unit – APFC) through business process innovation" for CESC
- 7 Gold Awards on Kaizen Allied Concepts at the 34th Chapter Convention on Quality Concepts (CCQC) 2021 organized by Quality Circle Forum of India for CESC
- Frost and Sullivan Awards, for the category "Project Innovation Leadership in the Service sector" for CESC

## Environment

*Aqua Foundation's Excellence Award, 2021*

- 1st runner-up prize at the 14th CII (ER) Energy Conservation Awards, 2021 for HEL
- GMF Green Mapple award 2021 for DIL
- Aqua Foundation's Excellence Award 2021 (for Water Management-Private Sector) for BBGS
- Energy & Environment Foundation Global award 2021 on water management for BBGS
- ICC Environment Excellence Award 2021 for Power Sector (Winner in Large Enterprise category) for BBGS
- ICC Environment Excellence Awards – Runner Up in 2021 for SGS

## Human Resources


*Recognised by Great Place to Work, 2022*

- Recognised by Great Place to Work among top 100 "India's Best Companies to Work for" for CESC
- Recognised by Great Place to Work as "India's Best Workplaces in Energy, Oil & Gas" for the year 2022 for CESC
- Global HR Skill Development Platinum Award, 2022 for CESC

## Supply Chain

*SCALE Award, 2021*

*MSC Award, 2021*

- Manufacturing Supply Chain (MSC) Awards, 2021 for the category "Quality Excellence in Innovative Processes and Systems" for CESC
- CII Supply Chain and Logistics Excellence (SCALE) awards, 2021 for the category "Best in class excellence in continuous improvement" for CESC

## Corporate Social Responsibility

*ICC Social Impact Award, 2021*

- Golden Bird Excellence Award 2021 for CESC
- Grow Care India Award 2021 for CESC
- ICC Social Impact Award 2021 for CESC
- Grow Care India Awards 2021 for CPL
- Greentech CSR Award, 2021 for DIL

## Health and Safety

*ICC National Occupational Health & Safety Award, 2021*

- 9th FICCI Safety System Excellence Award- (Gold) for BBGS
- ICC National Occupational Health & Safety Award 2021 (2nd Prize) for BBGS
- Energy and Environment Foundation Global Safety Award 2022" (Gold) for BBGS
- 11th Exceed OHS Award- 2021 (Gold) for BBGS
- ICC National Occupational Health & Safety Awards - Silver Certificate Winner 2021 for SGS
- SDF Occupational Health and Safety 2021 (Gold) - (EK Kam Desh Ke Naam) for DIL
- Apex India Occupational Health & Safety Awards 2021 for CPL

As we continue to gain prominence in our sustainability journey, these achievements instill confidence in our roadmap towards Powering a Sustainable Future. With this context we are proud to announce that NPCL achieving 43 national and international awards in in the area of Business Excellence during this financial year is one of the most extraordinary feats achieved in the history of CESC, which sets new benchmarks amongst not only amongst CESC and its subsidiaries but also amongst our peers. The list of these awards and recognitions are showcased below.

## Platinum Awards

- Platinum Award at CII's National Office Innovation Competition for "Reduction in repeat footfall at Customer Care Offices"
- Platinum Award at CII's National 3M Competition for "Improvement in Identification and Correction of Wrong rate category allocation thus improving revenue realization"
- Platinum Award at CII's National 3M Competition for "Revamping online new connection & overburden"
- Platinum Award at CII's National Technology Competition for "Eliminating wrong purchase requisition creation"

## Gold Awards

- Gold Award at India Smart Grid Forum Innovation Awards for "Single point to Multi-point conversion of societies"
- Gold Award at CII's National Office Innovation Competition for "Single point to multipoint conversion of residential societies"
- Gold Award at CII's National Office Innovation Competition for "Business Excellence Portal"
- Gold Award at CII's National Office Innovation Competition for "Eliminating wrong purchase requisition creation"
- Gold Award at Chapter Convention on Quality Concepts, QCFI for "Curb Electricity Theft in Night at Rural Area of NPCL for reducing distribution losses"
- Gold Award at Chapter Convention on Quality Concepts, QCFI for "Reduction in power outage due to delay in load management"
- Gold Award at Chapter Convention on Quality Concepts, QCFI for "Reduction in repair and maintenance cost of IT infra assets"
- Gold Award at Chapter Convention on Quality Concepts, QCFI for "Reduction in power transmission charges against the medium-term power purchase"
- Gold Award at Chapter Convention on Quality Concepts, QCFI for "Online New Connection Application"
- Gold Award at Chapter Convention on Quality Concepts, QCFI for "Business Excellence Portal"
- Gold Award at Chapter Convention on Quality Concepts, QCFI for "Improving power reliability in Surajpur Industrial Area"

## Silver Awards

- Silver Award at Chapter Convention on Quality Concepts, QCFI for "Minimizing the threat of COVID-19"
- Silver Award at CII's National Technology Competition for "Automatic Transformer replacement in Geographical Information System (GIS)"
- Silver Award at CII's National Technology Competition for "Business Excellence Portal"
- Silver Award at CII's National Technology Competition for "Eliminating errors while processing rebate to eligible consumer"
- Silver Award at CII's National 3M Competition for "Reducing power transmission charges by converting Power Purchase Agreement from medium to short term"

## Excellence Awards

- Excellent Award at National Convention on Quality Concepts, QCFI for "Online New Connection Application"
- Excellent Award at National Convention on Quality Concepts, QCFI for "Reduction in power transmission charges against the medium-term power purchase Application"
- Excellent Award at National Convention on Quality Concepts, QCFI for "Reduction in power outage due to delay in load management"
- Excellent Award at National Convention on Quality Concepts, QCFI for "BE Portal"

## Miscellaneous Awards

- Winner Award in CII National Kaizen Circle
- Winner Award in CII National Energy Efficiency Circle
- Winner Award in CII Energy & Utilities Management
- 2nd Rank under Efficient Operations category at 9th Innovation with Impact Award for DISCOMs
- 2nd Rank under Technology Adoption category at 9th Innovation with Impact Award for DISCOMs
- Distinguish Award at National Convention on Quality Concepts, QCFI for "Curb Electricity theft in night at rural area of NPCL for reducing distribution losses"
- Star Champion Award at CII's Champion Trophy for "Reduction in repeat footfall at Customer Care Offices"
- Star Champion Award at CII's Champion Trophy for "Improvement in Identification & Correction of wrong rate category allocation thus improving revenue realization"
- Jury Champion Award at CII's Champion Trophy for "Eliminating Wrong Purchase requisition creation"
- Super Challenger Award at CII's Challenger Trophy for "Business Excellence Portal"
- Star Challenger Award at CII's Challenger Trophy for "Single point to multipoint conversion of societies"
- Star Challenger Award at CII's Challenger Trophy for "Elimination of errors in processing rebate to eligible consumer"
- Winner at CII's Quality Circle Preliminaries for "Curb Electricity theft by conducting vigilance drive during night hours in rural area for reducing distribution losses"
- Winner at CII's Quality Circle Regional Competition for "Curb Electricity theft by conducting vigilance drive during night hours in rural area for reducing distribution losses"

# Our ESG Priorities

Our ability to Power a Sustainable Future is dependent on our long-term relations with our stakeholders. We engage with our stakeholders to understand their diverse views and respond to them appropriately. Listening to them, provides valuable inputs to the strategic approach of our business to mitigate risks, as well as defining the policies and procedures of working.

# Stakeholder Engagement

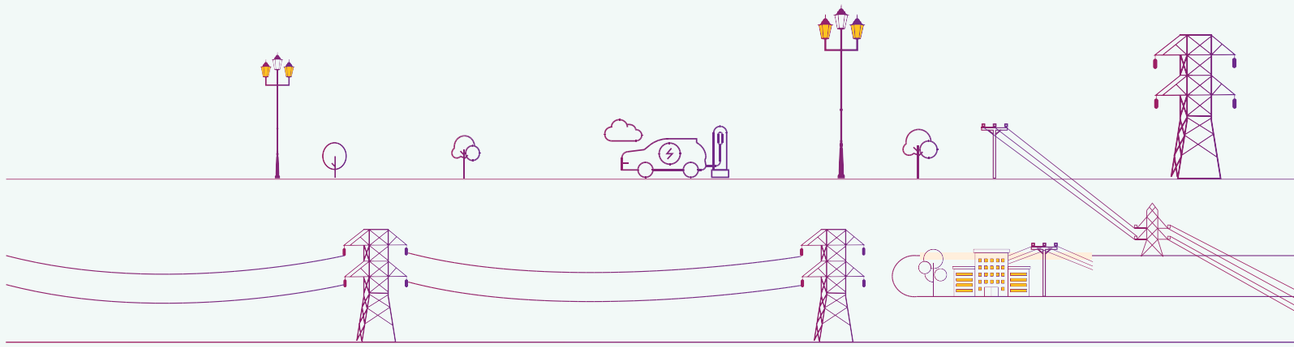
We take pride in maintaining good relations with all our stakeholders, and we are cognizant of our responsibilities to meeting their expectations.

Our engagement approach takes into consideration the dependency, immediacy, responsibility, vulnerability and influence while identifying our key stakeholder groups.

Some of our key stakeholder groups include our investors, lenders, regulatory bodies, consumers, employees, trade unions, suppliers, local community, Non-Government Organizations (NGOs) and media.

| Stakeholder Group | How we engage | Key expectations |
|---|---|---|
| Investors | • Annual General Meeting<br>• Grievances through Registrar and Share Transfer Agent<br>• Call for Quarterly results<br>• Regular interaction with institutional investors<br>• Periodic press release | • Improved profitability and earnings per share<br>• Dividend payout<br>• Transparent disclosure<br>• Improvements in ESG disclosure |
| Lenders | • Periodic meetings | • Maintaining healthy working capital<br>• Liquid fund position |
| Regulatory bodies | • Periodic public advocacy<br>• Regular liasioning | • Ensuring environmental, social and economic compliance |
| Consumers | • Regular on-call surveys for distribution service<br>• Regular online digital survey<br>• Annual perception survey<br>• Regular customer awareness<br>• Ongoing complaint redressal system | • Agile fault management<br>• Accurate and transparent billing<br>• Affordable solutions |
| Employees | • Weekly Coffee with MD<br>• Annual employee opinion surveys<br>• Employee grievance redressal mechanism<br>• Regular interactions for celebrating days of individual, organizational, national and international significance | • Learning and development<br>• Career growth opportunities<br>• Rewards and recognition<br>• Facilities and well-being<br>• Health and safety at workplace<br>• Respecting human rights |
| Trade unions | • Annual Meetings | • Health and safety at workplace<br>• Respecting human rights |
| Suppliers | • Vendor meet<br>• Regular vendor audit<br>• Periodic vendor interactions for sampling and grievance redressal | • Payment cycle<br>• Business opportunities<br>• Capacity building of suppliers on improvements in environmental and social performance |
| NGOs/Community | • Regular community meetings<br>• Annual beneficiary perception survey | • Access to clean drinking water, sanitation and hygiene<br>• Opportunities for education<br>• Improvement in maternal and newborn child health and nutrition<br>• Improvement in healthcare infrastructure<br>• Creating a clean environment |
| Media | • Ongoing one on one interactions<br>• Periodic press release and press conference | • Transparent and accurate disclosure<br>• Brand reputation |

During the reporting period FY 21-22, we interacted with the all the stakeholder groups, and their perceptions on important ESG topics are accounted while, prioritizing the key material topics that are significant to CESC. The details of our materiality assessment exercise are provided in the next section.



# Materiality Assessment

Materiality assessment helps us evaluate risks and opportunities to business, understand stakeholder expectations and consider it in our strategies and decision making. At CESC, we employ a four-step approach for undertaking the materiality assessment.

**STEP 1**

**Identification of material topics**

- Evaluated sector specific standards (GR) and SASB) and rating indices (DJSI and MSCI) for material topics relevant to our business operations
- Evaluation of material topics considered by our peers having an integrated power utility business
- Material topics are selected, basis its relevance to stakeholders

**STEP 2**

**Understanding the significance of material topics to external stakeholders**

- Identification of external stakeholder groups
- Engagement with the external stakeholder groups through one to one interaction and focussed group discussion
- Evaluation of stakeholder perception of CESC's impact with respect to material topics
- Application of weightages to external stakeholder responses to arrive at a weighted average score for each material topic

**STEP 3**

**Understanding the importance of material topics to business**

- Discussion on responses from external stakeholder with senior leadership
- Consulted senior leadership to understand the importance of the material topics on business based on corporate strategy. policies, risks and opportunities identified

**STEP 4**

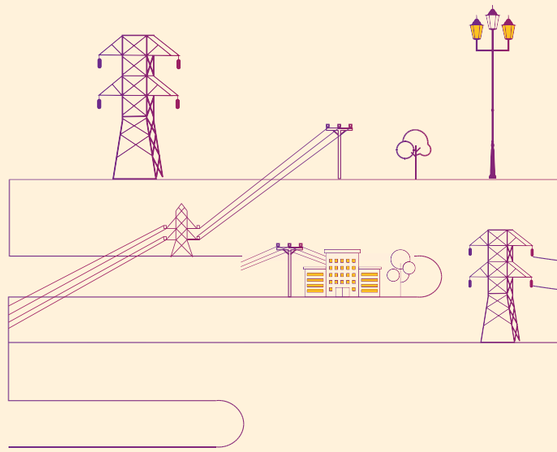
**Prioritization of the material topics**

- Mapped the weighted average score for external stakeholders against the average score of senior leadership for each material topic to develop the materiality map
- Material topics were graded under three levels of prioritization: very high priority, high priority and moderately high priority.

In FY 21-22, we reassessed our materiality map to reflect the emerging material topics faced by our diverse set of internal and external stakeholders. The outcome of the materiality assessment exercise is presented in the form of matrix that depicts the material topics in respect to two dimensions- significant to external stakeholders and importance to business.


*Refer the table alongside for the list of material topics

| SL. No. | List of Material Topics |
|---|---|
| 1 | Climate Change |
| 2 | Water management |
| 3 | Environment management |
| 4 | Community Development |
| 5 | Human Rights |
| 6 | Workforce welfare |
| 7 | Occupational Health and Safety |
| 8 | Public safety |
| 9 | Responsible Supply Chain |
| 10 | Corporate Governance |
| 11 | Customer focus |
| 12 | Energy access |
| 13 | Data privacy |
| 14 | Innovation management |



## Snapshot of our 2030 Targets for the Identified Material Topics

| | List of Material Topics | 2030 Targets | SDG |
|---|---|---|---|
| ENVIRONMENT | **Climate Change**<br>- Carbon emissions reduction<br>- Operational eco efficiency<br>- Growth in renewable energy<br>- Demand side management" | 100% of operational fleet will be replaced by green technology such as Electric Vehicles<br>Assist 10,000 commercial/industrial/residential canteens and roadside eateries in adopting e-cooking to replace conventional fuel<br>100% of the new substations/offices will be certified as green buildings<br>100% plant administration buildings will be certified as green buildings | |
| ENVIRONMENT | **Water management** | 100% thermal power plants with freshwater source have zero liquid discharge facilities<br>Reduce water intensity of thermal power plants below 2.25 KL/MWh | |
| ENVIRONMENT | **Environment management**<br>- Air Quality<br>- Hazardous waste management<br>- Biodiversity | Achieving Zero Waste to Landfill through value added utilization<br>Will maintain PM emissions below normative levels of 50 mg/Nm3<br>Will maintain SO2 emissions below normative levels of 600 mg/Nm3<br>Will maintain NOX emissions below normative levels of 600 mg/Nm3 for all thermal plants commissioned before 2003 & 450 mg/Nm3 for all thermal plants commissioned in 2004 onwards until 2017 | |
| SOCIAL | **Community Development** | At least 15,000 children have access to quality pre-primary, primary and secondary education with effective learning outcomes.<br>At least 4,000 mothers and 6,000 children will receive healthcare and nutrition support<br>At least 7500 underprivileged youth will receive skill development training and employment opportunities | |
| SOCIAL | **Human Rights** | Increase women participation in workforce to 12% | |
| SOCIAL | **Workforce welfare**<br>- Human capital development<br>-Talent attraction and retention | 100% employees receive career development reviews and appraisal<br>100% people have received training on digital skills | |
| SOCIAL | **Occupational Health and Safety** | Zero Incident in workspace | |
| SOCIAL | **Public safety** | Zero Incident resulting from logistics and transportation and installation/repair of equipment | |
| SOCIAL | **Responsible Supply Chain** | 100 % of critical suppliers are screened on ESG criteria<br>More than 80% of the procurement by spent is maintained for local suppliers | |
| GOVERNANCE | **Corporate Governance** | Women represent 30% of the Board of Directors<br>Implement ISO 37001 anti-bribery certification across operation | |
| GOVERNANCE | **Customer focus**<br>- Customer Satisfaction<br>- Reliable and continuous power supply<br>- Disaster response | 95% TAT adherence to consumer complaints<br>Maintain Average Response time below 1 hr for large area outages<br>More than 90% of the payments made will occur from digital platform" | |
| GOVERNANCE | **Energy access** | 100% new connection (LOOP Connection) requests are fulfilled for consumers within 24 hours subjected to compliance | |
| GOVERNANCE | **Data privacy and security** | Implementation of ISO 27001 across generation and distribution utilities and leading to unified compliance management programme while complying with Ministry of Power /CERT-IN guidelines as well as the readiness to comply with the Personal Data Protection Bill whenever enacted<br>At least one cybersecurity assessment/validation each year | |
| GOVERNANCE | **Innovation management** | 25 employees in the R&D team | |

In addition to materiality assessment, our Enterprise Risk Management Framework ensures business continuity through identifying and addressing critical risks in our day to day to functioning. Some of the critical business risks identified CESC are highlighted in the following section.

# Strategic Risk Management

At CESC, our robust risk management process assures sustained effectiveness of internal controls for mitigating the existing and emerging risk faced at both strategic and operational level. The Risk Management Committee of CESC is responsible for framing, implementing, monitoring and reviewing the risk management plan and ensuring its effectiveness. The Audit Committee has additional oversight in financial risks and controls. Furthermore, we have set up a robust internal audit function which reviews the internal financial controls by adopting a systematic approach to its work.

## Our Approach to Risk Management


The major risks identified by the businesses and functions are systematically addressed through mitigating actions on a continuing basis. We have identified the following key areas of risks and concerns.

### Covid-19 Risks and Mitigation

The Covid-19 pandemic resulted in unprecedented uncertainty, affecting livelihoods and disrupting businesses. While the situation improved as the year progressed, there is still uncertainty, exposing CESC to risks arising from maintaining day-to-day operations to longer term planning and performance.

To ensure business continuity, a core committee comprising of representatives from both management and trade union was formed. The committee leveraged our robust Covid-19 plans and procedures for quick decision making, communication, implementation, monitoring and review for the evolving dynamic scenario in lines with directives issued by the state and central governments. The committee ensured employees adherence to safety, sanitization and hygiene protocol, whilst enabling a digital ecosystem for remotely managing operations. We are proud to announce all our employees and workers are twice vaccinated, making our operations Covid-19 safe.

### Macroeconomic and Market Risks

Economy recovery since Covid-19 crisis has been slow, which has impacted the power sector. Surplus power generation capacities in the short term exposes the industry to risks associated with difficulties in executing PPAs and adverse price movements in the short-term power market. The situation is aggravated as coal availability, coal quality and linkages for new projects continue to be issues of concern.

Our generation capacities have long-term power sale arrangements and are well placed to access state and national grids to sell surplus power. Also, we have adopted a strategy of ensuring long term coal linkages for existing and future projects to mitigate risks associated with the coal supply chain.

### Disaster Management Risks

Our operations are exposed to the risk of natural and man-made disasters such as cyclones, floods, earthquakes and fire that can affect our ability to supply quality power to consumers.

To mitigate disaster related risks, we have implemented a comprehensive disaster management plan and adopted cutting-edge technologies to ensure public safety and prevent equipment failure.

### Integration of Renewable Energy

Integration of renewable energy into the grid as well as scheduling through implementation of open access power transactions enhances variability in management of grid stability and demand supply balances.

At CESC, we have implemented Battery Energy Storage Systems (BESS) for storing the excess renewable energy on procurement and avoiding inflation of charges during peak consumption hours. . CESC has integrated solar installation of 580 consumers of about 41 MW capacity.

### Regulatory Risks

Our business is exposed to risks with respect to changes in policies and regulations. These risks are resulting in regulations becoming more stringent, requiring immediate attention towards environmental concerns. Such risks pose challenges for us to execute new projects as well as increase the cost of operations.

Conscious of the existing risks, we are ensuring 100% of fly ash is recycled and maintaining a Zero Liquid Discharge (ZLD) facility for our generating stations and are compliant to applicable regulations for providing sustainable, cost effective, reliable and safe power to our consumers.

We are equally considerate in meeting the timelines for emerging regulations. We have initiated the competitive bidding process for Flue Gas Desulphurisation (FGD) systems and trials for substituting 5% of our coal with agricultural waste at the generating stations.

# Corporate Governance

A robust corporate governance is essential for Powering a Sustainable Future. Corporate governance involves a set of systems, procedures and practices to ensure that a valuable relationship of trust is maintained with all stakeholders. The fundamentals of good governance includes transparency, accountability and independence which helps in creating an organization intended to maximize wealth for its stakeholders.

At CESC, we lay emphasis on maintaining the highest standards of corporate governance. We have established systems, processes, procedures and policies to ensure that our Board of Directors are well informed and well equipped to discharge overall responsibilities and provide management with the strategic direction catering to exigency of long term stakeholder value.

Our practices are driven by strong Board oversight, transparent policy framework and high levels of integrity in decision-making process.

# Board Oversight

Our commitment to good governance starts with the Board of Directors (hereafter referred to as The Board). Their key insights and diverse expertise play a crucial role in ensuring business continuity and resilience.

The Board comprises of a mix of Non-Executive Independent and Executive Directors which is in compliance with the regulatory requirments and Dr. Sanjiv Goenka, is the Chairman of the Board and also the promoter of the Company. The members of the Board are appointed by the Nomination and Renumeration Committee based on their demonstrated experience, skills, competencies and achievements. Board members posess skills in various subjects including finance and audit, risk management, regulation and compliance and sustainability.

The Board discharges its duties effectively by enforcing policies and procedures and expressing confidence to the business strategy on economic, environmental, and social topics through the different committees namely the Audit Committee, CSR Committee, Stakeholder Relationship Committee, the Nomination and Renumeration Committee and the Risk Management Committee.

## Audit Committee:

The committee meets quarterly to review the financial position, provide feedback on internal audit findings and review the adequacy of internal control systems

## Nomination and Remuneration Committee:

The committee meets as per requirement and is entrusted with the responsibility to nominate and appoint suitable candidates for representing the Board and recommend renumeration to the Board based on their performance.

## Corporate Social Responsibility Committee:

The Committee meets as per requirement and is responsible for monitoring the implementation of the CSR programmes and approving the annual CSR budget for implementing CSR projects

## Risk Management Committee:

The committee meets twice in a year and is entrusted with the responsibility of monitoring and reviewing the risk management plan

## Stakeholder Relationship Committee:

The committee meets quarterly to review shareholder grievances and resolves them immediately

**Sanjiv Goenka**
Chairman
1 2 3 4

**Debanjan Mandal**
Independent Director
3

**Shashwat Goenka**
Vice-Chairman

**Pradip Kumar Khaitan**
Non-Executive,
Non-Independent Director
2 3

**Chandra Kumar Dhanuka**
Independent Director
1 3 5

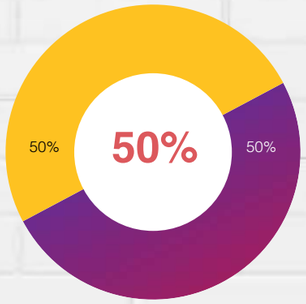
**Pratip Chaudhuri**
Independent Director
1 2 3 4

**Rekha Sethi**
Independent Director
1 3

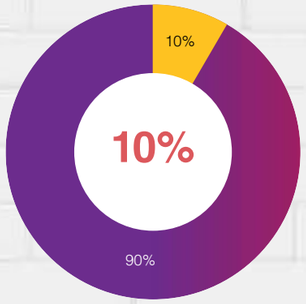
**Debasish Banerjee**
Managing Director
(Distribution)
2

**Rabi Chowdhury**
Managing Director
(Generation)
2 4 5

**Sunil Mitra**
Independent Director




Board Independence
Independent · Non-Independent




Female members on the Board
Female · Male

1 Audit Committee:
2 Risk Management Committee:
3 Nomination and Remuneration Committee:
4 Stakeholder Relationship Committee:
5 Corporate Social Responsibility Committee:
● Chairperson

## ESG Governance

Our sustainability vision is to supply safe, cost effective, low carbon and reliable electricity through our responsible and diverse value chain.

The Management Committee, comprising of the Managing Directors, Chief Finance Officer, Company Secretary and all functional heads are responsible for driving the strategy and monitoring progress to achieve this vision. The Managing Directors, who are also the representatives of the Board, keep the Chairman and the other Board members abreast with the discussions held at the Management Committee meeting on the Company's future plans, targets and current performance.

The Board meets on quarterly basis to review performance, provide strategic directions and enforce policies, targets and strategies.

### Board of Director and Management Committee

- Review KPIs, challenges and learnings on quarterly basis with MD-Distribution, MD Generation and CFO
- Report performance against KPIs on annual basis to board of directors
- Takes approval from the Board on policies and procedures and strategies

### Functional Teams

- Set strategies, goals, policies and monitoring procedures
- Progress reports against KPIs, challenges, learnings and activities to Management Committees
- Implement vision and strategy

### Cross Functional Forum

- Submits new and amended policies, processes, goals and targets for review and approval
- Taking signoff on annual report and release other investor related media communications
- Communicates quarterly and annual performance along with achievements with respect to business targets
- Present futuristic plans and communicates roadmap for achieving it

- Cross Functional Forum to assist in setting strategies and defining priorities
- Assist compiling data and information for reporting
- Assist in timely redressal of feedback from Board of Director and Management Committee

Annual Financial/ Non-Financial Performance Reporting



# Ethics, Transparency and Accountability

We understand that ethics, transparency, and accountability are a true reflection of good corporate governance. Deeply instilled within us are our Values, which guide us in our daily choices and decisions. It is our Values that ensures our commitment to ethics and integrity standards are embedded in who we are and everything we do.

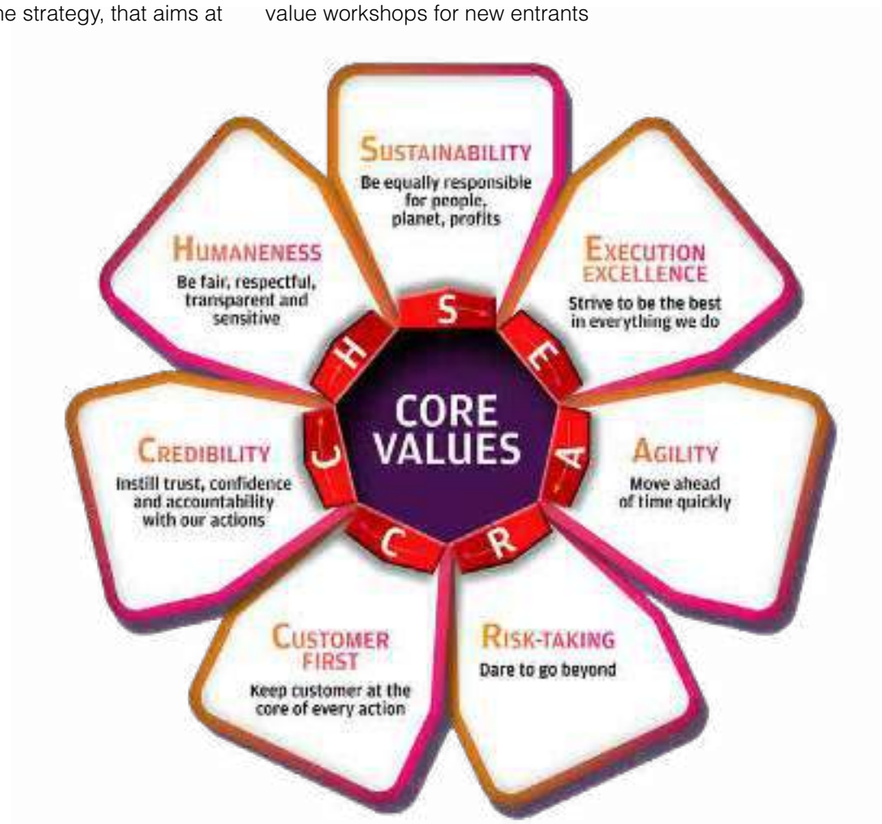
# Our Core Values

We cherish the formidable trust and relationship which we have created with our business partners and the business relationships along with it. The RPSG Group Values serve as a key catalyst for reaching the highest levels of ethics and integrity in interacting with the stakeholder groups. The Values are built upon seven pillars: 'Customer First,' 'Execution Excellence,' 'Credibility,' 'Agility', 'Risk Taking', 'Humanness' and 'Sustainability'.

As a responsible business, we embrace upon the triple bottom line strategy, that aims at positively impacting our people and planet while generating profit. These are therefore the key components of our journey in Powering a Sustainable Future. 'Sustainability' as a pillar is the recent addition to our list of Values. It has always been a driving pillar for ensuring long term value creation among our stakeholders and is embedded into our way of doing business. This also sets a benchmark and boosts our competitiveness in the market.

We imbibe our Values amongst our employees by organizing value workshops for new entrants and engaging with them through an interactive collection of short tales called 'Cherish' which elaborates our seven Values. The Core Value Championship Award, which is an integral part of CESC's flagship event, RP Sanjiv Goenka Group Foundation Day acknowledges employees who display consistency in demonstrating our Core Values

Additionally, a Competency Handbook is also made available to build a sense of consciousness amongst our employees to ensure the application of Values on daily basis.








# Anti-Corruption and Anti- Bribery

As a responsible business organization, it is very important for us to ensure that our employees are ethically and morally driven in line with our Values. To achieve the same, it is critical for each of our employees to showcase the highest standards of professionalism and honesty.

All our employees are subjected to abide by the Ethics and Code of Conduct ("Code"). The Code prohibits bribery and corruption in all forms including facilitation of payments. We have also adopted an Anti-Bribery and Anti-Corruption Policy ("Policy") to conduct the business in an honest and ethical manner. Both the Code and the Policy provides guidance for our employees to ascertain different unethical and illegal activities like insider trading, discrimination, harassment, anti-corruption, anti-bribery, and conflict of interest.

The Company Secretary and Compliance officer is responsible for overseeing the implementation of the Code and the Policy as well as monitoring the effectiveness of control mechanisms to ensure compliances related to anti-corruption and anti-bribery. We strive to implement systems and processes through ISO 37001 by 2030 to provide effectiveness in establishing, implementing, maintaining, reviewing and improving our anti-corruption and anti-bribery management.

Embedding anti-bribery and anti-corruption measures in our business has been a top priority. We ensure full compliance to the Code and the Policy by organizing periodic trainings for our employees which includes refresher courses and awareness sessions. All new entrants are made to understand and acknowledge the Code during their onboarding process. Our refresher courses and awareness sessions are focussed on familiarizing the possible scenarios around unethical activities and makes our new joinees cognizant of the available mechanisms to report any such potential or suspicious incidents that undermine the company's reputation.

Through the Whistle Blower/ Vigil Mechanism our employees are empowered to notify the management regarding suspected misconduct, frauds, bribery, corruption, or any other unethical misbehaviour without the fear of any disciplinary action or unfair treatment. The policy identifies the reporting responsibilities of our employees, of such incidents to the management without any hesitation. As on 31st March 2022, we confirm that we have observed no instances of corruption or bribery.

# Data Privacy and Security

Digitalization and information technology systems in our workspace have aided in our way of doing business positively across various facets. It also brings with it a suite of essential digital and cyber security risks in Powering a Sustainable Future. Thus, we strive to adopt the best practices and establish a sound governance structure to assess the potentially relevant risks, monitor the information systems & security controls and take preventive & corrective actions wherever applicable.

Cyber threats are events having the potential to adversely impact organizational operations (including functions & reputation), organizational assets, individuals, associated organizations & most importantly the nation, through compromise of an information system via unauthorized access, destruction, disclosure, modification of information technology related processes and/or denial of service.

Through the implementation of the Cybersecurity Policy and the Guidelines related to Customer Privacy we build trust in our relationship with consumers. The policies & guidelines are key enablers to future proof our business processes from potential breach of security measures and prevent misuse of consumer data.

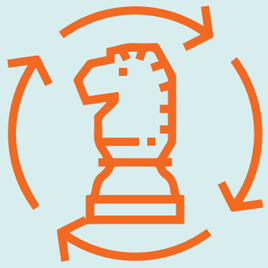
We uphold this trust and commitment through structured processes, enabled by the implementation of guidelines in the ISO 27001:2013 standard. The management system provides sound governance of critical risks at the data centres. Our targets for 2030, are designed to extend the implementation of ISO 27001 (ISMS) read along with ISO 27031, beyond the existing certification in the Data centre to other generation and distribution functions along with a phase wise programme for ISO 22301:2019 (Business Continuity Management System), thereby, leading to a unified compliance management programme. We are continuously working on Ministry of Power (MoP)/ Computer Emergency Response Team (CERT-In)'s recommendation of ISO 27001 certification, as well as preparing ourselves to comply with the Personal Data Protection Bill whenever enacted. We are committed to undertake atleast one cybersecurity assessment/ validation each year to review the control measures in place.

# Cybersecurity

Power sector is one of the seven sectors identified by the Government of India where identification of Critical Information Infrastructure (CII) is mandatory. The power sector guidelines provide common guidance to mitigate cyber risks. At CESC, we work closely with the Government nodal agencies CEA, National Critical Information Infrastructure Protection Centre (NCIIPC) & CERT-In (along with sectoral CERTs for distribution & thermal generation). We also map the cybersecurity guidelines of CEA, MoP when we undertake a cybersecurity assessment through a CERT-In empanelled auditor.

The cybersecurity programme is done in accordance with the five functions included in the NIST (National Institute of Standards & Technology, USA) Framework as given below:


To ensure the effective incorporation of our policies & procedures, we have a designated information security team comprising of Head-IT Security, CISO-Distribution and CISO-Generation along with a cross-functional team comprising of designated representatives from other functional units, to manage and handle all aspects related to cyber security. Structured training programmes are designed on creating awareness about the policy for security teams as well as for user departments, while incremental updates get notified for action from time to time either virtually or in person.



## Strategic steps

Every year, we undergo a rigorous cybersecurity assessment programme through Computer Emergency Response Team (CERT-In) empanelled assessors for all our processes and frameworks. During the programme, all our security systems, policies and controls are assessed and validated against applicable regulations and cybersecurity guidelines of CEA/NCIIPC. Every year, we proactively assess our own business environment and keep upgrading our security policies, processes, and tools both at our workstation and perimeter levels.

Through this assessment, CIIs are identified/reviewed and submitted to the NCIIPC for approval. Further a Cyber Crisis Management Plan has been formulated for both Generation and Distribution functions along with concrete Standard Operating Procedures (SOP) for management of crisis.

## Business Continuity Plan

Being in a dynamic environment, we assess our readiness for business continuity from time to time, through the following:

- Upgrading our DC/DR to take advantage of Hyper Converged Infrastructure, state-of-the-art 24x7 Network Operation Centre (NOC) & Security Operation Centre (SOC).
- Adoption of a global standard User Email system for Corporate use.
- Use of appropriate high availability Web Application Firewall (WAF) both at internal & perimeter levels for protection of internal & external-facing applications
- Exploring appropriate Cyber Insurance coverage with various insurance providers to assess and plan for the same accordingly.
- Mock drills as per the CMP (Crisis Management Plan) are practised in the Generation and Distribution divisions.

We confirm that we have experienced no breaches in information security or other cybersecurity incidents over the past three years.

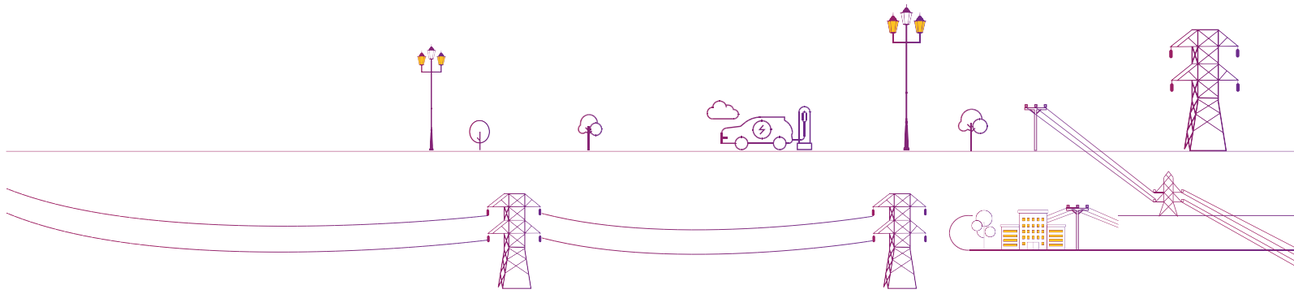
# Customer Privacy

We respect and protect the privacy of all individuals who entrust their personal information with us. Conscious efforts are taken by the IT Security Team and the Customer Relations team to assure sound privacy management in compliance with the applicable laws and emerging regulations such as the Data Protection Bill, when enacted.

Our privacy policy provides appropriate information on data collection, storage & processing practices and security measures to protect against unauthorized access, alteration, disclosure or destruction of the user's personal information and data stored in the online platform.

As covered under the policy, we seek consent from consumers before collecting any personal identifiable information such as the name, email address, age, gender, except in cases when the consumer specifically and knowingly provides such information on www.cesc.co.in. Also, we condemn sharing personal information to any third party without first receiving their permission.

We disclose that there have been no incidents concerning breach of customer privacy and loss of customer data in last 3 years.



# Creating value in the future: Intellectual capital

Sustainability is one of our Core Values, that fosters us to innovate. Both, sustainability and innovation are inseparable and go hand in hand in overcoming challenges and enabling us to lead the change in Powering a Sustainable Future. We at CESC, are open to innovative ideas for ensuring safe, cost-efficient, low carbon and reliable power.

The Apex Panel of Mentors for Knowledge & Innovation Management headed by the Executive Director (Distribution Technical) drives innovation in the Company. They are supported by the Innovation Council comprising of senior leaders to encourage, inspire and nurture young minds in various innovation and knowledge centric activities. We follow a three-pronged approach to innovation management.

### Identification of the Challenge

Through the insights gained by conducting audits and analyzing data, key challenges are identified. Challenges identified are prioritized based on the value added to the customer.

### Ideate Solutions

We follow mindful adoption / creation of technological solutions to address the challenges. Individuals are exposed to Original Equipment Manufacturers (OEMs) for building knowledge about the technology and customizing the technology to meet our needs.

### Assessing Feasibility of Solution

Identified solutions are assessed on three criteria- optimization of cost, value added to customers without increase in tariff and scalability.

# Creating value in the future: Intellectual capital

With a 123-year-old legacy, CESC's intellectual capital is reflected in our knowledge and capability, copyrights, patents, software, rights and licenses. Specifically, CESC avails a total of 16 patents, which are pending approval. Among the list of patents awaiting approval, are 6 patents that we submitted during the reporting period. This portfolio serves as a protection for us, in the markets we serve.

The numerical increase of our portfolio of intellectual capital mirrors the growing efforts targeted at enhancing identification and capitalization of innovation opportunities. Some of the identified opportunities for which patents were applied are as follows.

| Project Name | Description |
|---|---|
| An interface to fetch details of a consumer in an electric power supply organization | The "Metering on the Go" is a hybrid android app, developed indigenously by our In-house IT team, to make metering and consumer information available to our operational team at the convenience of a mobile app, on the go, with a view to bring data democratisation. The prior inspection reports, consumer history and usage pattern data provide useful insights to our meter inspectors at site. |
| Push notification in mobile application for protection and monitoring of power system | In the occurrence of a power system disruption, intelligent electronic devices (IEDs) deliver real-time information captured directly to the technical experts of the concerned department through mobile application instantaneously for further analysis and decision making, thereby reducing restoration time which in turn enhances customer satisfaction. |
| Protection transfer kit for feeder maintenance in a power distribution system | Protection Transfer Kit is used during preventive maintenance of distribution network where getting consumer interruption for such activity is very challenging and shutdown is not readily available. The kit also improves upon the operational efficiency by carrying out preventive maintenance of large numbers of feeders, in a short time span. Using this kit reduces the consumer interruption time substantially, saves revenue loss and increases system reliability. |
| Automated remote surveillance-cum-theft prevention system for low tension power distribution system | This low-cost system for real time micro-audit of consumer premise acts as a deterrent against pilferage attempts and significant loss reduction has been achieved in areas where this system has been implemented. Use of bare wires to siphon off electricity is negligible and has enhanced the safety of our customers. Moreover, the unavailability of free pilfered electricity has now ensured that customers are shifting to more energy efficient equipment. It has further improved the quality of supply to the relevant consumers. |
| Smart health monitoring system for transformers for electric distribution network | This smart health monitoring system for critical assets like transformers, station batteries, switchgear uses IoT (Internet of Things) based devices to monitor real time temperature, humidity, oil level, pressure, motor current, enclosure door status among other data points which empower the maintenance teams to ensure its operational healthiness, to avoid potential breakdown and outages through proactive interventions, to prevent asset damage owning to abnormalities and also to ensure safety of our people & customers. |
| A system utilizing an IoT device for sensing faults and telemetering distribution automation data | IoT based devices are installed for monitoring of Fault Passage Indicators of Ring Main Units which are not automated. In the occurrence of any fault, the device relays the signal to the Supervisory Control & Data Acquisition (SCADA) system, this assists in faster isolation of faulty section and restoration of power. |
| A system for automation of meter inspection activity for complaint management | Meter inspectors are provided with smart tablets with an in-house developed app to receive and analyze site information and subsequently submit their meter inspection report. This helps us to reduce delay in meter inspection process, address customer complaints quicker and significantly reduce paper consumption. |

| Project Name | Description |
|---|---|
| Compact Distribution Transformer | Distribution transformers have many accessories like HT fuse chamber, cable boxes, LT CFS chamber, metering kiosk, etc. which after assembly take a larger space and creates operational inconvenience. A compact transformer covers everything inside its enclosure making it smaller in size, safe to operate and aesthetically better. |
| Safe and efficient battery discharge set | To keep the station batteries healthy, it needs to be discharged once in two years and initially there was some crude method for the same. This new inverter-based battery discharge set sends back the discharge power to the grid, making it safe and efficient. |
| Substitution of natural river sand in concrete by using bottom ash of coal based thermal power plants | Bottom ash has similar physical and chemical attributes to river sand. The fine nature of bottom ash presents opportunities for substitution in concrete. A novel approach based on extensive research, laboratory and field trials was developed that allowed 70% substitution in non-structural and structural grades of concrete upto M-45. |

We aim at increasing the portfolio of innovations aimed at building a smart and resilient distribution network through several knowledge management sessions.

## Knowledge Management

The Knowledge Management team is responsible for promoting a culture of learning and innovation. The Knowledge Carnival organised over two days every year is aimed at fostering a culture of creativity and innovation involving fun and sharing. It consists of a Knowledge Fair where various departments of CESC showcase their innovations through models, videos, presentations and charts.

Further, the carnival provides a platform for prominent experts to conduct technical seminars and students from premier institutes to present their research paper.

Recognizing the efforts of individuals, select innovations and technical papers on improvement projects are published in our in-house journal- 'Eclectic' on a biannual basis. As part of our commitment for 2030 we aim at expanding our in-house research and development capabilities by staffing 25 employees dedicated towards accelerating innovation.


*Published copies of Eclectic magazine*



# Responsible Supply Chain

We at CESC, believe that a reliable, resilient and a responsible supply chain is essential for Powering a Sustainable Future. Our procurement practices are based on contractual agreements geared towards trust, transparency and collaboration. In addition to delivering the desired quality, suppliers are also expected to meet the highest environmental and labour standards.

We stand by our motto, "We Source Responsibly". We embrace this motto by applying a set of policies and processes to ensure our suppliers are fully compliant with applicable laws and adhere to the desired environmental and social

## 2030 Targets

**100 %**
of critical suppliers are screened on ESG criteria

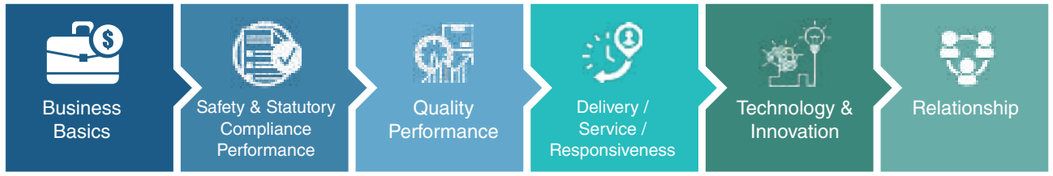
**> 80%**
80% of the procurement by spent is maintained for local suppliers

All our suppliers are expected to commit to the desired environmental and social standards and adhere to the Supplier Policy, the Quality Policy and the Responsible Sourcing Guidelines. Inbuilt systems and processes namely the E-procurement module, vendor engagement module, Quality Assurance portal and Supplier Performance Appraisal & Annual Rate Contract (SPAARC) enable us to systematically evaluate vendor bids, monitor supplier performance and ensure timely delivery of materials.

The Executive Director of the Materials division is responsible for spearheading our commitment to transform our supply chain into a reliable, resilient and a responsible one and providing updates on progress against targets to the Managing Director in the Management Committee Meeting. He closely liaisons with the Vice President of the Materials division to incorporate any feedback and recommendations of the Board.

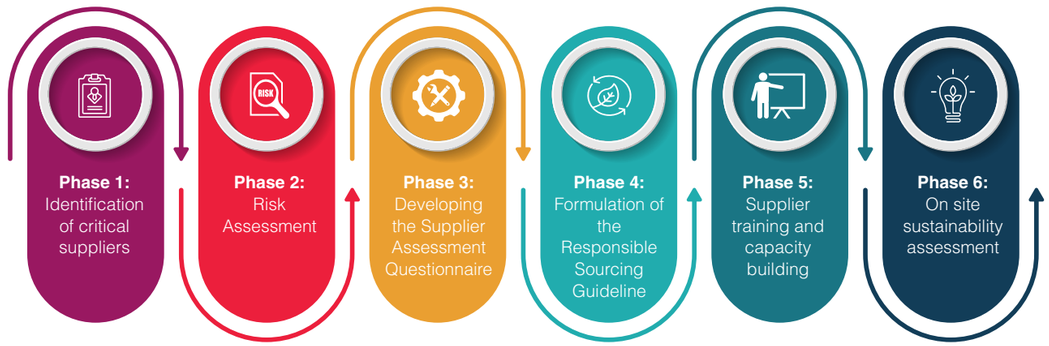
# Integrating ESG in Supply Chain

CESC's Materials Division applies a systematic approach in supplier selection, supplier assessment and strengthening the supply chain. Supplier assessment till date has been undertaken basis:




Integrating ESG considerations into our supply chain is essential to transform the supply chain into resilient, robust and responsible one. Aligned with our commitment, we aim to augment the concept of supply chain sustainability and reduce the negative externalities of business operations by instituting the triple bottom line approach in our upstream supply chain and encouraging our supply chain partners to follow the most appropriate environmental, social and governance (ESG) practices in their business operations.

With this intent we have initiated the journey of implementing the Supply Chain Sustainability Programme in a phase wise manner.




## Phase 1: Identification of critical suppliers

A plan is drawn to carry out the supplier assessment process. For the first stage of assessments, we have identified the critical suppliers based on business volume, criticality of materials and significance of compliance.

## Phase 2: Risk Assessment

Key ESG risks that pose a threat to the suppliers' business continuity and brand dilution are identified based on a desk review of the sectors they represent. The key risk areas include

- Bribery and corruption
- Environmental and social compliance
- Labour management
- Climate change
- Energy
- Waste Management
- Water Management
- Health and Safety

## Phase 3: Developing the Supplier Assessment Questionnaire

The assessed risks have enabled us to develop the assessment template. The template helps us rate organizations basis supporting evidence on their compliances to applicable environmental and social regulations, their proactiveness in measuring environmental and social parameters and implementing the industry best practices.

## Phase 4: Formulation of the Responsible Sourcing Guideline

The Responsible Sourcing Guideline has been developed with an intention to provide a framework and guidance for assessment and management of supply chain risks pertaining to environmental, social and governance domain. This Guideline provides a basic introduction as well as a simple approach to help suppliers dealing with power utility, electricity generation and distribution companies to manage business and relationships in a sustainable way, pulling through challenges and criticalities and avoiding potential risks.

## Phase 5: Supplier training and capacity building

Workshops were conducted to instil among suppliers, the importance of sustainability and the threat posed by the ESG risks to business continuity and brand reputation.Through these workshops, in future we intend to felicitate suppliers of their contribution to the environment and society parameters, as well as provide them a platform to share their success stories and exchange best practices.

## Phase 6: On site sustainability assessment

The suppliers are assessed by our internal process audit teams on a periodic basis. Process audit teams have been trained to undertake physical inspection of supplier facility, verify documents, assess suppliers based on the Supplier Assessment Questionnaire and monitor the status of corrective actions taken in the next audit.

During the reporting period, we have initiated this process. As a pilot initiative we have identified and assessed 20 such suppliers. The results of the assessments are as follows.

## Key Results

Based on the performance our suppliers have been categorized as follows

Gold

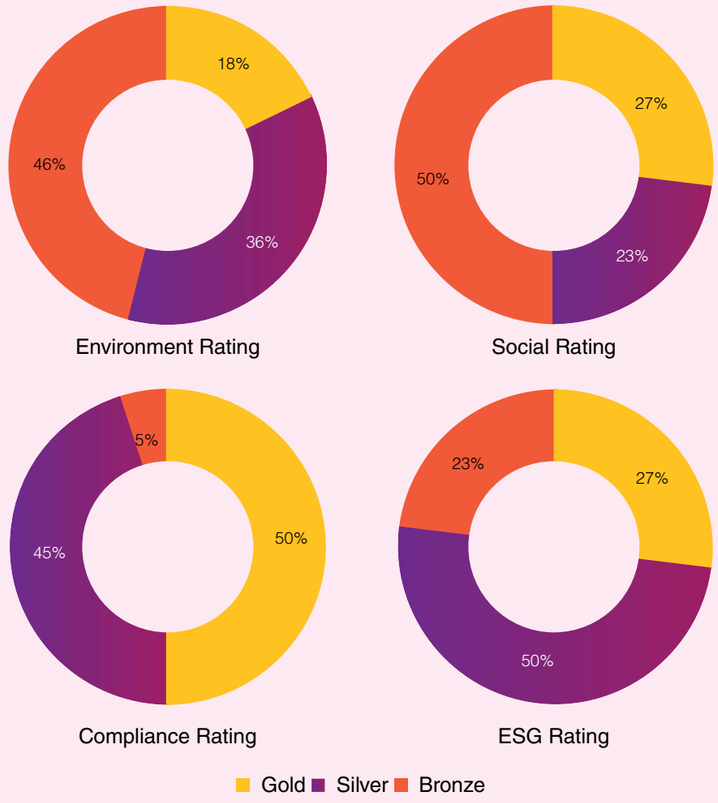
Performance Score
80 to 100

Silver

Performance Score
60 to 79

Bronze

Performance Score
Less than 60




We intend to use the learnings of the assessments carried out and increase the coverage to all critical suppliers by 2030.

# Supplier Diversity and Inclusion

While we integrate ESG considerations in our supply chain, our second objective is to make our supply chain diverse and inclusive. A diverse and inclusive supply chain not only widens the pool of potential suppliers but also creates economic opportunities for vulnerable communities. It stimulates new ideas and leads to innovation in product development.

The supplier categorization is represented in terms of the criticality to our business and the diversity is demonstrated by the proportion of MSME (Micro, Small and Medium Scale Enterprises) suppliers within our supply chain.

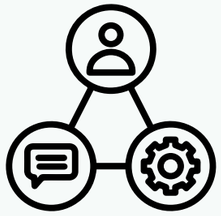
| Company name | Level-1 (Strategic Business Partners) | Level-2 (Mid-Level Associates) | Level-3 (Others) | Total Suppliers | % MSME Suppliers |
|---|---|---|---|---|---|
| CESC | 44 | 111 | 195 | 350 | 21% |
| NPCL | 15 | 74 | 47 | 136 | 89% |
| CESC Rajasthan | 15 | 53 | 39 | 112 | 82% |
| MPSL | 16 | 28 | 30 | 74 | 39% |
| HEL | 35 | 101 | 223 | 359 | 10% |
| DIL | 66 | 94 | 179 | 339 | 5% |
| CPL | 15 | 47 | 296 | 358 | 27% |

As part of our diversity and inclusion strategy we prioritize local suppliers, especially those classified under MSME to reduce our climate change impacts and bring agility to our supply chain to respond quickly to disasters. Local procurement is defined as purchase of any material/equipment. manufactured within India and any service provided from India. The proportion of local procurement by spend of CESC and its subsidiaries are provided below.

| Company name | % local procurement* |
|---|---|
| CESC | 84% |
| NPCL | 100% |
| CESC Rajasthan | 100% |
| MPSL | 100% |
| HEL | 85% |
| DIL | 95% |
| CPL | 94% |

*Excluding coal purchase

As we aim to maintain 80% of the procurement by spend from local vendors and service providers at CESC, there have been several efforts to aid diverse and local suppliers grow and sustain their business by carrying out joint product development and capacity building programmes. Illustrated below are some efforts where we have not only developed a homegrown supplier but also helped one of our long-term partners survive a financial hurdle.



## Creating Shared Value with our Suppliers

At CESC we value the relationship with all our suppliers. The trust gained over the years of relationship is unbreakable. We have forged this relationship to overcome several impediments to our business continuity and we intend to reciprocate by doing the same for our suppliers.

M/S Alcond Employees' Industrial Co-operative Society Ltd., a manufacturer of aluminum binding wires and various types of aluminum conductor steel reinforced cables has been our critical supplier since 2010.

After 2018, the supplier was facing financial distress and the future looked bleak as the supplier was on the verge of lockdown. In 2020, to sustain the vendor, we rekindled business relations by placing orders of large volumes.

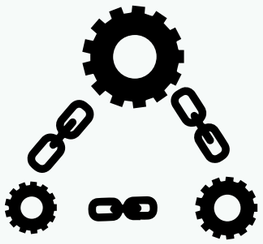
Last couple of years has witnessed a gradual financial recovery for the supplier with increase in business volumes.

## Empowering women in our community

M/S Mahila Samabyay Shilpa Kutir Ltd., a non-profit organisation located at Barrackpore works toward development and welfare of more than 80 differently abled women from marginalized communities.

Our relationship with M/S Mahila Samabyay Shilpa Kutir Ltd. traces back to 2003, when we first awarded a purchase order for handloom cotton dusters used by all our workers.

Today, we continue to create a difference to the livelihoods of these women by helping their business grow by four-fold over the last 3 years.



## Indianizing our supply chain

A 70 sq. mm overhead service kit comprises of four types of hardware accessories, out of which the suspension clamp was imported from Finland and other three type of items were manufactured in Noida by a certain vendor. Sourcing from the vendor was resulting in high lead time and the inventory for the kit was out of stock for most periods.

To mitigate the risk of procurement from a single source supplier, in 2021, M/s Classic & Co., a local Howrah based manufacturer was identified as an alternative. We re-engineered the materials and developed the capabilities of the supplier to manufacture all four type of accessories. Field trials undertaken by the Mains Department confirm the successful development of the supplier.

Through the development of the local supplier our lead time reduced to 1 month and reaped significant cost saving benefits.

# Material Efficiency

For a reliable and continuous power supply, use of resilient and safe materials are equally important to having a reliable, resilient and a responsible supply chain. The major products or materials procured by our distribution operations are given below.

| Type of Materials | Unit of Measurement | CESC Kolkata | NPCL | CESC Rajasthan | MPSL |
|---|---|---|---|---|---|
| Transformer oil | Lt | 1,40,900 | 27,720 | | 43,018 |
| LT Power cables | metre | 6,08,004 | 1,23,780 | 1,75,000 | 59,743 |
| LT Control cables | metre | 48,944 | 7,385 | 8,000 | 1,124 |
| Service cables | metre | 7,80,000 | 4,04,572 | 8,40,000 | 56,072 |
| LT AB Cable | metre | 70,340 | 7,479 | 10,500 | 13,249 |
| Optical fibre cable | metre | 52,000 | 24,163 | | 0 |
| EHV cable | metre | 2,000 | 87,202 | | 96,726 |
| HT Cable | metre | 1,00,683 | 7,187 | 23,500 | 1,476 |
| Pole | Nos | 5,130 | | 8,500 | 936 |
| Power transformer | Nos | 1 | 2 | 2 | 1 |
| Distribution transformer | Nos | - | 120 | 187 | 43 |
| Energy metre | Nos | 1,43,000 | 19,102 | 67,000 | 18,084 |
| Pillar Box | Nos | 1,000 | 281 | 155 | 223 |

At CESC, we believe that the availability of ecological goods and services are essential to economic growth. We recognize the limitations pertaining to availability of the ecological goods and services including the provisions for competitive uses and users of ecological systems as per existing environmental regulations. We address this scarcity by protecting and maintaining ecology and improving operational efficiency.

We monitor our waste stream by segregating and measuring the quantum of each waste generated in our operations and dispose it responsibly through authorized vendors. The waste generated in our distribution operations during FY 21-22 are as follows.

| Type of Materials | Unit of Measurement | CESC Kolkata | NPCL | CESC Rajasthan | MPSL |
|---|---|---|---|---|---|
| Ferrous Scrap | MT | 8.6 | 56.59 | 10 | 0 |
| Copper Scrap | MT | 4.815 | 1.10 | 1 | 0 |
| Aluminum Scrap | MT | 40.57 | 46.71 | 4 | 6.615 |
| Scrap Battery | Nos | 68 | 112 | 150 | 0 |
| Scrap Meter | Nos | 36,875 | 13,488 | 7,000 | 11,200 |
| Used oil | Ltrs | 1,64,820 | 10,640 | 0 | 0 |
| E waste | Nos | 14 | 1 | 0 | 0 |

At CESC, we embrace the principle of 3R's –Reduce, Reuse and Recycle to improve material efficiency. We identify alternative materials and seek opportunities in collaboration with our business partners to ensure our operations are environmentally friendly and resilient to climate change impacts.

## Reduce

Apart from digitalization of reading and inspection process, we have undertaken several measures to transform our operations into a digital workspace, thereby reducing paper consumption significantly. Some of these measures are as follows

- **Web-based job allocation portal-** The portal provides allocation of tasks to the concerned sections, records the responsibilities of the personnel allocated to each job and provides a mechanism for sectional heads to provide feedback on every completed job.
- **Web based GPS Tracking-** The application provides insights on available transport, allocates fleet for transport and monitors movement of logistics fleet
- **DREAMS Dashboard-** Creation and utilization of DREAMS Dashboard instead of the conventional DREAMS platform for tracking the SM/CM/PM jobs generated vis-a-vis jobs attended status which offers a much simpler, comprehensive and composite graphical presentation of the same
- Online quotation for distribution transformer refurbishment

### Paperless operations introduced in subsidiaries include

- HEL and DIL have implemented online NFA (Note for Approval) systems for maintaining records of all quotations, correspondences made with vendor and comparative sheets
- Thermal slip printer for receipts have reduced paper consumption

## Reuse

We monitor the health of our assets on an ongoing basis. In the occurrence of any deviation in the health parameters, we prefer to seek options for repair / refurbishment before replacement. Some of our actions in this respect are provided below

- Cut pieces of scrap cables are planned for reuse based on the cable length requirements in our operations,
- Distribution transformers are being refurbished internally as well as through the transformer repairers. Retrofitted Circuit Breakers are used to extend the service life, wherever possible.
- Off-circuit meters are duly segregated for effective functioning and are categorized under three methods (i.e., healthy, repair and replacement & scrap-non usable). The case study below is an illustration of the systematic process enabling an intelligent segregation of the off-circuit meters.

### Case Study: Scan based meter segregation & Re-use of Off-Circuit Good Meter

A scan based intelligent system has been implemented to segregate good and defective meters and also to ascertain if such meters are within or outside warranty period. The system was set up by the Testing Department, with a view to reuse and recycle good meters and claim replacement against defective meters within warranty period.

An outsourced agency has been engaged for carrying out functional checking / testing of such meters. The checking is done through an in-house mobile based application which is integrated to the back-end system. The application efficiently guides the tester to verify all important meter parameters/registers. Off-circuit electronic meters (of correct rating) in physically and electrically usable condition are included in stock though the mobile based application.

Through the establishment of this process defective off-circuit meters (within warranty period) are sent to vendors within a reasonable time for replenishment and the good off-circuit meters are reused in our operations.

Further the treatment of each meter is recorded on barcodes assigned for each meter. Any movement of off-circuit meters to/from the Testing Department is recorded through barcode scanning of the meters. The scanning process is integrated with the in-house software application, with built-in logics, for subsequent actions, based on several parameters & attributes. Upon scanning any meter serial number, the application is capable to decide the suggested/ proposed future action(s), like shipment to respective meter manufacturer for free replacement, scrapping, testing/checking. The software application also guides the supervisors the designated rack for storing.

Over 12,000 off-circuit meters have been reused till date. The major advantages reaped are:

- Significant reduction in the new meter procurement cost as a result of free replacement meters from vendors
- Reduction in lead time for segregation of assets thereby preventing physical damage and depletion of warranty life.
- Reduction in electronic and paper waste generation

## Recycle

Transformer oil is used as an insulating and cooling medium in transformers, switchgears and reactors. Non-recycled used oil has several detrimental impacts on the environment. Non-recycled used oil can contaminate water bodies and ignition of the used oil can result in emission of many life-threatening substances into the atmosphere.

Transformer oil reclamation restores the oil's properties to like new condition. The oxidation stability of the reclaimed oil is greatly improved when the process is combined with inhibitor injection. Thus the environment is protected as a result of reduced risk of oil spills and zero generation of waste oil that needs to be disposed of. Transformer oil recycled at CESC and its subsidiaries are as follows.

### Transformer Oil Recycled (Lt)

**1,64,820**
CESC Kolkata

**64,890**
NPCL

While we embrace the 3R principle, we are committed to using resilient and environmentally safe materials to ensure a reliable, safe and continuous supply of power to consumers. We collaborate with our suppliers to find solutions for alternative materials.

Some of the solutions developed and scaled up during the reporting period are detailed in the next section.

## Introduction of Resilient and Environmentally Safe Products

*Ester oil filled power transformer*

### Replacement mineral oil with ester oil

We are already using five power transformers with synthetic ester filled oil and twelve distribution transformers with synthetic or natural ester oil. Ester oil has several benefits over mineral oil

- Ester oil is biodegradable and provides an environmentally safer option for disposal
- Ester oil has higher heat withstanding capability and is less flammable as compared to mineral oil ensuring better safety

Installation of the dry type distribution transformers instead of oil filled transformers at sensitive locations like markets, hospitals and educational Institutes will ultimately address public safety

### Modification of 220 KV tiles

In earlier design, insertion of an earth rod through the mating surface of the 220 KV cable-protection tiles resulted in a cable fault. In collaboration with our business partner M/s Quality Precast, new designs were developed to arrest the lateral shifting of tiles due to overlapping mating surface, thereby preventing cable damage.

### Development of Galvanized Iron pole for Aerial Bunched (AB) cable project

In view of the severity observed during cyclone Amphan, CESC decided to covert the ACSR (Aluminium Conductor Steel Reinforced)conductors into LT AB cables for LT Overhead distribution line in the affected areas of the city and suburban area. To bear the additional load of the AB cable, the pole thickness was increased and was redesigned through galvanisation of higher-grade iron with the support of M/s Utkarsh India Ltd. The safety and the lifespan of the poles were enhanced with this development.



# Four Drivers re-shaping the Energy Landscape

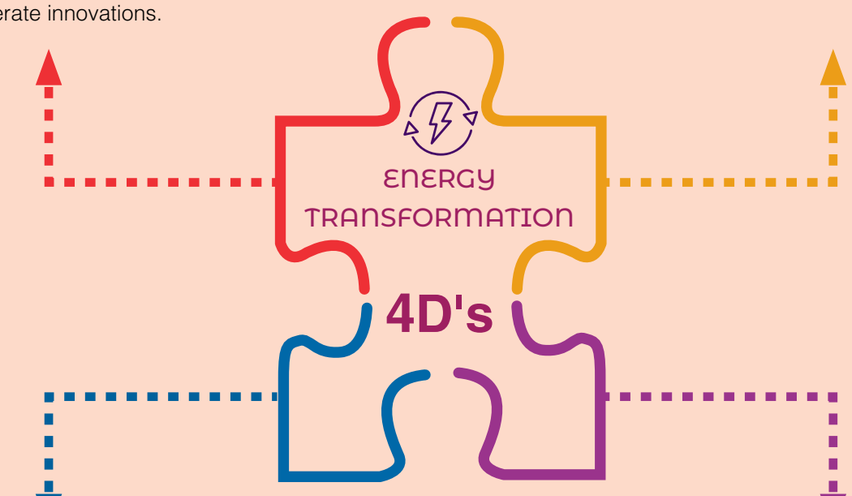
The demand for electricity is growing exponentially. This is attributed to the rise in global demands and economic growth, along with an increase in per capita energy consumption as a result of lifestyle changes. The concerted effort of electrifying automobiles and household appliances to replace fossil fuel further drives an increase in demand.

An important aspect of global energy dynamic is rise in electricity demand — led by Commercial and Industrial sectors requirement to comply with their Net-Zero commitments and hence reducing GHG emissions across the value chain has become one of the main priorities.

With time, network operation for a utility company is becoming more complex and challenging as the grid is shifting away from 'large power plants, centralized operation, unidirectional power flow and passive Customer' towards 'smaller power producers, decentralized operation, bidirectional power flow, Prosumer'. Furthermore, aging infrastructure coupled with continuous demand growth poses additional challenges. Understanding these challenges, we have adopted the 4-D approach viz. Digitalization, Decarbonization, Decentralization & Disaster Management.

**Digitalization**
Create greater values across operational business units, enhance Customer Experience and accelerate innovations.

**Decarbonization**
Climate change is on-going challenge and hence Decarbonization is an inevitable trend all over the world




**Disaster management**
Essential to meet our commitment towards continuous and uninterrupted power supply

**Decentralization**
Decentralization will promote increased Electrification

# Digitalization and Technology

Guaranteeing high level quality service and maximizing customer satisfaction has been our priority. Through enhanced customer service offerings and adoption of cutting-edge technology for reliable and continuous power our Distribution team creates an environment of trust, convenience and reliability.

## Enhancing Consumer Experience

We provide dedicated attention to the analysis of customer feedbacks, to understand customer perception, so that appropriate corrective actions are timely implemented without compromising customer satisfaction. To remain competitive and aligned to the market requirements, we conduct three levels of perception surveys each year.

**Annual Perception Survey with Benchmarking**
Face to face interview is conducted at the doorsteps of customers from different regions, consumption bands, tariff categories and socio-economic classification to identify the relative strengths and weakness of CESC vis-à-vis other players basis customer experience and loyalty

**On-call surveys**
Daily on-call surveys by third party agents for feedback on the ease, efficacy & behaviour of the personnel involved in delivery of services pertaining to supply restoration service, supply call centre service, meter fixing service, meter reading & billing helpline service

**Online digital survey**
Feedback on digital services availed from the website based on the customer's overall experience, ease of finding the exact service requirement and ease of completing the transaction.

### Case Study: Measuring Customer Satisfaction at NPCL

Listening to the voice of our customers is a key catalyst to improve customer-centric processes. Various engagements are planned during the annual calendar emphasizing on understanding their needs and expectations. We conducted 28 Virtual Customer Contact programs (VCCP) this year and like previous years observed the Consumer week with a theme of "Sampark, Samadhan evam Uttam Seva" to reinforce the importance of mutual support and further improve and align all customer-centric processes for a greater good.

The newly developed consumer experience portal collates consumer feedback received through the annual customer satisfaction survey and from various touchpoints such as but not limited website, mobile app and customer care kiosks to compute real time CSAT score for NPCL. External CSAT surveys are also conducted once every 2 years for the various service offerings to our consumers which provide us insights on the market requirements.

Based on dialogue and collaboration with our stakeholders, we anticipate market requirements to design and develop digital services and technologies.

During the last decade, we have imbibed numerous digital services and technologies that have assisted in creating an environment of trust, convenience and reliability. These include the following.

**01**

**Digital Office**

Plethora of digital services at consumers' finger tips, from the comfort & safety of their homes & offices

**02**

**CESC Mobile APP**

One Stop Solution Online Payment, supply off and billing complaint, AC application

**03**

**WhatsApp Bot**

Provide superior customer experience & deliver services on the platform of our customers' choice and daily use

**04**

**24X7 Call Center**

State-of-the-art IVRS, auto complaints, supported by GIS & algorithm

**05**

**Chatbot - Ebuddy**

Leveraging AI/ ML techniques to address customer queries without human interventions

**06**

**Social Media (Sentiment Analysis)**

FB, Twitter, Instagram, Linkedin Online Reputation & social media listening for better customer service

Through digitalization and technology, we aim to constantly improve the channels and methods by which consumers can connect with us and monitor response time for complaint resolution and query handling. Aastha, a vernacular Voicebot is one such initiative evolving from our past learnings.

## Case Study: Aastha, a Multilingual Voicebot

Aastha, is a one-of-a-kind initiative, launched during the reporting period aimed at enhancing customer experience. The digital voice assistant, enabled with Artificial Intelligence (AI), Machine Learning (ML) & Natural Language Processing (NLP) capabilities, is integrated with the existing Customer Relationship Management (CRM) & Outage Management System to ensure quick & uniform assistance to their customers.

The VoiceBot independently carries out conversations with customers, in the language, of choice of the customer to provide them necessary information regarding outage related issues or register their complaints. By doing so, we became the first power utility, in the country, to introduce a humanoid providing voice-based assistance to consumers in regional language apart from English and Hindi via. the CRM for outage management.

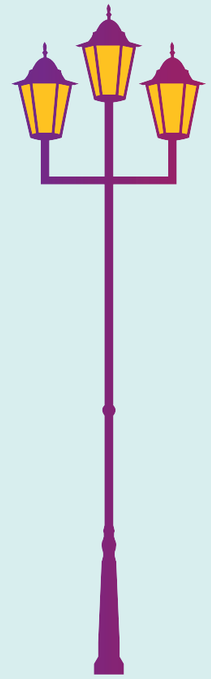
Not just tones and dialects, the VoiceBot is able to decipher words like voltage fluctuation, no power, power cut, load shedding, that can be inter changeably used in case of power outage. Another advantage of the VoiceBot for our operations is the elimination of wait time when call centre executive is busy, which is achieved through the transferring of calls to the humanoid. While the Interactive Voice Response (IVR) system will continue to function, consumer calls will now be transferred henceforth to Aastha, instead of a call centre executive. This initiative is a proud moment for our Company, marked by the words of our Managing Director, Mr. Debasish Banerjee.

*"Digitalisation is one of the pillars towards a Sustainable future for a better planet & it's people. A vernacular Voice Bot embedded with AI, ML and NLP creates a humanoid with human like seamless communications for enhanced customer Experience. This enables the organisation to move up the learning & innovation curve for delivering meaningful end use applications in larger good"*

- Mr. Debasish Banerjee, Managing Director (Distribution), CESC.

## Saathi, AI chatbot at NPCL

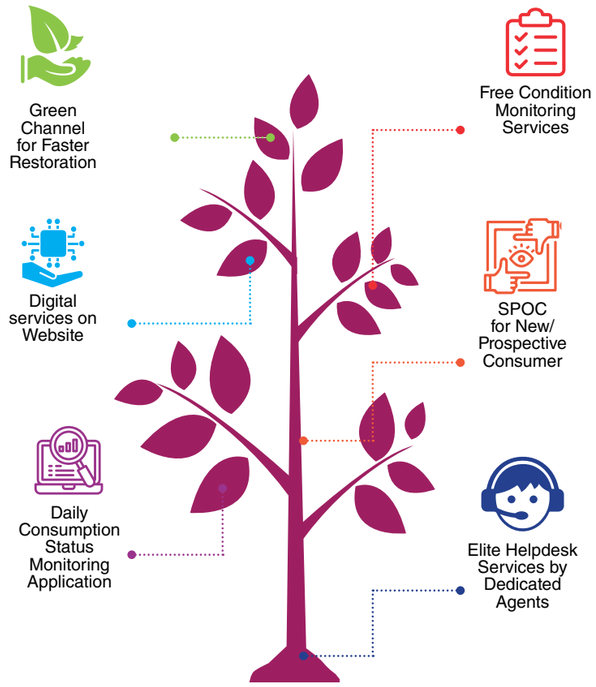
"Saathi" is NPCL's homegrown digitally driven AI chatbot. Through the chatbot, we provide our consumers with a plethora of service offerings such as but not limited to online complaint and request registration, bill downloading and online payment of estimates. The call centre aided by an Interactive Voice Response System (IVRS) system, enables the consumer to register any complaint or query anytime anywhere from the comfort of their homes. In the upcoming reporting period NPCL has also developed plans for menu-based solutions as part of the chat functionality which will improve accuracy and increase one more channel for directly interacting with an agent.



Today consumers have multiple avenues for raising complaints based on convenience and from the comfort of their home and offices. These include voice calls, docketed complaint letters, Queue Management System for walk-in consumers, social media, website, SMS, email, CESC Application, WhatsApp and chatbot.

Additionally, for our premium consumers, we have tailored a customized range of value-add services. These include assisting our consumers through

- Dedicated Key Accounts Manager (KAM), responsible for retention and growth of the consumer by optimizing value and achieving mutually beneficial goals
- Green channel for faster restoration of power
- Daily consumption status monitoring through dashboards
- Free condition monitoring of plants & equipment on request and sharing of findings for appropriate corrective actions at their end.
- Elite Help Desk to cater to and provide special attention and support for timely resolution of issues




Our range of digital services also extend to enhancing digital payments

## Multi-Channel Online payment

### Almost all modes of Digital payment are available


*Mobile Wallets*

*Website & Mobile App*

*Bank transfer*

**Target 2030**

**>90%**

of the payments made will be from digital platform

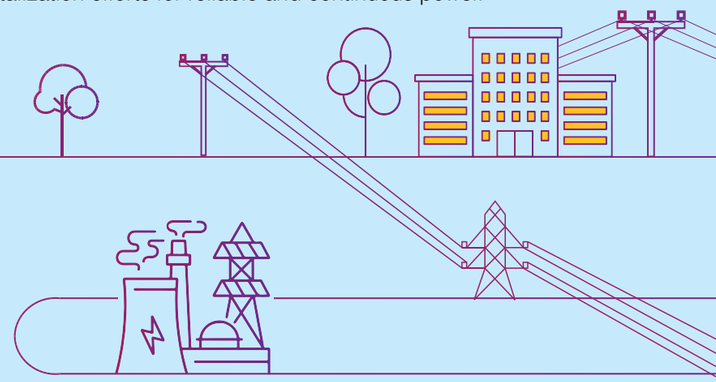
As a part of the mass-movement towards creating a Digital India CESC has been relentlessly pursuing upon multiple initiatives to enhance digital payments. As a part of such initiatives, CESC has been introducing easy and user-friendly methods of online bill payments, with an array of options such as mobile wallets, debit/credit cards, net banking, ECS, NEFT/RTGS, auto pay, Bharat QR & UPI.

CESC always believes in creating extra-ordinary user experience and for this purpose have started accepting online payments against bills since more than a decade back. To improve user experience, we are absorbing convenience charges, adding secure payment gateways and popular payment wallets such as Paytm, PhonePe, Amazon Pay amongst others. In addition, we have also engaged multiple e-Zones spread across our entire licenced area to ensure ease of digital payments for our consumers.

This has not only improved the overall user experience but has also increased the online payment penetration. Over the last 5 years we have witnessed our online payment penetration increase from 20% to 71%. For NPCL and CESC Rajasthan the online payment penetration is 86% and 62% respectively. At NPCL, a lucky draw was organized online for domestic consumers who were consecutively paying online since April 2021 to promote the Go Green initiative, where winners were suitably rewarded.

In this backdrop and with the greater goal of improving the online payment penetration further to 90%, we are targeting to expand on options in their digital ecosystem.

While integrating digitalization and technology for enhancing consumer experiences, we take measured approaches to introduce and scale up our digitalization efforts for reliable and continuous power.



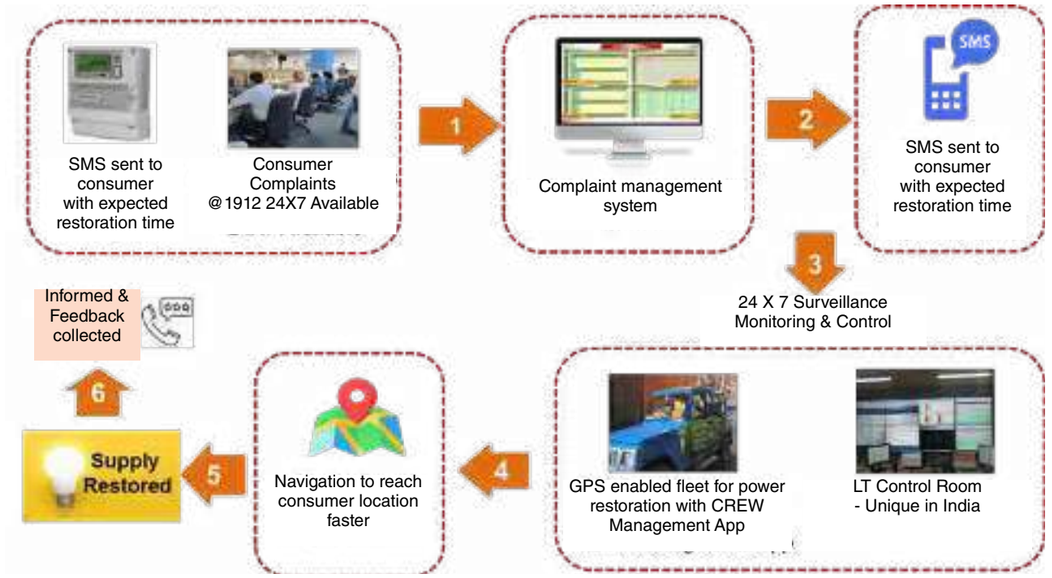
## Case Study: Dedicated consumer services at NPCL

We at NPCL, are constantly evolving our services with the changing trends, externalities and demographics in Greater Noida area. To render uninterrupted services to our consumer, we have adopted the best practices especially during the Covid-19 Pandemic. The following practices has enabled our integrated customer care center to receive an average google rating of 4.3.

| Measures during COVID-19 Pandemic | Measures enhancing customer experience |
|---|---|
| Inhouse printing of Consumers electricity bills | Online Application registration and status check |
| Implementation & Go-LIVE of 2-Way SMS based services for consumers to register complaints, avail information & check status | Dedicated Consumer Services tab on company's website |
| Implementation & Go-LIVE of WhatsApp based services for consumers to register complaints, avail information & check status | Decentralized Customer Care Office at Techzone-4 |
| Delivery of Bills through SMS with seeded link of Bill | Standardized Application forms & Document Checklist |
| On request, collection of cheques from the consumers | Subject Matter Expert at each Customer Care Desk |
| Customer Care Office Queue Status provide real time status of consumers traffic at Customer care offices. | Dedicated Consumer Week for consumer awareness, on-spot resolution for consumer concerns, etc. |
| Seventeen counters were made operational ensuring proper social distancing with minimum queue time. | Customer Contact programs with consumers |
| Installation of Retina Scanner for Temperature scanning at Customer care office | Proactive SMSes / Emails to consumers for improving awareness on consumers centric activities |
| Hand sanitizer installation at all offices for consumers & employees | Creation of NPCL YouTube Channel with videos for consumer awareness |
| Zoono at all offices specially for Covid-disinfectant spray | Implementation of 24/7 helpline Kiosk at 7 decentralized locations for consumers to log complaints, and view and mail monthly bills which has eliminated human intervention and waiting time |
| Screening through Thermal Gun in all offices for temperature scanning | |
| Visitors form for entry at reception for Covid checklist | |
| Sodium Hypochlorite Spray for outer area in Covid | |

## Reliable and Continuous Power Supply

We at CESC are committed to providing our consumers 24*7 quality and stable power supply throughout the year, however unexpected and un-anticipated power outages due to faults seldom occur. It is our responsibility to detect such outages and restore power at the earliest.




To uphold our promise to consumers, we have implemented the intelligent outage management system.

### Step 1: Outage Detection

Not all consumer premises are connected to smart meters which will enable us to detect outages remotely. Hence, we had to rely solely on consumer complaints to get to know about such outages, delaying the entire restoration process. Moreover, such docketed complaints had limited information regarding the scope and extent of outages, hence in many cases multiple visits were required by different sets of teams to correctly ascertain the cause and then rectify it, delaying restoration further.

To improve this situation, we decided to implement a novel outage detection system using its AMR infrastructure. The distribution transformers and HT consumers, scattered throughout the licensed area, have meters retrofitted with modems which are able to send outage and even restoration alerts to the utility. Modem heartbeat feature was further used to improve the Outage Defection System.

### Step 2: Customer Relationship Management System

All complaints received are docketed in our CRM system and relays the message to the LT control room engineers who dispatch the mobile field crew. An SMS is sent to concerned consumers regarding the occurrence of the fault and the expected restoration time. Implementation of Outage Management System application

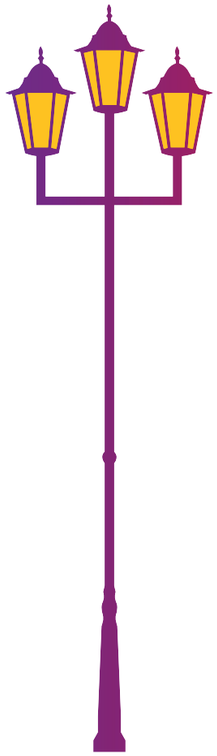
synced with SCADA provides real time information regarding outages. Any delay with regards to restoration of supply is flagged in the CRM dashboard, which is monitored 24x7 by LT Control Room Engineers, who expedite the supply restoration.

## Step 3: Crew Mobilization and Outage Restoration

The HT & LT Command Centers backed up with GIS technology, enable quick mobilization of gangs through Crew Management App along with GPS tracking to quickly attend the affected places. Once the supply restoration is completed, the call center agent calls back the consumer and reconfirms about supply restoration.

The process has enabled faster restoration of supply owing to timely detection of outages resulting in reduction of truck-rollout due to better situational awareness and improved transparency in operational KPI measurements.

While we ensure our responsibilities duly meet customer expectations, we remain sensitive for any prolonged interruptions. Essential & important utilities like hospitals, pump houses, Government buildings & offices are assured uninterrupted power. Remotely operable motorized Ring Main Units (RMUs) equipped with communication infrastructure have been installed at these premises providing multiple supply connectivity options that ensure faster restoration.



### Case Study: CESC's preparation to avoid any outages during Critical events

Elections, examinations, vaccination programmes and festival celebrations are significant days of every persons' life. We at CESC, uphold our commitment by ensuring uninterrupted ensuring the events are conducted in a seamless manner.

A master list of the centres undertaking the event is prepared and their corresponding supply points are mapped.

Condition monitoring is done at corresponding supply points at regular intervals and are given 'Non-sheddable' status. Network isolation points are re-aligned, and automation of network is introduced at key points for faster restoration.

In the occurrence of any outage dedicated region / district wise nodal officers and centralized monitoring is deployed to ensure immediate response during outage & they are in co-ordination with competent administrative authority.

At Kolkata city, during Durga Puja all plant, equipment and network are thoroughly maintained and kept ready to ensure uninterrupted power supply. Modern smart network through automation is implemented for quicker restoration. More than 200 emergency supply restoration vans, 100 repair teams and 6000 employees are deployed at different strategic locations, whilst a special 24x7 Control Room is in function during festival days dedicated for Puja Organisers.





## Preventive to Predictive Maintenance

Focusing on "Zero Downtime" for further enhancement of operational efficiency we have adopted several state of the art technologies for predictive maintenance. These include self-healing network, Remote IoT based monitoring of critical assets, drone-based monitoring of transmission infrastructure and pan tilt motor mounted thermal cameras for monitoring of substation assets.

## 1. Self-Healing Network

**For 33kV Consumers:**

Taking decision making to the edge, intelligent Programmable Logic Controller (PLC) based decision making solution, riding on (IEDs)/ Remote terminal Units (RTUs) have been have been introduced for key 33kV consumers for intervention free automatic restoration of supply from adjacent ring network in the blink of an eye, following any power outage.

**For 6kV & 11kV Consumers:**

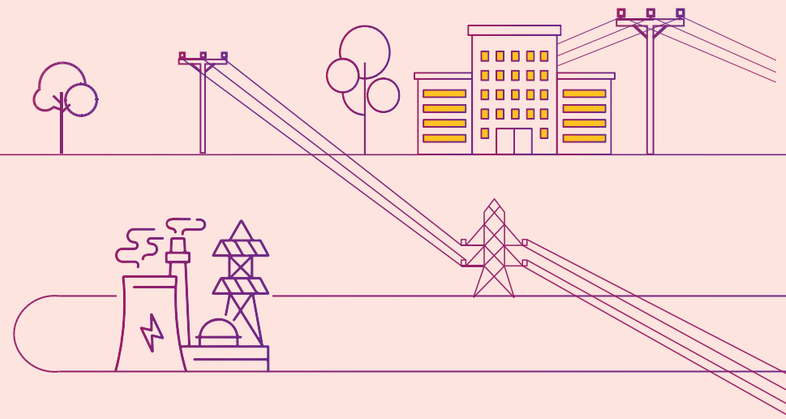
Automated RMUs for some key consumers have also been equipped with edge computing capabilities so as to intelligently restore supply locally, within seconds, without any manual interventions, should there be any outage of supply from one of the two feeding points of the ring network.

**For LT Consumers:**

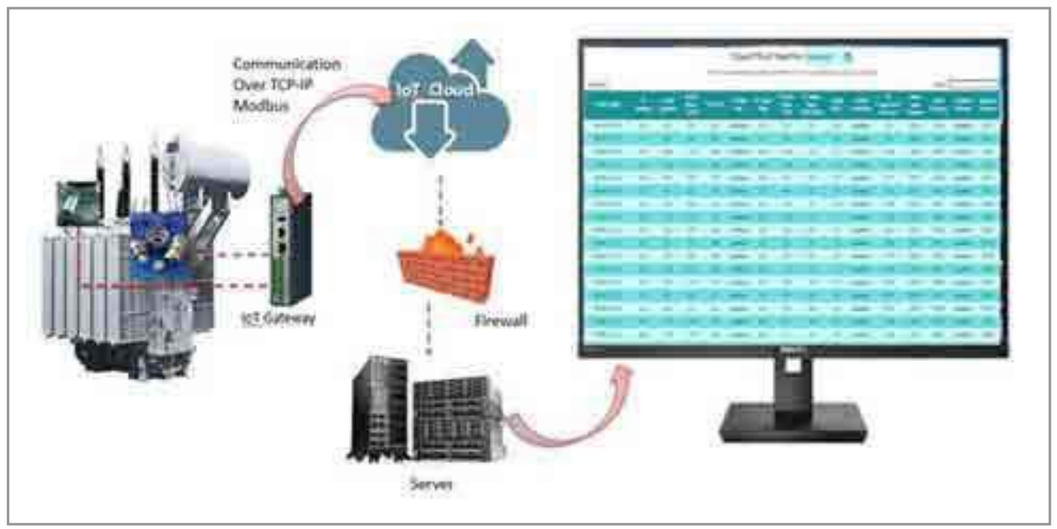
LT changeover equipment has been installed for select LT consumers having dual feeds for automatic (intervention free) changeover to the alternate supply point, in case of power interruptions.

**For Substations:**

Similar self-healing functionalities have also been introduced with existing Automation Units (RTUs) for such intervention free automatic quick restoration of bulk loads of substations too.



## 2. IoT Sensor-based Condition Monitoring of Transformers




IoT based sensors are being installed in transformers for capturing parameters, like temperature, humidity, oil level, motor current and door status, ensuring healthiness of our assets. A damage to any transformer, due to overloading, insulation failure and even over heating of windings due to internal issues will entail hundreds of consumer power less for a prolonged time, something no utility desires.

The parameters are reported wirelessly to the home-grown software using Internet of Things (IoT) over lightweight MQTTS transport technology and the data is made available in real time, in graphical as well as tabular form through a dashboard.

The improved life of assets, due to timely predictive maintenance, and prevention of potential faults & outages has a positive impact for the environment and society.

## 3. Drone based monitoring of transmission infrastructure

With technological developments across the world, services of UAVs (Drones) are sought more often in transmission line maintenance across the globe. In CESC, drone related services are being used for:

- **Transmission corridor mapping**
- **Health assessment of towers and conductors**
- **Monitoring & supervision of maintenance works**
- **Thermographic scanning**

## 4. Pan tilt motor mounted thermal cameras for monitoring of substation assets

Thermal imaging of all electrical joints is done once a year or as per requirement with thermo vision cameras to identify high contact resistances by recording the hotspots followed by attending to the critical ones identified at the earliest.

*Pan-tilt thermal camera*

## 5. Punctured Insulator Detection Test:

PID or Punctured Insulator Detection Test of all the insulator strings connected to the 220/132 kV lines is performed once in every two years to identify any faulty insulator disc by recording the flux distribution along each insulator disc and depending on the criticality, replacing the faulty items.

## 6. Measurement of tower footing resistance:

The tower footing resistance of each tower has a significant influence on the performance of the transmission line. A large number of tripping of the transmission lines occur because of back-flashover across the insulator(s) during lightning transients. The lower the tower-footing resistance, the lesser will be the magnitude of overvoltage across the insulator(s) and hence, the back-flashover rate. This is measured with the TFR meter once in every two years. The resistance should be as low as possible. In case the specified value of 10 ohms is exceeded, remedial steps are taken to reduce the same.

## 7. Extended Reality: Augmented Reality (AR), Virtual Reality (VR) and Mixed Reality (MR)

We have mapped our New Cossipore and Park Circus Substations in Kolkata using XR technologies. With MR application, an engineer is able to virtually enter a substation with the click of a button and collect real-time data such as live current and voltage. Augmented with real time information about the substation, the engineer is able to investigate the fault by viewing the fault analyser and receive the disturbance records live on the mobile for analysis and restoration of network, without having to physically be present at the station.

Also, with Simultaneous Localization and Mapping (SLAM) technology, virtual placement of equipment viz. 33 kV RMU, LT pillar box, meter arrangement at site is possible utilizing the in-built camera of mobiles/ tablets. It helps the user to anticipate the probable issues that may arise during installation of equipment and also enables to check if adequate clearances are maintained in all sides of the equipment. Hence, it helps in faster & effective decision making, manpower optimization and increasing the productivity of the workforce at site.

# Digitalization and Technology Initiatives of NPCL

1. Change Detection of two time period imagery- Machine Learning / Deep Learning model has enabled automation of the process for calculating temporal changes and automatically generating vector data by using satellite imagery and drone orthomosaic imagery. The changes detected by the software algorithm ensure readiness in GIS for updated land parcels which are required for various business processes and promote better decision-making.
2. Automatic Theft Detection - A Theft Detection Model has been developed for automatically identifying the potential theft cases by detecting electrical wire on the top of the buildings from the drone orthomosaic imagery using the Deep Learning Module.
3. Smart Prepayment Meters for societies- As per the state regulations all buildings were required to have a multi-point connection system. The buildings however had several challenges, wherein the DG supply was through a single cable and there were space constraints for laying electrical infrastructure needed to segregate DG supply and Mains supply. To resolve these challenges, suitable technologies were adopted, and a Society / Resident Welfare Association (RWA) was formed to manage DG supply related requirements.

   At the same time, a Dual register Dual recharge Pre-paid Meter (DRDRPM) was developed and an Automated Metering Infrastructure (AMI) for two-way communication was integrated with existing IT applications, which enabled real time monitoring and optimization of electricity consumption through the Multipoint App. The technology also makes available to customers daily, monthly and comparative reports for transparency, sets custom alerts and notifications for low balance- and also provide customers with multiple payment options.
4. Field Force Automation (FFA) provides the necessary tools and processes to support and empower employees and contractors and improve their productivity. It improves the co-ordination of field / mobile workers along with supervised monitoring and guidance from a centralized location and facilitates onsite crew as well as the supervisor with information on aspects such as but not limited to operational data, job status, crew availability.
5. NBIoT modem- NB-IoT (Narrow Band Internet of thing) is a communication technology that enables seamless remote data transfer in the occurrence of high mobile data or voice channel usage in our network. Thus, the technology facilitates us in Remote Meter Reading (RMR) applications and provides significant benefits in low self-consumption of power, faster data transfer, improved efficiency and reduced communication and overhead cost
6. Virtual Reality technology implemented at our corporate office in KP-4 and Customer Care Centre at KP-1 provides the user an interactive and immersive experience. The technology providing a virtual walkthrough of the complete office building, various facilities, and services offered to the consumers. At NPCL we have leveraged VR for imparting training on 'Distribution Transformer Maintenance'.
7. Drone based vegetation management enables us to remotely map the overhead network which is intruded with excessive vegetation and subsequently analyze the height of the network vis-à-vis height of vegetation for pruning.

While we ensure reliable power supply by preemptively managing faults in our downstream value chain, we recognize the challenges in our upstream value chain as well and have implemented Emergency Restoration Systems.

# Disaster Management

As climate change impacts intensify, cyclones and floods have become a common occurrence in several states in India resulting in widespread destruction of life and property while displacing several people from their homeland.

Coming off the heels of the super cyclone Amphan in Kolkata, we geared up our organization wide readiness to face and mitigate such adverse challenges.
To mitigate the challenges, a disaster management plan and a comprehensive set of standard operating procedures for pre, during & post disaster activities have been prepared for each department with guidance of the top management. A three-layered governance structure comprising of ADMG (Apex Disaster Management Group), CDMG (Central Disaster Management Group) and NDMG (Nodal Disaster Management Group) with defined responsibility matrix have been tasked to oversee the execution of the plan. This plan entails a 3-tier approach focused on communication & coordination, redundancy enhancement and resource augmentation to ensure adequacy of preparation during not only cyclones but nor'westers, floods and earthquakes. The case study below showcases the necessary arrangements that were put to effect by us to manage recent landfall of cyclone "Yaas".

## Setting Global Standards for Reliability: Success over Cyclone Yaas

Super cyclone Yaas made landfall near Dhamra port, about 20 km south of Balasore in Odisha on 26th May, 2021. The cyclone moving at an average wind speed of 140 kmph caused widespread damage to the coastal districts of East and West Midnapore, North and South 24 Parganas under West Bengal. The effect was compounded with high tide in the river Hooghly at around 9.15 AM on 26th May, 2021 which resulted in flood inundation in many low-lying areas of Kolkata, Howrah and their suburbs.

### Communication and Coordination

We maintained close coordination with India Meteorological Department (IMD), Kolkata for hourly weather reports over a dedicated WhatsApp group which were circulated amongst key officials and the operations team for taking appropriate preparatory measures. Consumers were notified via SMS, electronic and print media and tableau movements of the possible interruptions in supply and the safety precautions to be taken. Special phone numbers were released for direct communication with our call centres in registering complaints, providing information on danger due to electrocution/ fire hazards/ water logging.

## Preparation for Cyclone Yaas

Adequate arrangements were made for ensuring proper health of all vital electrical installations, plant and equipment through status monitoring and condition monitoring. Massive de-vegetation drives and pruning of tree branches across the overhead network area with local administration and public representatives were taken up before scheduled landfall date. For all emergency establishments like pumping stations, COVID-19 hospitals and quarantine centers, real time checking and monitoring of network automation features for automatic restoration through standby supply was ensured. Further, taking the lessons from our earlier experience during cyclone 'Amphan', any probabilities for tripping of generating stations and grid disturbance were minimized by deploying a prompt restoration plan, updating and validating the list of HT storm feeders that feed the areas of inundation for discontinuation of supply before cyclone and restoration on receding of water in the respective areas.

## Resource Mobilization

Emergency supply restoration gangs were strategically placed with the vehicles loaded with essential materials at decentralized locations for quick deployment while call centre infrastructure and consumer handling resources were ramped up. Major support services that play a vital role in synergizing our operation during the disasters were identified and their availability was ensured. These include resources for IT systems, security arrangement and maintaining communication channels. Arrangements were also made for manpower enhancement to tackle situations in the aftermath of cyclone 'Yaas'.

Additional stocks of vital raw materials and fast-moving spares like poles, conductors, fuse wires, single core cables were adequately maintained beyond safety stock for quick power restoration. Care was taken to ensure availability of adequate safety PPEs and safety equipment for each gang.

## Aftermath of Cyclone Yaas

Yaas brought with its intense storms, incessant rainfall, inflicting damage to life and housing property, uprooting several trees and street lighting poles leading to roadblocks and flooding the communities. The super cyclone also inflicted devastating damage to the region's electricity infrastructure.

## The Restoration processing

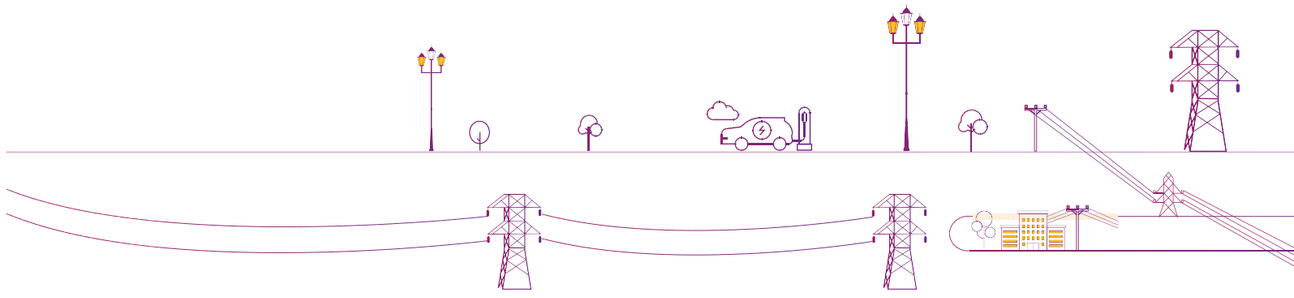
In the aftermath of the cyclone, almost all upstream network (EHT/ HT Network - 220 to 6 KV) which were kept off during the storm was running normally under the thorough supervision of engineers from System Control/ HT command station. This upstream network coupled with SCADA system, provided network visibility and control for achieving minimal downtime.

Existing decentralized emergency control rooms for real time monitoring and management of power supply restoration facilitated the overall emergency response process. The control rooms used available sensor based IoT platform and drones for online health monitoring and predictive maintenance of the Network & Equipment to ensure uninterrupted power supply (24X7). HT & LT Command Centers backed up with GIS technology, enabled quick mobilization of gangs through Crew Management App along with GPS tracking to quickly attend the affected places. The priority was to promptly restore power for healthcare facilities and major drainages within 30 mins through RMU automation.

These efforts were effectively supplemented by the support from the police and municipal authorities to enable structured and systemized power restoration. The progress of area wise power restoration process was communicated daily on newspapers and news channels.

Our preparedness, coordination and timely as well as apt communication were well appreciated by the highest levels of the Government, Ministry, Police & Municipal Bodies. To further strengthen our disaster management preparedness and increase our disaster coverage to man-made disasters like major fire, failure of critical equipment, cyber-attack, crowd/mob attack, bomb threats, terrorist attack, drone attack and strike/ sabotage we are in the process of preparing a crisis management plan.

Apart from ensuring reliable power to consumers digitalization and technology aids our ability to achieve low carbon and safer power. The upcoming sections of this report will provide you insights on the different applications we have leveraged in this journey of Powering a Sustainable future.



## Case Study: Emergency Restoration System:

Majority of the load demand of CESC are being met by transmitting bulk power from our generating stations at Budge Budge and Haldia through various 400/220/132 kV transmission lines. In the event of tower collapse sequel to an unprecedented disaster situation, restoration of supply by erecting new towers takes much longer time which negatively impacts our economic and social value creation. With a target of faster restoration of supply during such conditions, ERS (Emergency Restoration System) towers are used which takes much lesser time to restore supply on temporary basis.

Thus, the ERS has several advantages like:

a) Saves time and cost for rebuilding/reinstallation of the affected towers

b) Resolves ROW (Right of Way) issues which is critical for examining during installation of transmission towers/lines

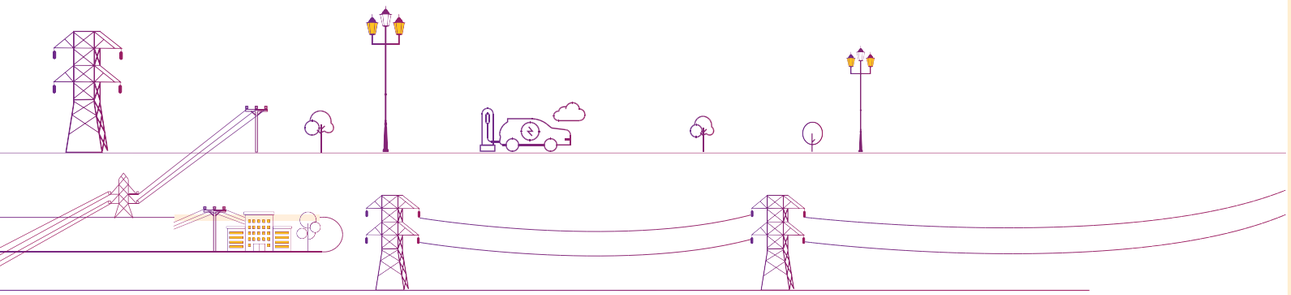
c) Provides convenience in mobilizing the whole system to the desired location, specially affected by the disaster, given the basic structure is made of modular aluminium of high strength to weight ratio

d) Provides flexibility for orientating in any direction as per requirement

# Decentralization

Decentralization of electricity generation systems is expected to unfold disruptions that will impact multiple sectors and stakeholder groups, with clean and green energy at the centre of this transition. Clean energy transition requires high capital investment towards addition of utility scale solar PV and cost-effective energy storage solution.

Distributed generation specifically distributed solar power generation is tipped as the future for scaling up renewable energy and will be a key contributor to meet the increasing share of electrical demand. We, at CESC recognize this as a tremendous opportunity for electricity distribution companies for turning disruptive threats into opportunities through new service oriented and value driven business models. Micro-grids is one of the technologies that will act as gamechangers in our journey towards Powering a Sustainable Future.







# Leveraging Micro-grid for Sustainable Power

*Micro-grid: 100 kWp Floating Solar Plant commissioning (along with Floating Solar & Battery) work in progress at Chakmir 132/33 kV S/S*

Microgrids are a growing segment of the electricity industry, representing a paradigm shift from remote central station power plants toward more localized, distributed generation—especially in cities, communities and campuses.

The power to isolate from the larger grid makes microgrids resilient, and the ability to conduct flexible, parallel operations permits the delivery of services that make the grid more competitive. By “islanding” from the grid in emergencies, a microgrid can both continue serving its own load when the grid is down and serve its surrounding community by providing a platform to support critical services.

Apart from building resilience and reliability, micro-grids offer several advantages. These include: -

- Facilitation of renewable energy integration to the grid
- Higher prosumer participation and enabling environmental protection
- Local Balancing of power and self-healing
- Deferral of CAPEX investments

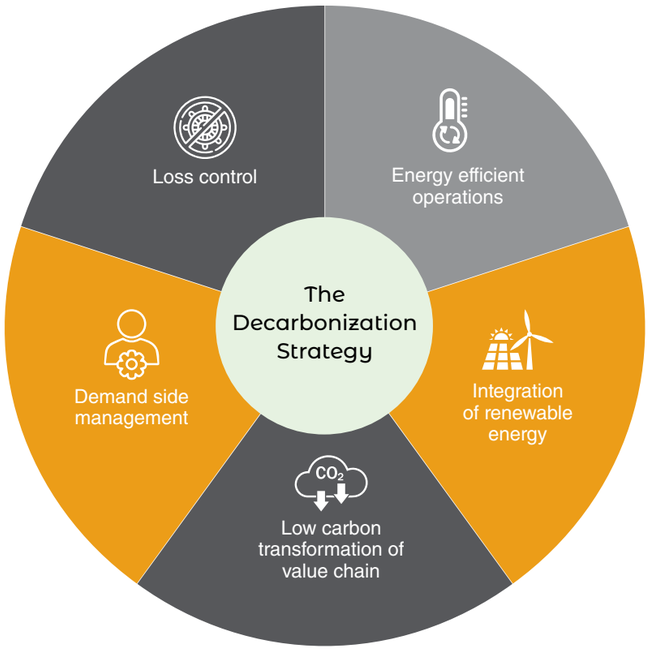
The first microgrid in our system with 100 kWp floating solar and 218 kWh Battery Energy Storage System (BESS) is in advanced stage of commissioning at Chakmir substation in South 24 Parganas. It will help in crisis management and uninterrupted power supply with green energy.

We are prioritizing on development of micro-grids for emergency establishments like hospitals and also to offset diesel generation sets in residential complexes to avoid air pollution as part of our future plans. The analysis of the performance of the microgrid trial project will be a valuable input for scaling up this technology as part of our future-plans and help our consumers reap maximum benefits.

# Decarbonization

The fight against climate change is one of the high priority concerns in every company's agenda. CESC, is no exception to this list. Through decarbonization we take the first step in making our economy net zero.

Guided by the ESG Policy, CESC has a defined strategy that encompasses improving energy efficiency in our operations, integrating renewable energy, advocating for low carbon transformation of the value chain, promoting demand side management interventions and limiting distribution losses.




## Energy Efficient Operations

Energy efficiency improvements in our offices and substations provide dual benefits to CESC- reduction in carbon emissions and cost reduction. At CESC, we have adopted the concepts of Green Building and are working towards implementation of processes that lower energy demand and meet energy requirements through renewable energy sources.



> Energy efficiency improvements in our offices and substations provide dual benefits to CESC- reduction in carbon emissions and cost reduction. At CESC, we have adopted the concepts of Green Building and are working towards implementation of processes that lower our internal energy consumption and meet energy requirements through renewable energy sources.

"Climate consciousness & sustainability has reached the heart of brand management, innovation & business processes. In the last financial year "sustainability" was added as a Core Value of RP-Sanjiv Goenka Group and echoed our promise to be equally responsible for people, planet & profits

Our leadership believes in deploying resources in a manner that is environmentally responsible and socially inclusive. Our company being in the space of power supply and distribution to the homes of 4.1 million customers, has a vision to set an example along the value chain. Towards accomplishment of this vision, the company has taken various initiatives for conservation of natural resources and reduction in greenhouse gases.

Our pathbreaking transformative journey of converting 1.3 million square feet of operating area into certified green building spaces testifies our commitment towards our goal to become the most responsible player in the power industry. We feel proud to mention seven of our buildings comprising of office spaces and substations are certified green buildings with many firsts. Our pioneer project, CESC House, an 89 years old nationally recognized heritage building, has been awarded LEED (v4.1) Platinum Certification by the United States Green Building Council (USGBC), which is a first in India.

Yet again, CESC Ltd's Park Circus Distribution station has been awarded LEED (v4.1 O+M) GOLD certification by USGBC under existing building category in May 2022 making it the first LEED (v4.1 O+M) GOLD certified Electrical Distribution station in India.

We are in the process of extending green building certification to some more substations of CESC Ltd. Besides, we also plan to bring the administrative buildings of Budge Budge and Chandrapur generating stations under the green building canopy of the group.

Through the course of our journey, we have been honoured with many awards, the most recent one being the 2021 USGBC Leadership Award for the South East Asia region for CESC House.

All our decades of cumulative efforts have not only helped us to be recognized with numerous accolades and awards from various international and national forums, but also has ingrained green building principles in our operations. We are committed through our efforts to ensure that all new buildings are certified Green Buildings and retrofit of all existing building is as per the Green Building guidelines."

**BL Chandak**

Executive Director- Investor Relations

## Our Hallmark Green Building Certifications

*RPSG House-Certified as "LEED Platinum" under NC Category in 2020*

*Chakmir Substation (CESC Ltd) First Substation to be certified as "IGBC Platinum" under O&M Category in Jan 2018*

*Park Circus Distribution Station - Certified LEED Platinum under v4.1 Dynamic Arc Platform in 2022*

*HEL Admin Building - Certified "IGBC Platinum" green building under O&M category in Jan 2018*

*CESC House-First Heritage Building to be certified as "LEED Platinum" under v4.1 Dynamic Arc Platform in Nov 2020*

*NPCL Customer Care Office-Certified as "LEED Gold" under NC Category in Aug 2018*

*NPCL Corporate Office-Certified as "LEED Gold" under NC Category in Aug 2018.*

Our commitment towards a low carbon transformation does not end at our operations, but also extends to how we deliver our services to our consumers.

### Case Study: Implementation of Advanced Machine Learning (ML) model to Screen Infructuous Inspections

CESC inspects around 40,000 meters each year, 40 % of which is a result of consumer complaints and the remaining from commercial logics. More than 65% of these cases were identified as infructuous, implying that most of the inspections were not necessary.

Such infructuous inspections delay resolution of actual metering defects resulting in wastage, of manpower, time and fuel. Hence, we decided to develop a ML model to screen & audit the worthiness of the job, directly replace meters if predicted defective to reduce inspection footprints.

An Artificial Intelligent / ML classifier model have been developed which predicts the outcome of inspection complaints considering multiple parameters like the consumers' historical consumption pattern, inspection history, meter properties amongst others. The classifier predicts defective meters, thereby enabling direct replacement of such meter bypassing inspection.

Back-officer validation tasks have also been automated through logics, expediting the process and saving significant officer hours. This has helped us achieve quicker resolution of complaints and reduced truck roll-out significantly.

The model is being refined continuously to improve on the efficiency, in order to achieve a confidence level where future inspection decisions will be predominantly made on the output from the model, which is expected to reduce inspection count further.

## Integrating Renewable Energy

Integrating renewable energy in our energy mix is evident for paving the path for Powering a Sustainable Future. Our ambition and commitment stems from our commitment to providing low carbon electricity to our consumers and in alignment with the Government's mission of securing 50% renewable energy by 2030.

We are cognizant that the change in energy mix is dependent on huge investments in solar and wind resources including energy storage technologies. Robust policies, procedures and numerous hallmark initiatives incorporated in our distribution network address the completeness in our approach to integrating renewable power in energy mix.

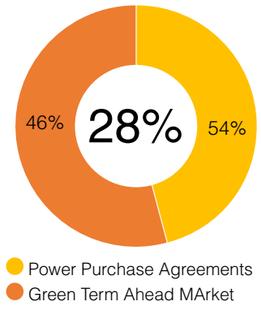
The Vice President- System Operations who reports to the Managing Director, is responsible for leading this commitment by planning the energy mix on annual basis, monthly basis and daily basis and making arrangement for procurement of power from the open market.

We strive to integrate renewable energy into our energy mix, through

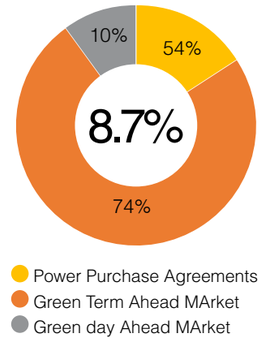
- Power Purchase Agreements with renewable energy generators,
- Green Term Ahead Markets (GTAM) and
- Green Day Ahead Markets

The proportion of renewable energy in our energy mix for NPCL and CESC Kolkata is provided aside.

NPCL




CESC Kolkata




We plan to enhance the proportion of renewable energy in the energy mix by leveraging the various Government schemes for rooftop solar. Currently a total solar rooftop capacity of 205 KW and 395 KW have been installed at our substations at CESC Kolkata and NPCL respectively.

Further, NPCL has been granted connections for 25.10 MW under net-metering to various rooftop solar plants in its licensed area.

Consumers who have installed or propose to install Solar PV generation system are being encouraged to avail either net metering or net billing methodology to inject renewable energy to the distribution network, thereby contributing to the overall renewable energy proportion in the energy mix.

Integration of renewable energy, however, presents new challenges. Intermittent power from renewable energy sources, increase in renewable power due to regulatory requirements and changing consumer demand profile impede our ability to provide reliable and continuous power to our consumers. Through energy storage systems we are able to mitigate these challenges.

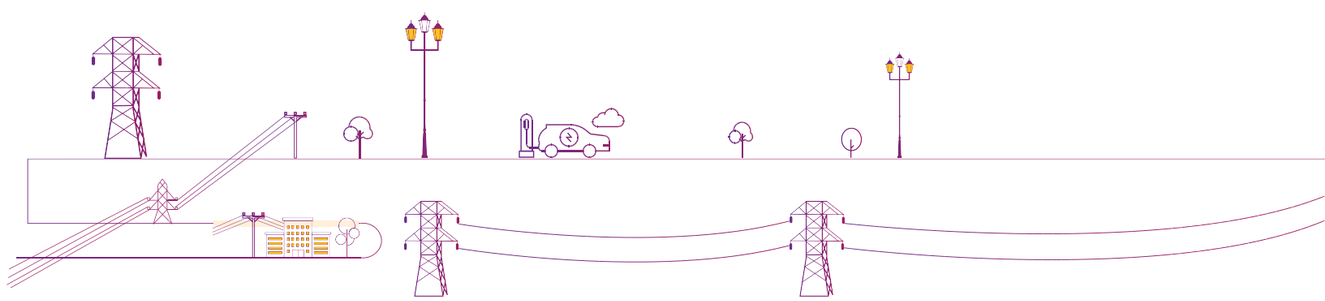
*Grid Connected 315 KWH BESS Installed at East Calcutta Substation*

## Building Resilience through Battery Energy Storage Systems (BESS)

According to CEA, 27 GW of grid-scale battery energy storage systems are required by 2030 with four hours of storage. Energy storage systems improve the level of reliability and increase distribution quality indicators. The storage system helps in,

- Integration of renewable energy to the grid, which are intermittent and distributed across the power system
- Manage peak load demand by supplying stored energy during peak hours, thereby
  - deferring capital expenses in the distribution network and resolving Right of Way (RoW) issue for drawing lines and getting land parcels to increase network capacity
  - providing reliable power for consumers
- Enhance grid resilience through backup power and black start
- Enhance frequency regulation, which helps in managing power schedule in respect of Deviation Settlement Mechanism

At CESC, we have installed grid connected 315 kWh BESS at low voltage levels in East Calcutta Substation. We plan to aggressively increase the capacity to 10 MWh by undertaking the necessary feasibility studies, identifying technology partners and conducting in-house studies to understand the efficacy of the technology on voltage regulation, load levelling and deviation addressal.



## Low Carbon Transformation of Value Chain

While integrating renewable energy in the energy mix, we lay emphasis on electrifying the value chain to enable low carbon transformation. In this journey, we lead by example and promote adoption of environment friendly technologies and devices such as electric vehicles and e-cooking amongst public including customers.

### 2030 Targets

**100 %**
of operational fleet will be replaced by green technology such as Electric Vehicles

**10,000**
commercial/industrial/residential canteens and roadside eateries in adopting e-cooking to replace conventional fuel

### Adoption of Electric Vehicles

*Electric 2-Wheeler*

Through the Government of India's Faster Adoption and Manufacturing of Hybrid & Electric Vehicle (FAME) Policy and several complimentary policies that mandate establishment of electric vehicle charging infrastructure in residential and commercial buildings, the electric vehicle market is gaining momentum. Also driving this transition is the rising concern of the skyrocketing fuel prices and increase in air pollution beyond the healthy limit.

As a responsible power utility, we are one of the key players leading this change. We have embarked on a journey towards complete transformation of the distribution fleet to electric vehicles by 2030. During the financial year both at CESC and NPCL we have introduced electric two wheelers for captive use in our operations. At CESC we have partnered with GoBykes, a rental e-bike aggregator, for in-house commute by e-Scooty.

*EVCS-Dhakuria*

We have started taking small but strong steps in creating an infrastructure that will create an uptake of electric vehicles. At present we have installed three EV Public Charging Stations in collaboration with Kolkata Municipal Corporation at three strategic locations. We have also installed EV chargers at two locations (CESC House and Taratala DTI) for charging the captive fleet. At NPCL too we have installed two electric vehicle charging stations for captive use.

We also provided supply to West Bengal Transport Corporation (WBTC) for the establishment of electric bus charging stations at about 10 locations across Kolkata and plan to extend supplies to the upcoming depots supporting electric bus charging


*Promotion of EV bike in Book Fair*

CESC is also encouraging its consumers to adopt EVs for safety and convenience via various offline and online platforms. This year we participated in the International Kolkata Book Fair 2022 and promoted the theme "Powering Opportunities for a Sustainable Future". To gauge the interest of the public, we displayed an electric bike at our stall which generated great interest among the visitors.

### Adoption of electric cooking

Along with electric vehicles, we promoted the use of e-cooking devices at the International Kolkata Book Fair. With an objective to provide a clean and healthy environment to public we aim to assist 25,000 commercial/industrial/residential canteens and roadside eateries in adopting e-cooking by replacing conventional fuel by 2030. Our impact till date is showcased below.

## Our Impact

While we are delivering our role in the low carbon transformation, it is time our consumers act a responsible citizen. Through our demand side management initiatives, we ensure that our consumers not only become conscious of their contributions to climate change but also proactively adopt energy efficient practices.

*67 Restaurants converted to Electric Cooking*

## Demand Side Management

Fostering energy efficient appliances among our customers contribute towards reducing the peak demand and managing load. Through demand side management interventions, we go beyond our business operations and help our customers reduce energy cost.

Transparently sharing information about consumption patterns, energy conservation and energy efficiency can aid the customer in managing power demand optimally. In this effort the electricity bill provided by us serves as a powerful tool of communication. While consumption and tariff details in a bill make the customer more conscious, energy efficiency tips create space for greater consumer engagement. Some of these energy saving tips are also available in our e-booklet 'Be Smart Save Smart'.

Additionally, through the company website and other digital service platforms we keep our customers abreast with the latest technologies contributing towards energy conservation and clean energy.

We further aim to make our value chain green and manage demand side consumption, through loss control measures.

Every year at NPCL we undertake several customer engagements focussed at creating awareness on energy efficiency measures. One such engagement is our annual Consumer Week, held in the month of September. During the year we celebrated this week by distributing LED Bulbs to our consumers for improving awareness on energy efficiency.

Additionally, we have also undertaken 17 Customer Contact Programs through which consumers were made aware of the different energy efficient appliances available in the market which will enable them to save energy.

## Loss Control

Distribution loss is one of the key performance parameters for CESC and its distribution subsidiaries. Distribution losses can be technical as well as non-technical in nature. Non-technical losses are a result of electricity theft while technical losses are a result of system losses due to energy dissipated in the conductors, equipment used for transmission line, transformer, sub- transmission line and distribution line and magnetic losses in transformers.

Both technical and non-technical losses impact the health of the utility economically and operationally, as well as result in increase in our greenhouse gas footprint. Our strategic Loss Control Cell (LCC) headed by the Vice President-Distribution Services ensures minimal distribution losses by scheduling periodic energy audits, identifying loss prone areas, undertaking consumer indexing to pin-pointed sales gap areas and applying different conventional and innovative methods. During the year we have undertaken several measures to arrest system losses and prevent electricity theft, which have been illustrated below.

### Arresting System Losses

To arrest the system generated technical losses we have adopted two measures during the reporting period.

- **Replacement of non-functional Automatic Power Factor Control (APFC) panels-** We have identified a number of APFC panels that are non-functional, most of which were old and had majority of its components damaged, derated or burnt, rendering them beyond repair. The downtime of these panels and hence the system loss was increasing. To arrest the loss and meet our requirement to improve the power factor of the distribution transformer, it was found prudent to replace the damaged APFC panel.

  We have initiated replacement of the panels in a phase wise manner. This has not only reduced the distribution losses significantly but also improved the voltage profile for our consumers by significantly correcting the average power factor from 0.79 to 0.96.

- **Phasing out 2G based street light meters- 2G based Automatic Meter** Reading (AMR) of street light meters is becoming an obsolete practice due to the emergence of new, better & advanced 4G technology and IOT devices. To improve our AMR communication and to ensure cent percent billing we decided to implement 4G based meters in our system.

We have initiated the process of upgrading the existing streetlights from 2G based meters to 4G enabled IOT based meters benefiting us with zero non-actual billing for the last four months at the select sites.

### Preventing Electricity Thefts

Despite efforts to curtail our greenhouse gas emissions, energy theft continues to plague our ambition to provide reliable and safe power. The unauthorized energy consumption not only impacts our power purchase decisions but inevitably accounts for unnecessary blackouts thereby encouraging consumers to opt for alternative sources of electricity in the form of diesel generators which increase our carbon footprint.

During the reporting period, some of our efforts focussed at preventing losses due to electricity theft include: -

*Increasing coverage of smart meters*

*Renovation of Metre box*

*Use of coaxial cables*

*Installation of Anti-theft pillar box*

### Reducing T&D loss from 71.62% to 10%.at Topsia-Tiljala Area

Topsia-Tiljala area was one of the pockets in the city of Kolkata with the high distribution losses. Through distribution zone segregation and consumer indexing for each distribution transformer, we identified electricity theft to be the root cause of concern for our revenue losses. Imperfections in our network configuration and the dilapidated conditions of our installations as a result of overloading were the other causes of concern.

Recognizing these concerns, in November 2016, we initiated a plan to curb this loss through application of innovative measures that can be classified as management, social and technical measures

## Management measures

A three-layered governance structure was deployed where the composition and responsibilities were well defined for the decision-making level, management level and executive level. We initially targeted to eliminate the root cause of concern i.e., unauthorized access to power by converting them into authorized consumers. To initiate this process and to give thrust to our initiative, we needed to streamline the process for site inspection, billing and meter installation within 24 hours of identifying the unauthorized user.

We engaged the local youths as brand ambassadors in collaboration with Lions Club to identify the households without authorized supply and organized mobilization camps for new connection request procedures. All applications on receipt from a single home were clustered into a single application to reduce inspection time and with the help of the band ambassadors we were able to receive faster payments, which ensured meter connections were installed within 24 hours of identifying the unauthorized user. Our team continues to follow-up with the non-applicants to minimize distribution losses as well as create access to authorized electricity in every house.

## Social measures

Our purpose is not served just by ensuring access to authorized electricity to these consumers. To build a harmonious relationship with them and to sustain our loss prevention efforts, we engage with them and their family members in social reconstruction interventions that aim at resolving their disputes and their deprivations for education and employment.

## Technical measures

The third step involves the technical measures which is complementary to management measures. Measures adopted are as follows:

| | |
|---|---|
| Network reconfiguration | • Divided the Tiljala Topsia area into several Distribution Zones<br>• Rearranged the power supply area of each distribution transformer<br>• Updated the data in GIS, AMR on tie<br>• Distributed load evenly on three phase |
| Securing pillar boxes and distributing lines from tampering | • Converted all OH lines to underground lines<br>• Provided SVCs with GI pipe<br>• Insulated busbar and joints inside pillar box and enhance its door lock |
| Tamper proof metering | • Renovated all meter boards with adequate sealing arrangement<br>• Replaced all electromechanical meters with electronic superior quality meters<br>• Meters on the road frontage of houses were shifted to the extent possible<br>• All distribution transformers were fitted with AMR meters |
| Advanced AMR and LMS | • Established Loss Management System (LMS) to detect theft by analysing DTR AMR data and consumption data of consumers |

The above measures have resulted in significant reduction in our distribution losses from 71.62% to 10% and have helped us sustain the reduction even today. These measures testify our integrated business approach towards enhancing environmental and social value.

Several loss reduction initiatives have been undertaken at our subsidiaries as well. At CESC Rajasthan we have reduced our technical losses by re-laying the old and dilapidated network with state-of-art network peripherals through replacement of the sluggish and old electro-mechanical meters with new meters, replacement of cable with open joints and damaged insulation with armoured cables, optimization of transformer loading and creation of load centres.

To arrest losses due to theft we replaced the conventional pole mounted distribution box with insulated theft resistive distribution boxes in theft prone areas.

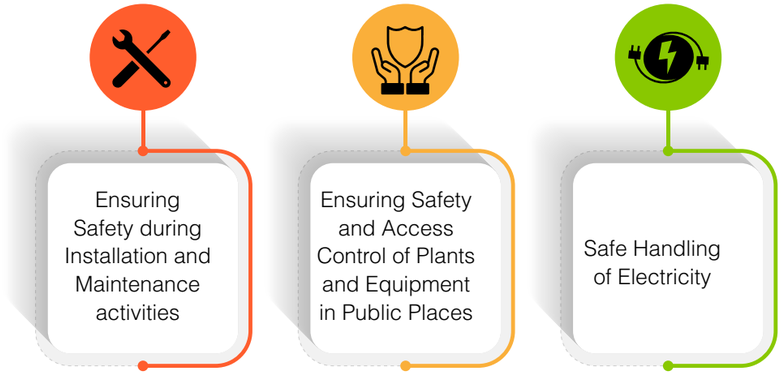
We, at CESC are also exploring alternatives of SF6 gas in switchgears at all voltage levels to reduce Carbon footprint.

Through the successful adoption and implementation of the decarbonization strategy, we feel proud to announce that CESC and its distribution subsidiaries have marked their roadmap towards low carbon transformation, and we assure our consumers that this plan is supportive of our common future. Our detailed carbon footprint and energy footprint is available in Annexure A and Annexure B of this report respectively.

# Public Welfare

People indulging in electricity theft often risk themselves to possible electrocution and manipulated electrical installations cause fire and damage to electrical appliances. We recognize that the roots of electricity theft lie in poverty leading to lack of access to electricity. Through our actions detailed under Corporate Citizenship we are already addressing poverty, but at the same time we are maintaining all the checks and measures to ensure public safety and providing access to affordable and reliable electricity.

## Public Safety




As a responsible corporate, CESC's role in ensuring public safety is immeasurable. In extraordinary situations such as during COVID and tropical cyclones like Amphan and Yaas, public safety has been a priority. We, at CESC have weathered such situations by deploying a three-pronged approach, that ensures safeguard to public from any injury or loss or damages arising out of any untoward incident of the organization.

The Safety Cell in close collaboration with the Corporate Communication Department and Customer Relation Department are responsible for ensuring zero incidents at public places resulting from logistics and transportation and installation/ repair of equipment by seamlessly deploying the three-pronged approach. As part of these approaches, numerous interventions have been undertaken which are showcased in the sections below.

### Ensuring Safety and Access Control of Plants and Equipment in Public Places

We are cognizant of the potential health and safety impacts of our installations to the public. We identify the coordinates where the frequency and probability of occurrence of these risks are high and develop plans to mitigate the risk by removing unsafe conditions through various interventions like –

*Installation of AB cables to replace bare overhead conductors*

- Routine checking of earth resistance at individual poles has been carried out.
- Development and introduction of insulated FRP Pole-Jacket and FRP Pole clamp to provide the barrier for electric shock in the unlikely event of a pole being alive.
- Trimming of tree branches that can interfere with our overhead lines is conducted (based on overlap of Vegetation layer of Satellite Map & Asset layer of our GIS Map)
- Replacement of bare overhead conductors with Arial Bundle (AB) Cables at identified locations to minimise hazard related to wire snapping during nor 'westers, thunderstorm or cyclone.
- Raising of distribution Pillar Boxes in low lying areas has been done to minimise electrical hazard during water logging and deluge.
- Introduction of IOT based water level sensors at distribution Pillar Boxes in low lying areas to send signal for arranging cut off electricity supply during flooding and deluge.

## Enabling Public Safety during Monsoon

*Timely maintenance of pillar boxes before monsoon*

Every year during the incessant monsoon, Kolkata faces the perennial problem of prolonged water logging at some of the low-lying areas. At times, we receive multiple calls from consumers about Pillar Box or Pole getting alive. On receipt of such urgent calls from Consumers, we immediately send our teams to such locations and de-energize the supply to the affected pole or pillar box, thus removing the danger quotient and to ensure that the pillar boxes and the poles are not electrified to prevent any electrocution or shock, thus preventing a potential hazard for the public at large.

The increasing trend in number of pillar box alive calls and unsafe incidents implied an urgent need of incorporation of some preventive measures. In pursuit of our relentless endeavour towards customer well-being, we developed a system by use of which these incidents can be avoided.

We prepared a list of pillar boxes which remain submerged in waterlogged conditions and through detailed analysis of past waterlogging incidents, implemented a strategy to first raise the height of those pillar boxes and insulate the lower accessible part of the pole with a PVC jacket.

In the second phase, many pillar boxes at waterlogging prone areas were affixed with a "Water level Indicator". The increase in water level, identified through a voltage difference between pillar box earth and neutral would trigger an SMS, that gets automatically docketed in our CRM system and relays the message to the LT control room engineers who dispatch the mobile field crew to the spot to de-energize the pillar box to avert any possible danger.

Once the water level subsides, the generation of another signal is triggered to ensure prompt restoration of normal service. Accordingly, the field crew visits the same spot again to take stock of the situation and restore supply from the pillar box if no further danger is envisaged.

The scheme provides a cost-effective solution towards ensuring access to reliable and safe power, thereby improving customer satisfaction. We are happy to inform that post introduction of the scheme, no further calls were received regarding unsafe incidents for these pillar boxes.

Some of the other interventions taken by our subsidiary NPCL on public safety and safe installation of plant equipment are worth mentioning and are illustrated below.

### Enhancing public safety and reliability at NPCL

Public safety is of the highest priority at NPCL. We lay emphasis on ensuring our installations are not a cause of inconvenience to public and have accordingly taken the following initiatives: -

**Safety measures for our overhead 11kV & 33 kV network**

- Ensured safety in the occurrence of conductor snapping through installation of cradle guards at several road crossings to facilitate instantaneous tripping of feeders
- Prevented accidents due to electrocution during monsoons, through fencing of double pole structures and application of FRP based coating & insulating paints on steel tubular poles.
- Revamped pole earthing wherever the ground resistance was found to be higher than the prescribed limits.

**Safety measures for our LT network**

- Scaled up replacement of existing PCC Poles with steel tubular poles to increase the height of poles
- Installed FRP feeder pillars having smaller footprints and locking mechanisms.

Apart from the above measures, we also undertake thermal photography and partial discharge tests, based on the results of which remedial actions are taken to prevent destructive failure of the high-value equipment.

## Ensuring Safety during Installation and Maintenance activities

During execution of any new installations, fault isolation, repairs and maintenance at public area, all CESC workmen and employees are instructed to take all necessary precautions keeping in mind that our operation and activities should not affect public. The public are cautioned by providing danger notices, caution boards and physical barriers while working beside residential area or roads and working personnel apply utmost safety control measures to minimize any risk exposure to the general public. Our threefold process to mitigate any possibility of hazard exposure to public are listed below.

Assessment of work Zone where construction, maintenace, or utility work activies are done → Ensure compliance of effective safety control, deployment of competent workforce, and use of right tools & tackles → Ensure that the job area is returned to its original condition to the extent possible

## Safe Handling of Electricity

Electrocutions occur mostly due to damage in insulation of electrical wires, improper earthing of electrical installations and a lack of awareness on the "do-don'ts", and unsafe activities by the users while handling of the electrical components of the installations. Hence, CESC puts in its earnest endeavour to ensure safe use of electricity by deploying various means to create awareness. These includes:

- Branding of all our call centre vehicles with safety messages
- Organizing safety workshops for electricians and residents of housing complexes on online platforms through webinars and social media
- Safety mailers on electrical safety aspects through electricity bills and in the

form of leaflets with special emphasis during the monsoon season

- Awareness campaigns among autos during nor'westers.
- Organizing tableau movements in collaboration with the local police authorities and broadcasting safety messages in vernacular language around the lanes and bye-lanes of identified areas during the monsoons
- Displaying safety posters and hoardings at strategic locations in the city

While we create awareness amongst our consumers on the safe use of electricity, we play our role in ensuring safety of their equipment. Protective shield for voltage and current imbalance is one such measure that eliminates potential fluctuations in voltage thereby protecting consumer's electrical and electronic goods from damage.

### Protective Shield for Voltage and Current Imbalance

For the satisfactory working of all electrical and electronic devices, it is recommended to allow voltage at prescribed limits. Voltage fluctuations in electric power supply certainly have adverse effects on connected loads. These fluctuations can be of over voltage and under voltages which are caused by several reasons like voltage surges, lightning, overload, etc. Over voltages are the voltages that exceed the normal or rated values which cause insulation damage to electrical appliances leading to short circuits. Similarly, under-voltage causes overloading of the equipment leading to lamp flickers and inefficient performance of the equipment.

The equipment or installed machineries in such installations are very sensitive and even some minor fluctuations in voltage or current parameters may permanently damage such equipment leading to incurring loss of our valuable consumer which is undesirable.

To eradicate such undesirable event, we introduced a new device which acts as a protective shield for voltage and current Imbalance. The switching device monitors the incoming feed parameters and will trip the incoming circuit under abnormal circumstances such as during faults or high surges, and again restore the circuit on recovery of the voltage of incoming network.

It is worth mentioning that our consistent effort towards public safety awareness build-up has been widely appreciated by the society.

## Energy Access

Ensuring access to reliable and safe power plays a critical role for the continuity of businesses in the license area we serve. In this regard, CESC operations are aligned with the parameters of Ease of Doing Business (EODB).

### Fulfilling Timely New Connection Requests

World Bank's "Ease of doing business" initiative ranks countries based on ten parameters. 'Getting Electricity' is one of these parameters, which evaluates distribution companies on the number of procedures available for new connection requests, time required to receive new connection, cost of accessing electricity, reliability of power supply and transparency of tariff.

In relation to EODB, one of our foremost commitments is to fulfil new connection requests within 24 hours. In the purview of maintaining EODB guidelines we have provided our consumers with the following facilities and benefits:

**Target 2030**

**100%**

new connection (LOOP Connection) requests are fulfilled for consumers within 24 hours subjected to compliance

#### Online Application

- 100% Online Application submission
- Online application support- over phone, helpdesk at customer centre, e-corners at different localities
- System generated acknowledgement after submitting of application
- All applications up to 150 kVA (within notified voltage of 650 V) are processed based on self-certification online without Chief Electrical Inspector (CEI) approval
- Better & faster service experience through WhatsApp Bot, Chat Bot & Voice Bot 'Aastha'
- Connection effected with UID, Nil Documentation
- Facility of 'Cost Estimator' & 'Provisional Bill'

#### Inspection and Bill

- Auto-scheduling & instant communication of system generated execution date of meter fixing jobs based on system-driven payment intimation
- Quick Bill generation and transparent billing

#### Payment and Execution

- Tariff chart and applicable Monthly Variable Cost Adjustment (MVCA) Charges are hosted on our corporate website, to create Transparency
- Multi-channel online & offline payment mode like NEFT/RTGS/Net Banking/Credit and Debit cards
- Reduction in execution tmeline
- Standard rates for new connection (upto 150 kVA load for single beneficiary consumers) in form of 'Load based Service charge

Through the above measures we are able to process new connection requests within 24 hours which is well within the recommended timelines for EODB.

### Implementation of Block Meters in Slums and Marketplaces

In line with our social commitment, CESC joined hands with the Kolkata and Howrah Municipal Corporation to provide supply to some of the marketplaces and slums.

Most of the stalls in these marketplaces do not have any physical demarcation from the adjacent ones and have severe space constraints. Multiple wirings and criss-crossing of wires raise potential risks of fire and electrical hazards. Considering the congested nature of the marketplace and huge footfall, safety is our utmost priority. Hence, to provide vendors as well as customers a joyful and safe shopping experience with an electrified marketplace, we introduced block meter concept in our licensed area.

Through block meters, we are able to limit the number of wires running across the consumer premises and prevent the risk of cluttered wiring, thereby ensuring safety to citizens. Further the concerned municipal authority/market committee/slum committee enjoy due rate slab benefit which ensures affordable power to stallholders at the market and slum dwellers.

Thus, through access to affordable power and public safety we strive to establish our corporate citizenship.


## Our CSR Approach

At CESC, our approach towards being recognized as a “Community Changemaker”, is in line with our CSR policy which follows the process of systematically assessing the community requirements, designing, and implementing the CSR programs. The process in place has been represented below:

- Identification of the vulnrable groups
- Need Assessment
- Selection of an implementing
- Carrying out baseline survey
- Project Implemention
- Monitoring and Evaluation of the effectiveness of the project
- Exit strategy end line assessment

# Our CSR Strategy

Consistent with our approach, we align our strategy with the United Nations Sustainable Development Goals (UNSDGs). Our strategy aims at not only alleviating the inequalities and deprivations persistent in our communities but also ensuring our operations are conducted in a harmonious way.

The following thrust areas are identified based on prioritization of the social needs and the influence of the community on the business.

| Theme 1 | Theme 2 | Theme 3 | Theme 4 | Theme 5 |
|---|---|---|---|---|
| Education and Child Protection | Health | Skill Development | Water, Sanitation and Hygiene | Environment and Sustainability |
| **Project:** Humari Awaaz Nayee Roshni | **Project:** Suswasthya Nayee Roshni | **Project:** Saksham Prayas Udaan Pragati | **Project:** Nirmal Abhiyan Nirmal Parivesh | **Project:** City Beautification |

## 2030 Goals

Provide at least 15,000 children access to quality pre-primary, primary and secondary education with effective learning outcomes

Facilitate healthcare and nutrition support to 4,000 mothers and 6,000 children

Provide 7500 underprivileged youth with skill development training and employment opportunities

# Focus Area 1: Education and Child Protection

## Hamari Awaaz

At CESC, we condemn exploitation and abuse of child rights in any form including but not limited to abuse, trafficking, child labour, child marriage, undernourishment and deprived education.

Through Hamari Awaaz Project, we have created community safety nets for identifying vulnerable children and building resilience among them.

In collaboration with Child in Need Institute, we have positively impacted the lives of 1,230 vulnerable children in Ward Number 66 of the Kolkata Municipal Corporation.

*Resource mapping under Hamari Awaaz Programme*

## Stories of Change

Mohammed Iqbal, a 11-year-old boy lives with his single mother in a small house in Topsia. His mother works very hard so that she can support Iqbal's education, however he never likes going to school. As schools were closed due to the pandemic, Iqbal slowly moved away from studies and dropped out of school. In January, 2021, an enrolment drive for formal schooling was conducted by the Hamari Awaaz team. It was during this enrolment drive that the team came across Iqbal and learnt that he has dropped out of school. The team was determined to get Iqbal back on track and they kept motivating and counselling him explaining the benefits of being educated. They were able to convince him to take re-admission in school and he now attends his classes online. Iqbal has also started attending the Special Training Centre under Hamari Awaaz Project, which is helping him cope with the class.

## Nayee Roshni

Education as well as health are two critical components in a child's overall growth and development.

Roshni Project focusses on ensuring opportunities for children to access their educational, health and nutritional entitlements at different stages of development, in order to attain a sustainable adulthood. The Project uses a life-cycle approach to ensure safe motherhood and child-care, early childcare and education, access to formal school and prevention of dropout, enhanced scholastic skills of children in primary level, and remedial education for children in secondary level for improving retention. The Project aims at:

- facilitating early childhood care and education for the children between 3 to 6 years of age and linking with formal school
- enhancing scholastic skills of children in primary level in the areas of reading, writing and arithmetic
- providing remedial support to needy as well as academically weak children of class VII to X to improve access to school and retention of children in school.
- ensuring safe motherhood and childcare through facilitating safe delivery, complete immunization as well as proper nutrition level of mothers and children below 5 years
- ensuring mass awareness and mental health of all mothers, children and adolescents in post lockdown period

*Imparting education under Nayee Roshni Programme*

The Project caters to 4,917 households belonging in Ward no. 66 under the Kolkata Municipal Corporation..

### Stories of Change

Guriya Bibi, a 30-year-old lady resides in Chappar Gali, Tiljala-Topsia with her husband, mother-in-law and three children. During a home visit by a mobilizer of Nayee Roshni Project, Guriya was identified as three months pregnant. Out of Guriya's three previous children, two were delivered at home and the third was delivered at a hospital due to certain complications. However, this time Guriya was not willing to visit any hospital or health centres, as her husband and mother-in-law were prejudiced against institutional delivery. After birth of their third child, Guriya Bibi and her husband were informed about family planning and use of family planning methods, but they did not follow any method. As a result, Guriya became pregnant for the fourth time. After repeated visits by the Nayee Roshni staff, Guriya got herself registered at a local hospital. However, at the time of delivery her husband and mother-in-law were reluctant to take her to the hospital. A community mobilizer of the Nayee Roshni Project immediately got Guriya admitted to the hospital with the help of two Lead Mothers. Guriya delivered a girl child weighing 205 kgs through normal delivery and availed all the necessary vaccines at birth. She thanked Nayee Roshni team for ensuring that she had a safe delivery. She has now been enthused to take up the mantle and work and help other mothers in her community.

### Case Study: Supporting Children and Parents During Lockdown

During the pandemic, the nation faced a unique situation of lockdown. Children were forced to stay at home without any school and outdoor activities, resulting in psychological breakdowns.

To ensure that students got continued access to their education and remain engaged, we ensured provision of e-classes with a focus on completion of school curriculum. We planned virtual live lessons, monthly lesson plans, video-based worksheets and e-notes to make learning more accessible, engaging and contextualized.

Reaching out to students became a challenge. Hence, we conducted classes over multiple platforms including WhatsApp, Zoom and Google Duo so as to reach out to as many students as possible.

To ensure that sessions were carried out seamlessly, the syllabus was broken down into weekly targets thereby making studying simpler and systematic. A staggering 784 online classes with students of classes VII – X over a period of 4 months were conducted during the pandemic with an online attendance percentage of 78% which gradually increased to 81%. Through our systematic and interesting approach, we recorded a high retention rate of 97%.

# Focus Area 2: Health

## Suswasthya

Safe motherhood and child survival programme integration are essential for overcoming high infant and child mortality as well as maternal mortality.

Suswasthya is an initiative in collaboration with City Level Programme of Action (CLPOA), aimed at improving maternal and child health status, reducing mortality and morbidity of pregnant women, lactating mothers, and children by increasing health seeking behaviour and establishing linkage between formal health service delivery systems and beneficiaries.

In the high-risk settlements of Kamarhati Municipality, we have successfully established Mahila Samitis, which generate door to door awareness sessions on health, nutrition and personal hygiene to pregnant women, lactating mothers and eligible couples. Our intervention has made a difference to the lives of 2,757 children and women.

*Sensitization of Women on nutritious diet using local ingredients*

**Stories of Change**

Jubaida Khatoon, 26 years, a mother of three children, lives in Bhagban Mandal Street, Ward No.8 of Kamarhati Municipality. She migrated to Kolkata from Bihar in April 2021. She does not get much support from her husband in bringing up her children, as he is an alcoholic. The Community Health Volunteers (CHVs) of Suswasthya Mother and Child Health Project met Jubaida during one of their house visits. They found out that her two elder children, daughter aged six and son aged four years, did not have any immunisation dure to lack of information and knowledge. Her third child, who is eight months old, was born with low weight. The CHVs counselled her regarding the importance of having post-natal check-ups and getting her children immunised. They also ensured that her children were registered with the nearest ICDS centre so that they receive supplementary nutrition, and their growth is monitored. Through continuous counselling and follow-ups, Jubaida and her family are now healthy and happy. All her children are now immunised.

# Focus Area 3: Skill Development

We believe that empowerment of the marginalized youth will unlock economic growth potential within a nation. In pursuit of bridging the current skill gap on basis of local industry requirements and improving the quality of life for these individuals and their families, we have designed several skill development initiatives in collaboration with CLPOA.

## Saksham

Through project Saksham we trained 300 youths in Topsia area to uptake employment roles as a sewing machine operator, basic computer and advanced excel specialist, light motor vehicle driver, air conditioning & refrigerator technician and beauty therapy assistant.

The Project succeeded in providing placement to 67% of the trained youths.

## Prayas

Under project Prayas we provided skill training to 335 youths in the age group of 18 to 28 years in Howrah and Kamarhati areas on various employable trades, such as, basic computer skills with advanced Excel, light motor vehicle driving, air conditioning and refrigeration repairing.

We have successfully placed 58% of the enrolled students with a job opportunity.

## Udaan

Through Udaan we have empowered 240 youths from Garden Reach and Khidderpore areas in various trades like basic computer skills with advanced Excel, sewing machine operations, light motor vehicle driving, AC and refrigeration repairing.

67% of the trained students have been placed successfully under this initiative.

## Pragati

Under Project Pragati, students were trained in tailoring and driving. Out of 100 students who were enrolled for the courses, 70% of them were successfully placed.

*Training on repairing of electrical appliances*

**Stories of Change**

Vishal Thakur, an aspiring student from Khidderpore, wanted to help his family by contributing to the family income as they were struggling to make ends meet. However, Vishal faced many an obstacle in getting a job, as he was only a Class XII pass. He came to know about the Udaan Skill Development centre in Khidderpore from a friend of his. Vishal got himself enrolled for training in Basic Computer with Advanced Excel. He was determined to do well in the training and successfully completed the three-month training. He was provided with several job opportunities and he finally cracked the interview for Bazaar Kolkata, Park Street, where he is working as a Sales Representative and earns a salary of Rs.10,000/- a month.

### Case Study: Virtual Classes- A Blessing

The Corona Virus (COVID-19) outbreak had affected all sections of the population and were especially detrimental to the lives of marginalized communities. It resulted in widespread economic and social disruption threatening millions of people to fall into extreme poverty. The lockdown situation to curtail the pandemic presented challenges, that played a huge role in affecting the entire education system including all schools, colleges, educational institutions, skill development centres, which were forced to shut down. This was a setback to the morale of youth who have placed their trust with us for receiving employment opportunities.

We recognized this challenge at an early stage and enabled virtual learning for our skill development programmes. We developed e-books and shared the learning modules with students over WhatsApp groups which helped them keep abreast with their studies. For practical classes, virtual demonstrations were given by the faculties through google meet or video conference. Although internet connectivity was a barrier for some of the youths, they gradually overcame the problems. We were able to maintain 90.92% attendance for the students while conducting these classes.

Through virtual classes, our project team has successfully trained 975 youths. Now these students are able to support their families.

# Focus Area 4:
# Water, Sanitation and Hygiene

We understand that access to safe and affordable drinking water and improved sanitation is essential for humans to lead a healthy, dignified and productive life. Water and sanitation initiatives, such as, Nirmal Abhiyan and Nirmal Parivesh have been implemented in schools as well as communities to address challenges pertaining to water quality and provision of sanitation and hygiene facilities.

## Nirmal Abhiyan

The Nirmal Abhiyan Project seeks to improve child health through provision of safe drinking water and appropriate sanitation facilities in government schools. The Project being implemented by CLPOA has benefited 3,521 students and 216 teachers from 23 schools in Kolkata and 6 schools in Kamarhati Municipality.

Out of the 29 schools covered under the Project, nine schools received 'Nirmal Vidyalaya Puraskar' and two schools received 'Sishumitra Puraskar', in recognition of their efforts for creating child friendly environment.

*Safe drinking water facilities for school children*

## Nirmal Parivesh

Nirmal Parivesh is a community sanitation and hygiene project in Titagarh Municipality. Under this intervention, apart from hygiene awareness activities, separate pay and use toilet blocks for men, women and children have been constructed. The toilet blocks are wholly managed and maintained by the Water and Sanitation (WATSAN) committees formed within the communities out of the revenues generated from user charges.

In 2021-22, Nirmal Parivesh has been successfully implemented in two Wards of the Titagarh municipality, benefiting 298 households.


*Establishment of pay and use toilets*

**Stories of Change**

Hema Kumari Singh is an adolescent girl, who lives with her parents in Titagarh Municipality. Her mother is a home maker while her father, who is the sole bread winner for the family, is a Jute Mill worker earning Rs. 8,000/- per month. In spite of all his struggles, Hema's father wants her to continue studying. Prior to the Nirmal Parivesh Project being implemented in their community, the family had to stand in long queues to use the community toilet, which was filthy and unhygienic. There was no provision for a changing room and, overall, there was no privacy for women and young girls. Due to the usage of the unhygienic infrastructure, Hema used to have frequent stomach problem, which made her miss school often. After implementation of Nirmal Parivesh Project in her Ward, she is happy to see gender segregated toilets. She is also pleased that a toilet block for children has been constructed wherein a parent has to accompany the child. All these efforts including the various educational activities, such as, community awareness programmes, pocket meetings, formation of women and adolescent groups have helped reduce open defecation in the area. Hema is also happy that with sufficient toilets she can now reach her school on time.

# Focus Area 5:
# Environment and Sustainability

## Project: City Beautification

We are committed towards providing a clean environment for the society in which we operate. We are maintaining a green verge from Park Street flyover to Hazra Crossing for the last eight years in partnership with the Kolkata Municipal Corporation.

*Maintenance of green verge from Park Street flyover to Hazra Crossing*

# CSR Programmes at Subsidiaries

CESC generating stations and distribution units proactively addresses basic needs of the community it operates in by setting aside a portion of its corpus and dedicating resources for volunteering activities. Some of the initiatives undertaken include the following.

## NPCL CARE Programs

**Swachh Bharat & Energy Efficiency programme**

Under the programme 500 LED bulbs were distributed in villages and awareness sessions on energy efficiency and safety was conducted.

**Establishing Public Health Centre**

Constructed and set up a Public Health Centre in Bilaspur Village of Greater Noida

**Felicitation of Covid Warriors**

Acknowledged 138 frontline Covid Warriors for their exemplary service with 'prashastri patra' and food hampers

**Jacket and dry ration Donation**

Provided jackets to 70 children between the age of 4 to 14 years, residing at Father Agnel Bal Bhawan and belonging to poor families.

Dry ration was also donated to the Bal Bhawan

*Distributing jackets and ration at Father Agnel Bal Bhawan*

**Say No to Plastic initiative**

2,000 jute bags were distributed among the members of the local community.

**Project Pehel**

Supported 10 government schools across Greater Noida under the Uttar Pradesh Prathmik Shiksha Parishad for empowering women, and young girls by improving their soft & hard skills, augmenting no. of classrooms, toilets, drinking water facility, installation of swings, library

**Recognizing Students**

12 meritorious students of class X & XII belonging to low-income group families and studying in government schools were felicitated with a scholarship cheque, a certificate of achievement, a book, and a gift hamper.

**Donation to Blood Bank**

Donated a Spectra Optia Apheresis System used exclusively for apheresis, provided components (plasma/ platelets) with portable and a Blood Collection & Transportation Vehicle (BCTV), fitted with all requirements to improve the blood component availability and conduct onsite blood donation camps at Government Institute of Medical Sciences (GIMS).

**Joy of Giving programme**

Donated clothes to GOONJ, a non-profit organization under its initiative of "Rahat COVID" for the unprivileged.

*Joy of Giving programme with GOONJ*

# CESC Rajasthan CSR initiatives

### City Beautification

Constructed sculptures around Museum Circle in Bikaner. Also laid out tiles in the old lanes beautifying the roads aesthetically and improving the cleanliness.

*Beautification of city- Building sculptures*

### COVID-19 Initiatives

Participated in Rajasthan Government's COVID-19 awareness drive and provided supplies required for the success of the campaigns.

*Beautification of city- Heritage Pathways*

### Supply of School Infrastructure

Provided school furniture, water coolers and computers to Government Model Higher Secondary School, Peepla (Bharatpur) and Government Higher Secondary School, Bikaner

Provided sports equipment to Pemasar village govt school

### Felicitation of employees of CESC Rajasthan by Community

Municipal Counselors and local community members of DF Area celebrated and recognized the work of the Rajasthan DF employees who have been working day and night to ensure uninterrupted electricity supply to all the consumers even in the containment zones all through the

pandemic. The employees were felicitated by giving out certificates of appreciation and garland.

*Felicitation for work during the pandemic situation*

### Enhancement of Medical Infrastructure

Installed, tested and commissioned medical oxygen gas pipeline system to 80 beds at the RBM Govt. Hospital, Bharatpur.

Arranged health checkup camp for slum community in Vaishnodham Area, Bikaner and eye checkup camp in 4 villages of Bikaner

## HEL CSR Programmes

### Health and Sanitation Program

Organized regular Health Camps and Specialized Health Camps achieved zero skin infections, 100 percent institutional delivery, vaccination and vision check-up for 1,500 school students across 6 villages.

### Adolescent Girls Program

Worked towards maintaining the hemoglobin level of 300 adolescent girls at more than 11 gm/dl and encouraged good health and hygiene practices through provision of health kits and sanitary napkins.

*Health check up camps*

### Fight against COVID-19

Mobilized communities to stop the spreading of virus and prevented COVID-19 by facilitating vaccination for 95% of the community people.

### On Farm Activities

Imparted sustainable organic farming habits and training among 80 farmers across 4 villages with improved agricultural technology in association with KVK Purba Medinipur.

### Educational Initiatives

Renovation and Construction of School Buildings, installation of Smart Class at 2 schools and initiation of Science Laboratory in 02 schools. Accomplished no dropouts till class X across 6 schools and ensured the students achieve first division marks in Madhyamik exams. The higher secondary students were also facilitated with educational infrastructure to grow as professionals.

### SHG Program

Enabled each SHG members to earn Rs. 1,500/- per month through training in various Income generation trainings like mushroom cultivation, muri making, masala making and poultry farming in partnerships with Haldia based Training & Financial Institutions

### Support During Cyclone YAAS

Rescued 1,500 people after the cyclone and provided them shelter inside plant premises. More than 5,000 people were provided with food, clothes, and tarpaulin.

*Support During YAAS Super Cyclone*

# DIL CSR Programs


**Child Education Program**

Provided free quality education to 970 students during the lockdown.

Also collaborated in Shikshandan program with Govt

**Skill development program**

Empowered 19 youths with adequate training in market relevant skills such as mobile phone repairing, automobile training and hospitality and generated employment.

**Agriculture Program**

Provided training for 170 farmers across 7 villages of Chandrapur on pest control and organic farming in collaboration with NABARD.

**Health& Sanitation Program**

Raised awareness on COViD-19 pandemic, malaria and dengue among the local communities and mobilized the community members for vaccination. Organized COVID 19 vaccination camp for DIL employees and villagers & provided masks & sanitizers to villagers.

936 toilets constructed. Donated fogging machine to Gram panchayat to prevent Malaria. Orgnised Health chec and proEye Checkup camp and spectacle distribution. 6 village got Swachh Bharat Award.

**SHG & Adolescence girls program**

33 SHGs are earning Rs. 5000-6000 by undergoing training on income generation activities such as pickle, papad and home-based products making, jute bag making and mushroom cultivation to 180 women.

Organized HB camp and provided medicines and nutrition. Also, organized sessions on menstrual hygiene and child abuse at 7 villages

**Digital Village Program**

Provided digital training to villagers and awareness sessions on various transaction modes to people from 7 villages in Chandrapur including mobile applications like Paytm, Bhim, PhonePe and Google Pay.

**Infrastructure Development**

Provided RO village and also road construction for farmers.

*Haemoglobin check-up camp*

*Farming trainings*

*Education to children*

*Mobile repairing training*

## CPL CSR Initiatives

**SHG Program**

Imparted training on income generation activities such as jute bag making and mushroom cultivation to 130 women.

**Handicapped Person Program**

Empowered 3 handicapped persons with wheelchairs and underarm crutches.

**Infrastructure Development**

Developed educational Infrastructure of schools benefitting 160 students. Also, through infrastructure development including the construction of community centre in the local community have resulted in the benefitting of 700 villagers

*Construction of Community Centre*


*Providing wheelchairs and crutches to handicapped people*

*Developed educational Infrastructure of schools benefitting 160 students*

*Imparted training on income generation activities such as jute bag making and mushroom cultivation*



# People and Culture

Our employees are one of the key pillars that drive our ambition of Powering a Sustainable Future. We believe that their passion, dedication, and hard work is the fundamental essence contributing to our business success.

Our HR strategy is built upon dialogues and feedbacks drawn from various employee engagement mechanisms. The strategies are focussed on promoting a diverse and inclusive work environment, attracting and retaining the best talent and creating unique and fulfilling career opportunities, while adhering to applicable human rights and occupational health and safety regulations.

The Executive Director- HR & Admin, provides the highest level of executive oversight on the HR performance, progress against targets, strategic alignment and policy implementation through HR reports, training reports, monthly review meetings and divisional meetings.

Our endeavour to be recognized as one of great places to work is embedded in our commitments, laid down in the ESG Policy. These commitments have enabled us to continuously grow as an organization.

## 2030 Targets

**12%**

Women participation in workforce

**100%**

Employees receiving career performance reviews and appraisal

**100%**

Employee training on digital skills

As on 31st March 2022 the employee strength of CESC and its subsidiaries stand at 15,574

| Employee by Category | CESC | NPCL | CESC Rajasthan | MPSL | HEL | DIL | CPL |
|---|---|---|---|---|---|---|---|
| Top Leadership Team / Executive Management | 62 | 2 | 0 | 0 | 7 | 0 | 1 |
| Senior Management | 139 | 7 | 2 | 0 | 3 | 3 | 0 |
| Middle Management | 196 | 22 | 6 | 1 | 9 | 12 | 1 |
| Junior Management | 392 | 93 | 50 | 55 | 108 | 78 | 20 |
| Junior Management Staff (JMS) | 165 | 366 | 200 | 8 | 56 | 65 | 61 |
| Non-covenant staff | 5,966 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total employee strength | 6920 | 821 | 502 | 618 | 714 | 918 | 305 |

Our employees represent people from diverse cultures and geographies. Their unique experiences and perspectives are a value addition to the organization, that has enabled us to win consistently and generate long-term value with our stakeholders. Hence diversity and inclusion are a key part of CESC's HR strategies.

# Diversity and Inclusion

At CESC, diversity of people and culture is encouraged at all levels of the organization. Fostering diversity and inclusion in our strategy, from developing teams to cultivating leaders is of top priority for us. Aspiring to become an equal opportunity employer, we encourage people with the right skills and expertise to join us irrespective of their caste, race, birth, nationality, gender, origin, religion, disability, family responsibility, marital status, political opinion, age, union membership and sexual orientation. The diversity and inclusion in our workforce are represented in the table below.

| Company Name | Employee Classification (in Nos.) By Gender | | |
|---|---|---|---|
| | Male | Female | Female (%) |
| CESC | 6419 | 501 | 7.2% |
| NPCL | 782 | 39 | 4.8% |
| CESC Rajasthan | 250 | 8 | 3.1% |
| MPSL | 614 | 4 | 0.6% |
| HEL | 711 | 3 | 0.4% |
| DIL | 913 | 5 | 0.5% |
| CPL | 301 | 4 | 1.3% |
| | By Age (only permanent employees) | | |
| | <30 years | 30-50 years | >50 years |
| CESC | 253 | 2,901 | 3,766 |
| NPCL | 198 | 248 | 52 |
| CESC Rajasthan | 79 | 162 | 17 |
| MPSL | 27 | 31 | 6 |
| HEL | 13 | 129 | 41 |
| DIL | 22 | 128 | 8 |
| CPL | 4 | 6 | 18 |

We aim at increasing women representation in our workforce to 12% by 2030. We will achieve our goal by nurturing women in the society to take up suitable opportunities within the organization and continuing to promote a culture that empowers women.

Through empowerment, we instil leadership qualities amongst women by undertaking the following programmes:

- Outbound Programme on Leadership & Team Building
- Women's Leadership Development Programme
- "Being Free - Reclaiming Our Innate Power As a Woman", a programme for leveraging strength for success in women.

At NPCL, we are also forging equality for a gender equal world. We organized a workshop on "Gender sensitization" with the help of an external facilitator in order to create awareness about the importance of gender sensitivity and the principles of gender sensitive communications.

The next sections of this chapter will help you familiarize with our practices and procedures focused on creating equal and fulfilling opportunities and fulfilling opportunities that will create a just and equitable work environment.

## International's Women's Day

We celebrate and honour the achievements of women every year by inviting experts and celebrities from diverse background to deliberate about gender issues and share thought leadership messages. The event also includes a slogan contest and a bunch of cultural events to celebrate the joy of womanhood.


*International Women's Day celebration*

# Attracting the Right Talent

At CESC, we believe that attracting the right talent at an early stage has a pivotal role in providing us the competitive edge in the market. We strive to attract the next generation of talent and actively reach out to young minds on university campuses as part of our recruitment strategy. "Unmesh", our summer internship programme for pre-final year students, provides us with the perfect opportunity to assess the competency and cultural fitness of the students. The selected students undertake live projects of business relevance under our in-house domain experts. The best performing candidates based on their final evaluation are bestowed with pre- placement offers to work with us.

Our attempt to attract the best talents in the industry and be known as the 'Employer of Choice', have led us to introducing a Campus Connect Cross Functional Team (CFT) comprising of employees who are alumni of premium institutes who are working with us at present. The CFTs organize technical seminars by onboarding the subject matter experts based on the needs identified by the institute and sponsor campus events to help potential students to connect with our brand. The CFT members also keep in touch with the selected students after campus hiring till their onboarding process is complete.

### Campus to Corporate

We understand that our new campus recruits are fresh out of college and require special attention to help them have a smooth transition into the corporate world. Thus, at NPCL, we have designed a 20-day theory session, conducted by our internal trainers with the goal of imparting knowledge in line with their job roles. Our structured and well-planned Campus to Corporate sessions become a vital component of their transition journey by empowering the fresh graduates with the right tools to achieve greater personal and professional excellence.

During the financial year, we expanded our team and introduced new members to our family through our hiring programmes, as showcased below

| Company name | Male (Nos) | Hiring Rate | Female (Nos) | Hiring Rate | Total(Nos) | Hiring Rate |
|---|---|---|---|---|---|---|
| CESC | 56 | 0.87% | 24 | 4.79% | 80 | 1% |
| NPCL | 85 | 18.27% | 4 | 12.12% | 89 | 11% |
| CESC Rajasthan | 50 | 20.00% | 0 | 0.00% | 50 | 19% |
| MPSL | 22 | 34.92% | 1 | 100.00% | 23 | 36% |
| HEL | 8 | 4.44% | 0 | 0.00% | 8 | 4% |
| DIL | 3 | 1.96% | 1 | 20.00% | 4 | 2% |
| CPL | 1 | 1.25% | 0 | 0.00% | 1 | 1% |

Retaining our talent pool is critical for maintaining our position in the market. We offer an attractive employee value proposition and create every opportunity to fulfil their career ambitions. This process starts with onboarding the talent.

## Talent Onboarding

Successful integration of new recruits is very essential for making them a part of CESC culture and Values. The induction programme for new fresh graduates joining as Management Trainees is christened as 'Anneswan', while 'Unmilon' is a separate induction programme organised for new hires joining as Trainee Assistant Officers.

Anneswan commences with a unique practice of inviting the parents of new joinees and distinguished professors from their educational institutions.

The induction programme, extending up to six weeks, not only sensitizes new hires about the organization, its Core Values, its business goals and challenges, but also provides a guided and holistic exposure to different functions, facilitated by classroom trainings, outbound programmes, mentorship by senior leaders, departmental visits and interactions with various departments.

Our top leadership interacts with the new joinees and shares perspectives, experiences, and wisdom to inspire and motivate them at the beginning of their professional life.

Once the new joinees are onboarded, we have put in place a structured talent management process to ensure that they attain their full potential and grow professionally in their career.

### Aarambh: Induction Programme at NPCL

For providing the new joiners with the right and guidance around acquiring business awareness, inculcating our Values and culture NPCL organized a 3-day classroom induction program with the objective of: -

a. Familiarizing the vision, mission, Core Values, company policies and procedures.

b. Holistically understanding various functions of different departments

c. Interacting with Senior Leadership Team of our organization.

# Creating Unique and Fulfilling Career Opportunities

It is very essential to provide each talent with the right platform and medium to grow as a professional within the organization. Nurturing each employee and recognizing them for their work acts as a catalyst in helping employees experience a fulfilling professional career.

## Talent Development

We believe that retaining our talent by providing unique and fulfilling career opportunities is essential for business continuity and unlocking new business opportunities. At CESC, our efforts are focussed at creating a conducive work environment with stable and fulfilling career opportunities. We provide multiple avenues for growth and development of our employees to realize their potential and contribute to the advancement of the business.

The integrated appraisal system deployed vide the Balanced Business Score Card manages and assesses our employee's performance against individual targets and their competencies in alignment with the Core Values for increments, performance bonuses and career progression.

The annual appraisal process also helps in identifying development needs of our employees based on which organization provides specific trainings from an extensive bouquet of training programmes designed to develop behavioural and functional competencies derived from job descriptions. Training needs identified through the process are mapped into an annual training plan and imparted accordingly. The identified training programmes are enabled through state-of-the art training facilities equipped with training simulators, models, films and handbooks with the help of in-house trainers and experts as well as external faculty members. The imparted course modules are accessible at our Oracle Learning Management System post the actual sessions.

*In-house training programmes*

### CESC Rajasthan's Assessment Development Centre

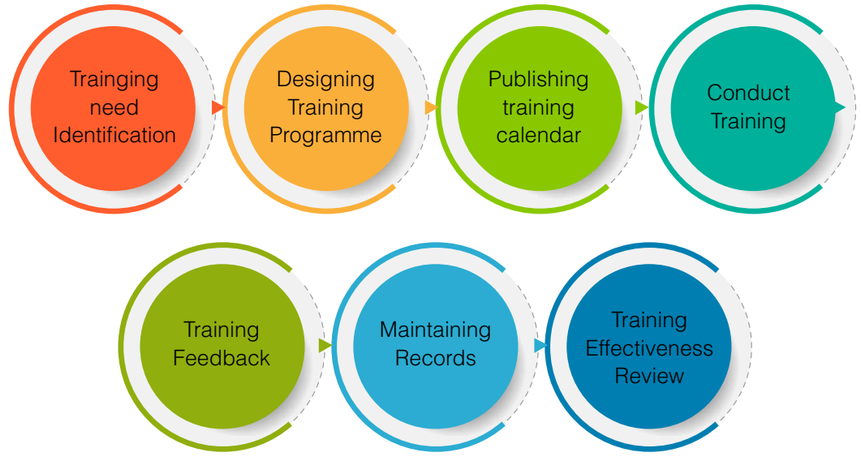
CESC Rajasthan organized a Development Centre in partnership with Thomas Assessments Pvt. Ltd.

The programme is aimed towards achieving inclusive growth by identifying and developing talents with an entrepreneurial spirit.

The approach of the programme includes monitoring the individual's performance, years of service and behavioural patterns. Based on the results, high potential participants are identified and nominated.

Thus, the Development Centre caters towards bringing in continuous development, building leadership qualities among our employees and providing feedback on strengths and progress in learning of each participant.

The flow diagram below represents our organized learning approach:




Our training programmes are classified across four categories:

## Training Classification

1. Need based training programmes improve behavioural attributes like creativity and innovation, communication and business writing skills and technical skills like energy management and maintenance
2. Curriculum based training programmes develop the knowledge and skills of employees engaged in specific areas to the desired level on distribution technology and material management
3. Specific interventions programme addresses priority areas of the organisation through training on cost management and customer service to name a few
4. Leadership development programmes enhance the leadership potential that drives organizational excellence through programmes on transformational leadership and general management programmes.

*Behavioral Training Programme*

Every year we review and update our training modules and introduce new courses with the aim of constantly evolving ourselves as an organization and making our employees adaptable to the changing ecosystem. It is with this objective that we aim at ensuring all our employees are trained on digital skills by 2030. Some of the new trainings introduced during the reporting period include

- Programme on HT Network Operations
- Familiarisation with BBGS Plant & Equipment for Management Trainee
- Advanced Condition Monitoring of Power Cables
- Technical Course on Power Distribution Technology for Trainee Assistant Officer
- Condition Monitoring of Transformer using Robot
- Online Pre-retirement Planning Programme
- Programmes on Emerging Technology covering Big Data Analytics, IOT and Applications and AI&ML applicable in Power Industry
- Special trainings on customer centricity
- Behaviour based programmes for officers.
- Programmes on disaster management in power utility

## NPCL Training Programmes

We at NPCL have also developed special training programmes to help our employees evolve professionally and behaviourally.

Our Leadership Development Programme (LDP) is aimed at transforming departmental heads into business leaders by providing exposing them to fundamental tools and strategies required in today's VUCA world.

Further, with the goal of improving strategic thinking, team building and nurturing change management skills we introduced the programme "A Strategic Approach to Managing Self & Others".

During the year we also focussed on building the capabilities of in-house personnel to deliver training under the "Train the Trainer Programme"

We also introduced new training models in our Distribution Training Institute focussed on working at on-load tap changer and 160 MVA cable box type transformer. In-house e-learning modules and platform are development to cater to our unique knowledge and skill requirements.

Cross-Functional Teams also play a critical role in the talent development process. The team is set up to guide individuals on process improvements and innovation in major areas. Our continuous efforts towards building a knowledge hub and supporting our employees lead a fulfilling career which is demonstrated by the number of training hours invested per employee over the reporting period.

| Company Name | Total Training and Development Expenses (Lakh INR) | Percentage of total employees receiving training | Training Hours/Employee |
|---|---|---|---|
| CESC | 201.63 | 44% | 7.39 |
| NPCL | 10.41 | 100% | 36.59 |
| CESC Rajasthan | 3.41 | 96% | 2.08 |
| MPSL | 0 | 82% | 2.98 |
| HEL | 5.73 | 98% | 4.00 |
| DIL | 8.89 | 98% | 5.21 |
| CPL | 0 | 13% | 1.48 |

We look beyond imparting training to our employees and also monitor the potential of each individual based on their knowledge and skill set. This helps us in identifying the right talents for the right possible job in the future through succession planning, resulting in a smooth business continuity process.

## Succession Planning

We regularly access the internal capabilities and skills of our employees to create opportunities for succession planning and internal job transfers. Succession planning follows a streamlined process of identifying individuals who have constantly demonstrated high performance over the years and have the potential to assume higher responsibilities.

Our development centres have been designed to develop and assess these talents for the assumed roles. As part of the company's Talent Management process, CESC has formed the Young Executive Board (YEB). Introduced in the year 2009, this initiative aims at nurturing talents drawn from a pool of high performing and high potential young officers from the organisation. The forum gives them an opportunity to participate in strategic decision-making process through projects that have cross-functional perspectives and impact. It also provides a platform for these identified candidates to be groomed in building competencies in the improvement areas and assessed on their readiness for holding a role of higher responsibility.

To keep up their motivation and instil a spirit of competency among the entire pool of talents, we acknowledge their performance through several reward and recognition programmes.

## Rewards and Recognitions

Rewarding and recognizing our employee's efforts not only motivates and enhances their commitment but also enables us to build a strong employer brand. Appreciation of good behaviour and work creates happiness and job satisfaction while promoting teamwork, competitiveness and loyalty towards the Company.

We celebrate the RP-Sanjiv Goenka Group Foundation Day every year on 13th July since the year 2013. On this day, we acknowledge employee contributions and their actions which are aligned with the Group Core Values.

On this day, several awards including the Outstanding Achiever Award, and Core Value Champions Award are given out to the deserving employees in the presence of all employees and their family members.

*Spot recognition award*

**Some of the other company level awards include:**

- Udaan - for Senior level Executives
- Nakshatra - for Mid and Junior level Executives
- Surya- Supervisor of the Year
- Saptarshi- for Team Performance of workmen
- Eklavya- Workman of the Year
- Abhay- for Team performance of workmen
- Sabash- Spot Award for non-covenant workers
- Kudos Spot Award for officers in the ranks of Executive to Deputy Manager
- Kaizen and 5S - Innovative approach towards better ways of doing things

Several other reward programmes are undertaken for the deserving employees at our subsidiaries. These are as follows:

**HEL & DIL**

- Aaditya- Employee of the year
- Dhruv- Employee of the month
- Ulka- Sport Award
- Outstanding Teamwork Achievement Award

**Employee Engagement**

- Award categories for Quality Month include
- 6S
- Kaizen
- Quality Circle
- Process Improvement
- Allied Concepts

**CESC Rajasthan**

- Aspirations
- Metre Reader of the Month
- Vigilance Performer of the month
- Best Sub Divisional of the Month
- Rewards for theft lead

Awards and recognitions are definitely a strong motivational aspect for our employees, but at the same time it is also essential to engage with our employees regularly to create a connection with them and foster a relationship. We believe that this shall enhance our employees perceive a sense of belongingness and be highly content with their workplace.

# Employee Satisfaction

As a responsible employer, we strive towards ensuring our employees feel a sense of pride working with CESC. Our multiple employee engagement programs offering multiple channels to stay connected with our employees have been a real success which is evident from the results of employee opinion surveys.

## Employee Engagement

Our highly committed and competent workforce are the primary drivers in providing uninterrupted electricity service to its millions of consumers. Throughout the year we organize several employee engagement initiatives to keep them motivated so that they strive hard and achieve individual and organizational goals.

These events are focused on fostering a sense of togetherness and belonging, promoting health and fitness and making their families an inclusive part of our community. Some of the several engagements conducted during the reporting period are listed below .

*Performance during Avishkar*

*Organization of sports events*

### CESC Employee Engagement Programmes

**Health, Sports and Fitness**

Understanding the importance of physical fitness, we undertake various fitness related initiatives to ensure the physical well being of our employees.

- Annual health check-ups
- Free doctor consultation
- In-house recreational activities
- Sporting events at our established sports clubs
- Annual Sports Meet
- Inter-departmental football and cricket match
- Flagship Annual Chairman's Cup Tennis Tournament
- Online chess tournament in collaboration with Sportskedia

**Employees' Family Engagements**

We believe that the family members of our employees are an extended support system for the company. We love getting involved with them through our different programmes and initiatives like:

- "Avishkar", an annual talent hunt competition for employees and their family members.
- "Suvechha", a programme designed for greeting employees on birthdays and sending cakes, flowers to their homes to celebrate with family.
- Children's Carnival, a programme featuring unique activities for our employee's children.

**Team Engagements**

To engage with our employees, we have various mediums and platforms in place

- "Leadership Connect", an online portal which connects employees with the top leadership including Managing Directors (MDs)
- "Coffee with MD", a weekly initiative enabling one to one discussion between an employee and the MD
- Celebrating "Utkarsh Dibas" and "Sankalp Dibas" for departmental achievements.
- Town hall meetings
- Family group communication meetings
- Small group interaction meetings

Some of our other employee engagement initiatives across the subsidiaries are as follows:

| Subsidiary | Employee Engagement Programme/Activity |
|---|---|
| HEL and DIL | • Engagement based on the 7 RPSG Group Core values<br>• Planting trees on World Environment Day<br>• Flag hoisting on Independence Day and Republic day<br>• Festivals celebrations like Durga Puja and Ganesh Chaturthi<br>• Fun events like housie and drawing classes for the children of employees |
| NPCL | • Celebration of festivals and New Year<br>• "Family Day", a cultural extravaganza<br>• Health and wellness talks- on occasions like World Heart Day, World Cancer Day, World Kidney Day and World Diabetes Day |

# Employee Facilities and Benefits

We understand that the well-being of our employees at workplace plays a central role in creating happiness, increasing competency and satisfaction. As a responsible employer, we ensure taking all possible measures towards the holistic well-being of our employees.

Small group interaction session in progress

Apart from providing competitive compensation packages, CESC ensures flexibility at work. We have declared every alternative Saturday as a non-working day. Also, we offer a plethora of health and financial benefits that are competitive within the region to meet the needs of our employees. They are as follows:

## Employee Benefits at CESC and Subsidiaries

### Permanent Employees

- Provident fund
- Gratuity
- Employee's Deposit Linked Insurance (EDLI) benefits well above the statute.
- Co-operative credit society
- Job based & attendance-based incentive scheme
- Insurance coverage
- Accident Compensation Scheme over and above statutory benefit of Employees Compensation Act
- In-house medical facility with free OPD treatment and free medicines from partner chemist shops
- Recruitment of eligible nominees are done in case of death of a permanent employee in harness and voluntary separation on medical ground.
- Hospitalization facility and medical insurance for officers and their family members
- Reimbursement of cost of spectacles and artificial dentures
- Family Medical Benefit Scheme for serving employees, spouse and two dependent children as well as the retired employees and their spouses. On demise of an employee, his/her spouse will continue to enjoy the benefit of Medical coverage.
- Post-retirement medical insurance up to 15 years for employee and spouse

### Additional Benefits at Subsidiaries

- At HEL and DIL, the permanent employees are provided with housing facilities, site allowance for employees at locations, interest free car and medical emergency loans, festival allowances, pick up and drop facilities, meal and gift cards and flexi pay for tax savings.
- At NPCL, our employees' benefits, and facilities includes subsidized lunch in canteen/cafeteria, transport facilities, Out-patient tie-ups with Fortis and Yatharth Hospital, bike and car loan policies and club membership to General managers and above.
- At CPL, bike loan is provided to junior officers and car purchase loan is provided to executives and above. Apart from these benefits we are also providing carpool facility for employee commute to office.

*Organizing vaccination drive for employees*

We also have a COVID 19 Support Policy that was instituted last year. Under the aegis of this policy all our employees are covered under COVID insurance scheme and have received double vaccination doses. In the unfortunate situation where the employee succumbs due to COVID, we uphold our Policy to provide employment to either the spouse or a child based on qualification and experience.

## Employee Opinion Survey

Employee opinion related to workplace satisfaction helps in creating long term relations with the employees and ensures talent management through higher retention rates and less grievances that demand quick resolution. We undertake an annual online engagement survey covering all employee categories in collaboration with the Great Place to Work (GPTW) Institute as per their globally acclaimed model. The annual survey conducted by GPTW is based on five major dimensions:

**Credibility**
Communication, Competence, Integrity

**Pride**
Support, Collaboration, Caring

**Fairness**
Equity, Impartiality, Justice

**Respect**
Personal Job, Team, Corporate Image

**Camaraderie**
Intimacy, Hospitality, Community

We feel proud to announce that the GPTW Trust Index Score for the current financial year has improved to 86%, as compared to the last year's score of 83%.

We have proactively addressed the issues raised by our employees in the communication meetings and other forums. To mention a few, we have introduced a spot recognition programme "Kudos" for employees and declared every alternative Saturday as a non-working day. During the pandemic we also ensured that all our employees were provided with all kinds of medical and humanitarian support including double doses of vaccination.

**86%**
CESC
(GPTW-Trust Score)

**78%**
NPCL
(Gallup Score)

NPCL also undertook employee satisfaction surveys through Gallup to gauge the engagement levels of employees. We received 95% response rate and the Employee Engagement score was 78%.

Our low turnover rates are a true reflection of the employee's trust with CESC.

| Company Name | Male | Female | Overall |
|---|---|---|---|
| CESC | 0.31% | 1.40% | 0.39% |
| NPCL | 13.00% | 30.00% | 13.85% |
| CESC Rajasthan | 8.00% | 0.00% | 7.70% |
| MPSL | 10.34% | 0.00% | 10.17% |
| HEL | 5.50% | 0.00% | 5.50% |
| DIL | 3.80% | 0.00% | 3.80% |
| CPL | 0.00% | 0.00% | 0.00% |

# Human Rights

Being recognized as one of the great places to work, the fairness in our approach is resonated by the voices of our employees. At CESC, we recognize our fundamental responsibilities in respecting and protecting human rights and are committed to ensuring a diverse, inclusive and equitable work environment.

Our commitment to human rights is contained in the Labour Relations Policy which takes into consideration the following aspects:

| | | |
|---|---|---|
| No Child Labour | Working Hours and Fair Wages | Non-Discrimination |
| No Forced Labour | Employee Rights to associate with Unions | Descent Working Conditions |

CESC has deployed a structured grievance redressal process, which is based on the principle of 'prevention is better than cure' to address human rights concerns and satisfactory resolve them.

All leaders in CESC, including the Managing Director, practice an "Open Door" policy whereby anybody can approach them to discuss issues and raise grievances. An online portal, Leadership Connect is in place which provides a platform for all Executives to directly interact with the members of the Top Leadership team, including MDs, regarding their queries, ideas and grievances.

Grievances of non-covenant staff are dealt formally by the Industrial Relations personnel at respective sites through the three-tier grievance redressal mechanism as depicted below:

**Tier 1: Unit Level**
Our line executives and supervisors aim at providing an instantaneous resolution to the received grievances.
In case the grievance is sill not addressed the line manager and the IR officer resolves it jointly. If the issue is a general concern for all employees, then it is dealt with by the Unit Head.

**Tier 2: Divisional Level**
In cases where the grievance resolution is found unsatisfactory by the complainant, the issue is escalated to the Divisional Headquarter.

**Tier 3: Corporate Level**
In case the grievance remains unresolved, the matter is escalated to the Corporate IR headed by the GM, where the issue is discussed and negotiated with the central leadership of the bargaining union to arrive at a settlement.

Issues related to sexual harassment are resolved through a separate Internal Complaint Committee (ICC), which is headed by a female executive director and comprises of six members from different functions of human resources and an external member.

We can proudly declare that during the reporting period, we have received no complaints regarding violation of human rights, child labour, forced labour, freedom of associations, right of collective bargaining and discrimination based on gender or social vulnerability.

# Occupational Health and Safety

CESC believes that every accident is avoidable and excellence in safety practices is an outcome of creating a safety culture within the organization. Committed to 'Zero Incidents', we guarantee a workspace that is free from health and safety hazards by implementing safe work procedures, promoting a robust safety culture and monitoring and controlling unsafe work conditions. This is communicated by an inherent belief that 'Good Safety is Good Business' through our Safety Vision, Safety Principle, Safety Policy and Safety Pledge Statements.

We ensure the highest standards of health and safety at our workspace through the development and dissemination of the Corporate Safety Manual and the Corporate Safety Policy along with the seven sets of Internal Safety Standards namely 'Confined Space Entry', 'Working at Height', 'Electrical Safety', 'Permit to Work', 'Safety Observation' and 'Incident Investigation', which are aligned with the requirements of ISO 45001.

The Apex Safety Committee comprising of the Managing Director (Distribution), Managing Director (Generation) and the Executive Director (HR & Admin) review the safety performance and oversee the effective implementation of the policies/ standards by the Safety Cell, Divisional Safety Monitoring Committees and Unit Safety Committees on a periodic basis. The Unit Safety Committee equally represented by departmental officers, employees and workmen, discharge their responsibilities to monitor safety incidents, identify unsafe acts, facilitate trainings, suggest amendments in safety procedures and manages safety through the Capability Building Sub-Committee, Rules & Procedures Sub-Committee, Safety Observation Sub-Committee, Incident Investigation Sub-Committee respectively.

The effectiveness in implementation of the safety procedures including the recommended corrective and preventive actions is ensured through actions ensured through the following measures:

| | | | |
|---|---|---|---|
| Sharing of monthly report to Managing Directors | Bi-monthly Management Committee Meetings | Site safety audits undertaken by safety cell and third party | Site safety observations by departmental officers |
| Safety trainings and job safety workshops | Communication meetings for different levels | Safety Awareness Survey conducted at a regular interval of 2-3 years. | Safety Perception Survey conducted once every 3 years |

## Healthcare Facilities

We at CESC, have a strong focus on health and well-being of our people. Best-in-class medical facilities including major super-specialty hospitals, nursing homes and diagnostic clinics are available to the employees through tie-ups. We operate 27 well-equipped dispensaries across the organisation managed by qualified doctors and pharmacists who are available round the clock. We also have state of the art ambulance with basic life supporting services at DIL and HEL and a multi-purpose fire van at BBGS equipped with all accessories to extinguish a fire in case of an emergency.

As a part of our occupational health initiative, we conduct regular health check-ups of our employees. In addition to the regular health check-up, we undertake electro hysterography for vertigo testing, cardiovascular risk monitoring, bone mineral density testing, eye and dental check-up camps, orthopaedic camp, diabetic camp, cardiac camp, and snake bite workshop.

### CESC Rajasthan

In association with DHRE (Dr Reddy Health) and RPSG Group, health awareness programs are conducted for officers and their family members on topics like backpain at workplace, kidney care and diet & nutrition.

## Mitigation of Health and Safety Risks

The establishment of Management Systems is based on identification of hazards, the qualitative and quantitative assessment of risks, the planning and implementation of the corrective and preventive measures. In line with our aspiration towards 'Zero Incidents' at our workplace we conduct Hazard Identification and Risk Assessments (HIRA) and Job Safety Analysis (JSA) for routine and non-routine jobs, based on which risks are identified, assessed and classified as high, moderate and acceptable, after which risk control and minimization measures are defined to bring down the risk index within the acceptable limit. The process takes into cognizance, of root cause analysis from incident investigation reports, safety rules violation identification through site safety audits, unsafe acts observed during safety observations and recommendations from external experts.

The integration of the safety precautions and procedures into the standard operating procedure ultimately leads to the preparation of the Safe Work Procedures (SWPs). The effective implementation of the SWPs and corresponding Work Instructions (WIs) through trainings ultimately results in mitigating the risk.

The major risks identified by CESC during the reporting year include:

- Electrical safety for workmen.
- Working at height.
- Confined Space Entry
- Material handling both regular and heavy materials.
- Hot work and Chemical work

Several interventions have been introduced to enhance health and safety in operations including mitigation of the above-mentioned risks. Some of the initiatives in our generation and distribution operations are elaborated below:

### Safety Interventions in Distribution

- HV cable end termination guard
- Flash test equipment in LV distribution system
- 5-way and 6-way shorting clips in HV and LV distribution systems
- Telescopic OH line earthing cum testing rod in LV distribution system
- 400 V Test Lamp with probes during meter inspection
- Insulated crowbar to ensure safety during manual excavation
- Safe Zone creation with hard barricading
- Special eye-guard for spec-wearing gas cutters
- Work position lanyard for working at height in switch yards
- Waterproof waders for transmission tower maintenance
- Use of polyethylene make hard foldable 2-seater boats to access transmission lines in marshy areas and fisheries for maintenance especially during rainy season

*Portable tower lights*

### Waterproof Waders for Transmission Tower Maintenance

Due to topographical nature of the areas across the route of our transmission lines, a large number of transmission towers in vast areas remain under knee deep to waist deep water throughout the year. To carry out any maintenance activities including regular ground patrolling also, the workmen need to physically access these waterlogged towers. Climbing towers or attending multiple towers by passing through such waterlogged areas not only pose serious threats to the safety aspects of working at height or near live lines but also cause serious health issues. With a view to mitigate the health and safety hazards of our workmen for their regular activities in such locations, we have introduced a tailor-made waterproof wader along with gumboot as a special PPE for all the workmen working in such conditions.

*Workman with waterproof wader*

## Safety Interventions in Generation

- Colour coding of chain pulleys to determine load test status of chain pulley blocks at a distance
- Medium velocity spray water system at cable galleries
- Load testing of electric overhead traveling cranes with water weight
- Forced fresh air circulation system (ventilation) for the air-conditioned rooms
- Tarpaulin removal platform for easy removal of tarpaulin by the drivers from coal trucks.
- Fibre reinforced polymer insulated ladders to approach power transformers and fibre reinforced polymer gratings and handrail to approach cooling tower fan motor hub area to prevent damage from corrosion
- Aluminized fire proximity suits for high temperature works,
- Chemical spill suits for chemical handling
- High voltage protection suits for working at high voltage zones
- 12-Watt LED Hand lamp in confined spaces to reduce fire and explosion risk
- Neolite fire nozzle with least back pressure which can be handled by single person.
- Robot camera for checking boiler tube thickness which decreases risk of human at height.
- Virtual reality application for safety training

## Application of Technology in Safety Prevention

While we have been able to mitigate our risks through improvements in processes, introduction of safer materials and enhanced personal protective equipment, we also leverage upon digitalization and technology to minimize operational costs, improve safety, and broaden the scope of customer services by reshaping the processes through integration with immersive environment.

The challenging training requirements for a large group of employees of Distribution Division within a short span of time, for jobs related to provision of temporary power supply to Puja pandals and replacement of cut-outs by MCBs in consumer premises following all safety norms provokes a tough test for us. To meet this, Safety Cell came out with an innovative training initiative utilizing the Large Format TVs (LFTs) installed in our various site offices by broadcasting specially prepared in-house training films for our supervisors and workmen attached to Mains department. To cover the above identified training needs, 2 training videos elaborating the safe work procedures were prepared involving our own experienced technicians demonstrating all safety protocols involved in such work.

Using virtual simulated situations, employees can be trained on how to respond to different situations effectively and efficiently. It offers a virtual environment for immersive training sessions for power station operators. Virtual Reality (VR) training helps in making its workforce ready for real dangers, enhancing their safety and proficiency. It offers a faster and safer way for the utility personnel to examine equipment, thereby reducing the probability of technicians getting injured or harmed.

One unique intervention to highlight that will aid us in eliminating the risk from working at height is the Virtual Reality training application.

## Virtual Reality (VR) Application for Safety Work

Work at height can be made safer by better training and quick detection of individuals having problems with working at height. Workers proving to be less suited for the job can be subject to more intensive training or recruited for different positions. Unfortunately, the early detection of workers unsuited for working at height involves specialized personnel and expensive equipment to recreate the similar stressful environment.

CESC, committed towards 'Zero Incidents' has tried to solve this problem with the aid of Virtual Reality Module. Virtual reality training can offer a risk-free space to develop the skills needed to work in dangerous environments at height and the training process duration is significantly quicker. Added to that, it is possible to monitor the psycho-physiological state of the worker using biomedical instruments and identify potential psychological weaknesses

This module is created in 360° 3D stereoscopic VR footage, and the viewer is trained with basic instructions and requirements for working at height and after which the person has a real sense of being at height. The VR module fully immerses them in the realistic environment of 236 m high river-crossing transmission towers at Haldia, which is the heaviest and tallest transmission tower in India. The training is highly effective and imparted in a very holistic and safe approach.

## Health and Safety Trainings

We recognize that technology interventions alone are insufficient to mitigate health and safety risks. Adequate awareness on the safety risks and their preventive measures is also essential. Our trainings are classified as:

- General Safety measures training
- Training on SWP and Work
- Behavioural Based Safety (BBS) trainings
- Job specific video based safety trainings

During FY 21-22, as we continued to abide by the COVID-19 restrictions, the trainings have been limited. Summarized below are our safety training performances:

| Company Name | Training Hours-Permanent Employees |
|---|---|
| CESC | 7,389 |
| NPCL | 3,055 |
| CESC Rajasthan | 572 |
| MPSL | 66 |
| HEL | 635 |
| DIL | 850 |
| CPL | 264 |

## Creating a Safety Culture

Apart from formal training programmes, several health and safety communication campaigns are carried out concerning areas of specific attention to imbibe the safety culture. A strong safety culture is established at the top management and it extends to all our employees. They proactively participate in all health and safety programmes and share the safety vision of the company to remind everyone is responsible for safety. They lead by example and abide by the safety norms and we expect the same from all our colleagues.

The safety culture is imbibed within every employee, through various behaviour-based safety programmes such as but not limited to slogan competitions, safety suggestion competitions, poster competitions, safety quiz, rallies and drama competitions with motivational reward programmes for exemplary safety behaviour and safety performance, through unit safety days at various departments/ sections and on special days like National Safety Day and National Safety Week.

We continue to celebrate the Central Safety Day which involves not only our employees but also eminent personalities from academia and government services who grace the occasion. In the event, plethora of attractions are set up and organized including stalls from different departments showcasing their safety initiatives, safety related film screening and award ceremony for best safety performances.

Several other instruments like posters, signages, standees, Large Formal Displays (LFDs) and publications in the form of half-yearly magazines – Safety Net and Surakshabarta and the web based monthly newsletter – Spotlight enable a cohesive safety culture at CESC.

The establishment of a cohesive safety culture in an organization lays down the foundations for safety management systems. Through empowerment of each member of our workforce, a system is established for identification of unsafe acts and unsafe conditions. Employees can report unsafe acts and unsafe conditions using an android based application and provide their suggestions on the “Click to Safety” online portal. Subsequently the cases are analyzed and investigated for corrective and preventive actions. The Management gratifies teams/ groups among its employees under monthly rewards and recognition programme for their efforts towards ensuring zero incidents at workplace. At HEL and DIL, we also gratify the contract workers with the ‘Spot Award’ and employees with the ‘Employee of the Month’ Award for their efforts towards ensuring zero incidents at workplace.

With a strong intent and belief that quality and safety is everyone’s responsibility, NPCL has embraced the highest standards for ensuring continuous improvements in productivity keeping safety of each individual at the core of its approach.

### No Hastle No Waste

This was the theme for NPCL’s recently concluded Quality Month, held in November 2021. The annual event which reinforces our vision of attaining “Zero Defects”, observed twelve different activities focussed on spreading awareness on quality and safety and witnessed active participation from all departments. Through this event a special ceremony is organized to felicitate employees including third party employees and departments for their exemplary performance in area of quality and safety. The event also saw the launch of our Quality Handbook, which covers various quality tools, and methodologies that can be applied by employees for effective data analysis, idea generation and solution implementation.

To integrate the best of practices for quality and safety at workplace, we encourage every employee to register projects under the categories of Kaizen, Quality Circle, and Process Improvement. Even the workplace of employees is properly managed through regular 6S audits, which improves their productivity. Cross-functional teams are formed to take corrective action against problems identified through ideation sessions by endorsing fact-based studies. With a belief, that learning is a never-ending process, the team regularly conducts internal and external training on various quality tools and techniques to empower employees to independently undertake and implement projects.

The institution of the concept “Safety first” and emphasis on quality has ensured zero tolerance to non-conformances in quality and safety at site.

## Health and Safety Performance

The various technological interventions, trainings and behaviour-based safety programmes have resulted in the making of a robust health and safety management system. All our lost time incidents and fatalities are brought to our attention and reported timely by the concerned departments to the management using the Safety Incident Reporting Systems. Our health and safety performance are showcased in the table below:

| | CESC | NPCL | CESC Rajasthan | MPSL | HEL | DIL | CPL |
|---|---|---|---|---|---|---|---|
| | Permanent Employees | | | | | | |
| Number of fatalities | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of lost work cases | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| First Aid cases | 33 | 5 | 0 | 0 | 2 | 0 | 0 |
| Loss Time Injury Frequency Rate (LTIFR) | 1.16 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Recordable Injury Frequency Rate (TRIFR) | 3.29 | 5.70 | 0 | 0 | 6.01 | 0 | 0 |

# Protecting our Environment

The environment bestows us with an abundance of gifts in the form of natural resources and it has its own mechanisms to heal itself and replenish the natural resources being used. However, overexploitation and overuse of these resources in the form of excessive deforestation, rapid urbanisation, industrial emissions polluting the atmospheric air is gradually resulting in depletion of these natural resources at a rate higher than nature can replenish itself and reconstitute those resources. Over usage of natural resources is also a major cause for climate change and global warming which is far and wide becoming a major threat to our sustenance and its impacts are being felt across the world.

Powering a Sustainable Future calls for a concerted effort to mitigate the challenge. We at CESC, are committed towards environment protection and are guided by the Board approved ESG policy which provides strategic directions towards improving our environment performance on a continual basis. Environmental objectives and targets are drawn from the Policy that conform with the requirements of ISO 14001 and goes beyond the limiting values prescribed under statutory acts and rules. These targets are aligned with best-in-class industry practices and further demonstrate our concern for the environment.

Leading this journey, is the Apex Environment, Health and Safety (EHS) committee headed by Executive Director-Generation. The committee is responsible for overseeing the effective implementation of the policies/ standards and reviewing the environmental performance against the targets. Monthly environmental performance and environmental issues pertaining to legal compliance are dealt with in the Management Review Meeting headed by the Managing Director-Generation who is responsible for bridging the communication to the Board.

Over the years, our efforts towards improving our environmental performance, have laid emphasis on increasing energy efficiency, minimizing air pollution, reducing water footprint, minimizing of waste in operations and integrating biodiversity conservation through innovative practices and acquisition of new technologies which testify our commitment. We continue to embrace this path and remain accountable to the environment around us through our current practices as well as our future plans which have been elaborated in this chapter.

# Energy and Carbon

We are cognizant of the challenges posed by climate change and the urgent need for reducing greenhouse gas emissions. India being a signatory to the landmark agreement at Paris is committed to achieve net zero emissions by 2070 and will strive towards reducing its emission intensity as of 2005 by 45% by 2030. We at CESC being in the business of power generation recognize that we have a key role to play in providing our consumers with reliable power while enabling the country in phasing down use of fossil fuels in line with the Glasgow Climate Pact and limiting the increase in the planet's temperature to below 2° C.

Our resource footprint which is largely fossil fuel based is a key contributor to our carbon footprint. We manage our resources responsibly and mindfully by implementing processes that are efficient and rationalized. Our resource footprint during the reporting period are as follows:

| Type of Materials | Unit | BBGS | SGS | HEL | DIL | CPL |
|---|---|---|---|---|---|---|
| Coal (sub bituminous) | tonnes | 32,35,319 | 1,31,393 | 29,38,831 | 27,20,968 | 3,88,768 |
| Light Diesel oil | tonnes | 627 | 630.52 | 230.1 | 646.06 | 31.73 |
| Lubricant | tonnes | 60.815 | 6.58 | 5.69 | 53.14 | 2.02 |
| High Speed Diesel | tonnes | 186.50 | 37.44 | 153.12 | 2.86 | 0.74 |
| LPG | tonnes | 0.00 | 2.28 | 0.00 | 0.00 | 3.11 |
| Chemicals | tonnes | 2,029 | 35.43 | 1,991.74 | 1,219.35 | 85.42 |

Aspiring to mitigate the negative impacts of our resource footprint we have embarked on a low carbon transformation journey.

We reaffirm our commitment as a climate steward in this journey by supplementing our efforts in reducing Auxiliary Power Consumption (APC) with integration of renewable energy and fuel diversification programmes to support climate change mitigation and adaptation.

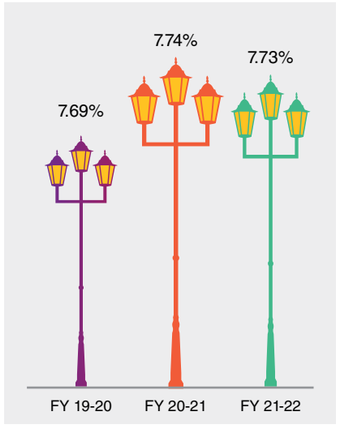
## Reducing our Auxiliary Power Consumption

Auxiliary Power Consumption (APC) is one of the major performance parameters of a generation station. We implement various initiatives to improve process parameters under the "Perform, Achieve and Trade" programme of the Bureau of Energy Efficiency, by inducting state of the art technologies, which has successfully enabled us to reduce our Auxiliary Power Consumption (APC) and subsequently avoided greenhouse gas emissions. Some of the initiatives and their accrued impacts for the reporting period are given below:

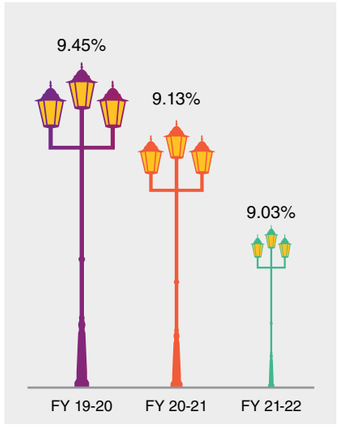
1. Installation of acoustic soot blower
2. Replacement of existing lights with LED lights
3. Reductions in lighting load through sensor-based technologies and voltage optimization
4. Replacement of cooling tower parts
5. Rationalization of ESP operations
6. Installation of variable frequency drives
7. Maintenance of air preheaters
8. Modification of PA Fan rotating element
9. Replacement and refurbishment of pumps and pump parts
10. Replacement of high energy steam valves
11. Rationalization of pumping operations

| Company Name | Annual Energy Savings (in GJ) | Greenhouse gas emissions avoided (in tCO2eq) |
|---|---|---|
| BBGS | 54,665.4 | 13,058 |
| SGS | 3,396 | 1,245 |
| CESC (BBGS+SGS) | 58,061.4 | 14,304 |
| HEL | 5,91,929 | 1,41,405 |
| DIL | 2,926 | 723 |
| CPL | 159 | 49 |

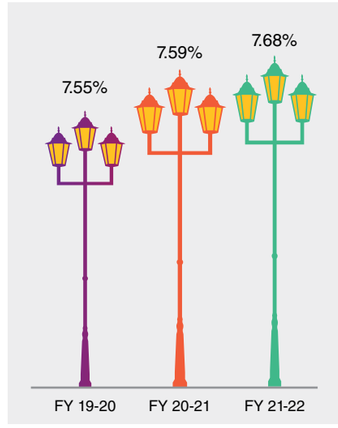
## Auxiliary Power Consumption (%)



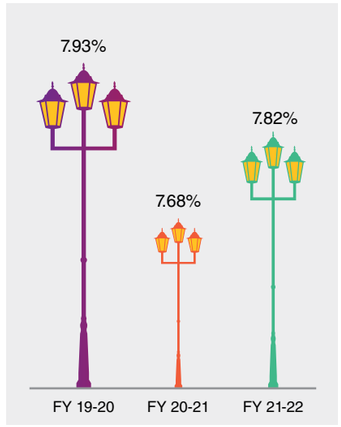

BBGS



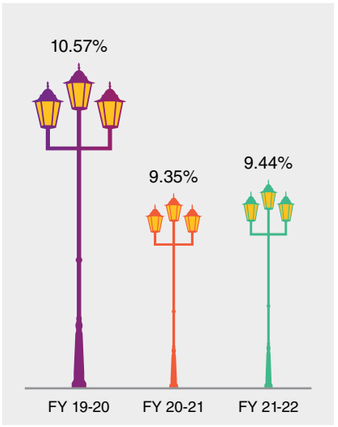

SGS




HEL




DIL




CPL

## Integrating Renewable Energy in Operations

While we endeavour to improve upon our operational efficiency through identification and implementation of energy saving opportunities, we continue to offset fossil fuel consumption for our own operations through renewable energy. Illustrated below are some of our interventions across generating stations.

### Southern Generating Station

SGS operates a 3X15 KW micro hydel project utilizing condenser cooling water discharge to river Hoogly and solar power module of capacity 3.2 kWp installed on the roof of turbine house building. These projects have avoided greenhouse gases to the tune of 153 kg CO2eq during the reporting period.

### Budge Budge Generating Station

At BBGS, we have installed 18 kW Solar Cells over the car garage to supply the our administrative building.

### Haldia Energy Limited

HEL operates a 30 KWp roof top solar plant installed on the administrative building roof and a battery-operated vehicle for internal transportation of materials which can be recharged from this solar power source. Further solar garden lights of 500 W capacity are installed near administrative building. This intervention has supported our efforts to mitigate 27 tCO2eq during the reporting period.

### Crescent Power Limited

At CPL, we continue to operate a 15 MW capacity solar power plant at Ramnad, Tamil Nadu that contributes to the renewable energy mix in Chennai city. Also, in Asansol, West Bengal we have a 30 KWp capacity solar panel module and a 2KW solar wind hybrid system, which is being recommissioned for the upcoming reporting period.

## Fuel Diversification

Stubble burning is reckoned to be a major cause of air pollution in India over the years, considering its vast agrarian economy. These stubbles or agricultural waste can alternatively be used to produce biomass pellets which have equivalent calorific value as that of Indian coal, based on estimates from the Central Electricity Authority (CEA).
We at CESC have recognized that effective and eco-friendly utilisation of the agro residue can not only save the environment, but also be a part of our solution to substitute coal as a cleaner fuel and also address its shortages to meet electricity demand.

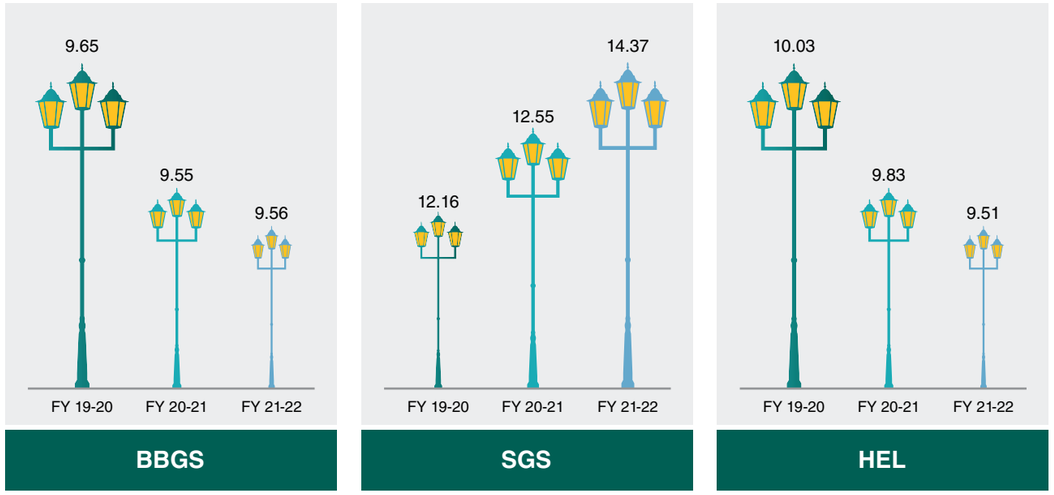
Besides, this will also help in effective engaging of the farmer community & can contribute to their livelihood enhancement.

We have begun conducting trials for co-firing biomass pellets from agro-residues like rice husk, groundnut shells and paddy straw at all our coal based thermal power plants. Different approaches of firing and effect on process parameters are ventured with series of experiments under the guidance of the senior management. Over a substantial period varying from 3 to 4 days our power plants have co-fired 170 MT of pellets to substitute a part of coal consumption.

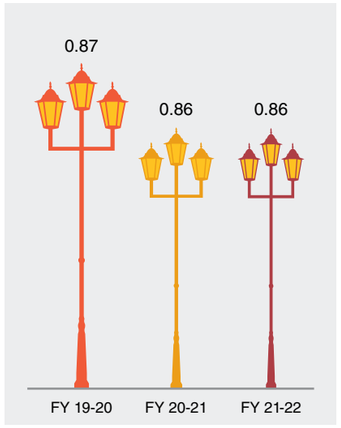
The outcome of the trials confirmed the feasibility of the solution; however, some challenges have been envisaged as a part of the learnings which we are currently working upon through process modification and upgradation.

Our continuous efforts demonstrated through the above interventions have enabled us in reducing our carbon footprint and reducing our energy intensity and our emission intensity, which testify our aspirations to provide our consumers with low carbon electricity.

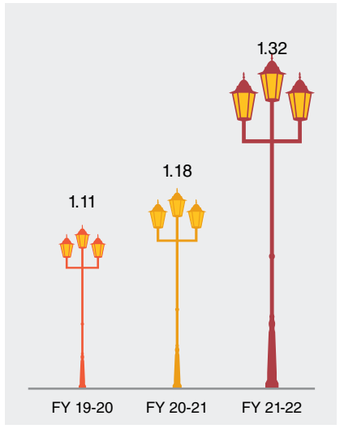
## Energy Intensity (GJ/MWh)



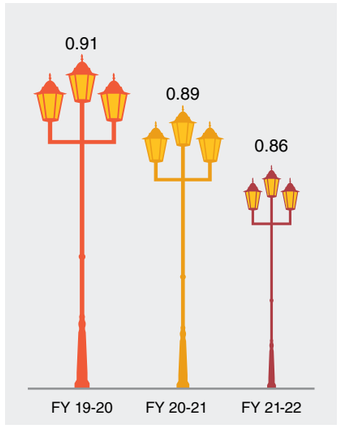
## Emissions Intensity (tCO2eq/MWh)



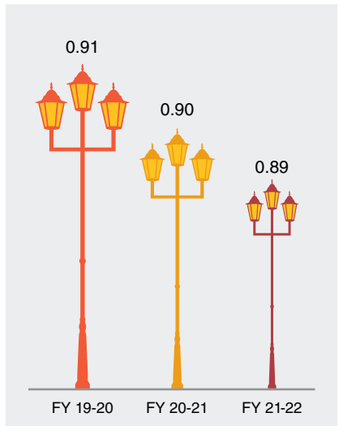

BBGS



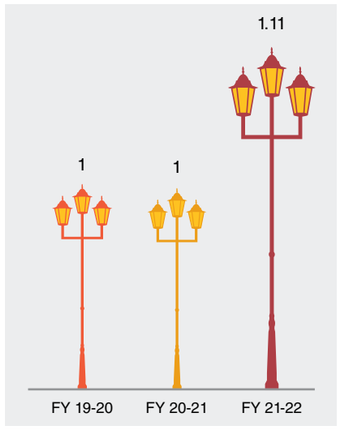

SGS




HEL




DIL




CPL

Our detailed carbon footprint and energy footprint is available in Annexure A and Annexure B of this report respectively.

As part of our future plans to amplify the positive impacts on climate change, we have set a target to convert all our plant administration buildings into certified green buildings and transform our operational fleet inside the plant by embracing green technologies such as Electric Vehicles.

# Air Emissions

We are cognizant of the consequences of the air pollutants emitted during power generation activities on the environment. All our thermal power generating stations are committed to not only comply with stack emission norms set by the statutory authorities but also operate at values which are significantly below them. Our generating stations strive continuously to reduce the fugitive emission by embracing the latest technologies and ensure strict monitoring of the air emissions. Some of the technologies embraced by us in our operations include: -

- Installation of Dry Fog Dust Suppression system in all the dust prone areas of coal handling plants.
- Telescopic chutes installed in fly ash unloading spout for dust free dry ash unloading from ash silos.
- High efficiency ESPs have been installed to keep the Particulate Matter (PM) emission well below norms.
- Green belt developed along the periphery of coal stock yard to act as a natural green shield to curb fugitive emission.
- All coal conveyors and all transfer points are covered along the entire length and equipped with dust extraction systems.
- Coal Handling Plant is provided with rain guns and water sprinklers to control fugitive emission.
- Automated Ammonia dosing system is in place to control the PM emission during combustion of varying coal quality and other probable excursions.
- NOx control technologies like low NOx burners and over fire air dampers in the boilers are in place at all generation stations. Further reduction of NOx emissions is being done through continuous operational innovation and optimization.

## 2030 Targets

| Will maintain PM emissions below normative levels of | Will maintain SO2 emissions below normative levels of | Will maintain NOX emissions below normative levels of | for all thermal plants commissioned before 2003, maintain NOx emissions below |
|---|---|---|---|
| 50 mg/Nm3 | 600 mg/Nm3 | 600 mg/Nm3 | 450 mg/Nm3 |

## Our Performance

| Generating Station/Company | Capacity | PM | | $SO_2$ | | $NO_x$ | |
|---|---|---|---|---|---|---|---|
| | | tonnes | $mg/Nm_3$ | tonnes | $mg/Nm_3$ | tonnes | $mg/Nm_3$ |
| BBGS | 750 | 568 | 20-30 | 20,598 | 850-1000 | 11,364 | 440-600 |
| SGS | 135 | 66 | 40-50 | 1,117 | 800-850 | 603 | 410-470 |
| CESC (BBGS+SGS) | 885 | 635 | 20-50 | 21,715 | 800-1000 | 11,967 | 410-600 |
| HEL | 600 | 378 | 15-25 | 26,318 | 1500-1600 | 6,895 | 400-460 |
| DIL | 600 | 428 | 20-30 | 21,973 | 1300-1400 | 6,587 | 380-460 |
| CPL | 40 | 20 | 10.8-80 | 970 | 479-596.8 | 343 | 210.9- 324.7 |

To improve upon our performance further we have already undertaken feasibility studies for installation of Flue Gas Desulfurization system (FGD) and DeNOx mechanisms to control SO2 and NOx emissions respectively. As part of our next steps for FGDs we have initiated the international competitive bidding process while technical specifications for competitive bidding process is under preparation for De-NOx mechanism.

# Water Stewardship

As climate change becomes prevalent, availability of clean and safe water is under threat. Increase in water demand beyond availability results in water stress. Water stress causes freshwater depletion and deterioration in water quality resulting in negative impacts on human health and ecosystem. We, at CESC recognize that having a water intensive operation, we have a vital role to play in protecting the water quality and stewarding water resources. We continuously monitor the water stress using the Water Filter tool of World Wildlife Fund (WWF) and manage water resources effectively as per our policies.

## 2030 Targets

| 100% | 2.25 KL/MWh |
|---|---|
| thermal power plants with freshwater source have zero liquid discharge facilities | Reduce water intensity of thermal power plants below |

## Water Withdrawal

At CESC generation stations, raw water is primarily sourced from the local rivers. The raw water undergoes pre-treatment to remove suspended solids and feed clarified water to the demineralization plant where dissolved impurities are removed through filtration and chemical processes, resulting in water suitable for use in boilers for generating steam. Generation stations at Budge Budge and Haldia have installed Ultra Filtration Reverse Osmosis (UF-RO) plants to mitigate the challenges due to high chloride content water. Water withdrawn at CESC and its subsidiaries for FY 21-22 is as follows.

| Water Withdrawal by Source (in KL) | | | | | | |
|---|---|---|---|---|---|---|
| **Source of water** | **BBGS** | **SGS** | **CESC (BBGS+SGS)** | **HEL** | **DIL** | **CPL** |
| Surface Water | 1,13,70,695 | 2,73,48,962 | 3,87,19,657 | 85,50,290 | 85,49,000 | 11,59,978 |
| Rainwater | 3,148 | - | 3,148 | 14,90,435 | - | - |
| Third party water | 8,969 | 7,732 | 16,701 | - | - | - |
| Borewell | - | - | - | - | - | 2,950 |
| Total water withdrawal | 1,13,82,812 | 2,73,56,694 | 3,87,39,506 | 1,00,40,725 | 85,49,000 | 11,62,928 |

## Water Conservation

Water in thermal power plants is mainly required for the power cycle (for steam generation), cooling cycle (cooling towers/condensers/ equipment cooling) and in bottom ash conveying system. Other than these process related requirements, there are uses of water in sprinklers / foggers, gardening and for drinking and personal hygiene purposes of employees. Further at solar energy generation station of CPL, water is utilized for solar module washing.

We recognize that through installation of Flue Gas Desulphurization (FGD) units our water consumption is expected to increase in the coming years. To mitigate this impact and reduce the stress on water resources we have defined plan in place to reduce our consumption below 2.25 KL/MWh by 2030.

The plan entails a three-pronged approach that aims at

- Identifying alternative water sources
- Improving water efficiency
- Implementing Zero Liquid Discharge

## Improving water efficiency

We aim at improving our water use efficiency by identifying and eliminating the losses in our system and optimizing water consumption to the extent possible with the use of innovative technologies. In all our generation stations we attend to water and steam leakages pre-emptively. At HEL, DIL and BBGS, we have implemented AVT (All Volatile Treatment), which has helped us not only in controlling the boiler water chemical parameters but also greatly reduce the boiler blowdown.

Moreover, at BBGS, we have already installed a RO plant for supplying demineralized (DM) input water which has reduced number of DM Chain regeneration and subsequently water consumption. CPL has also installed a RO plant to convert the Cooling tower blow down water to cooling tower makeup water for reuse, which has reduced water consumption.

During the reporting period, at DIL we have implemented the sonic soot blower to reduce our steam consumption.

## Identifying alternative water sources

**27 Lakh cum**

Total Rainwater harvesting and water reservoir structures

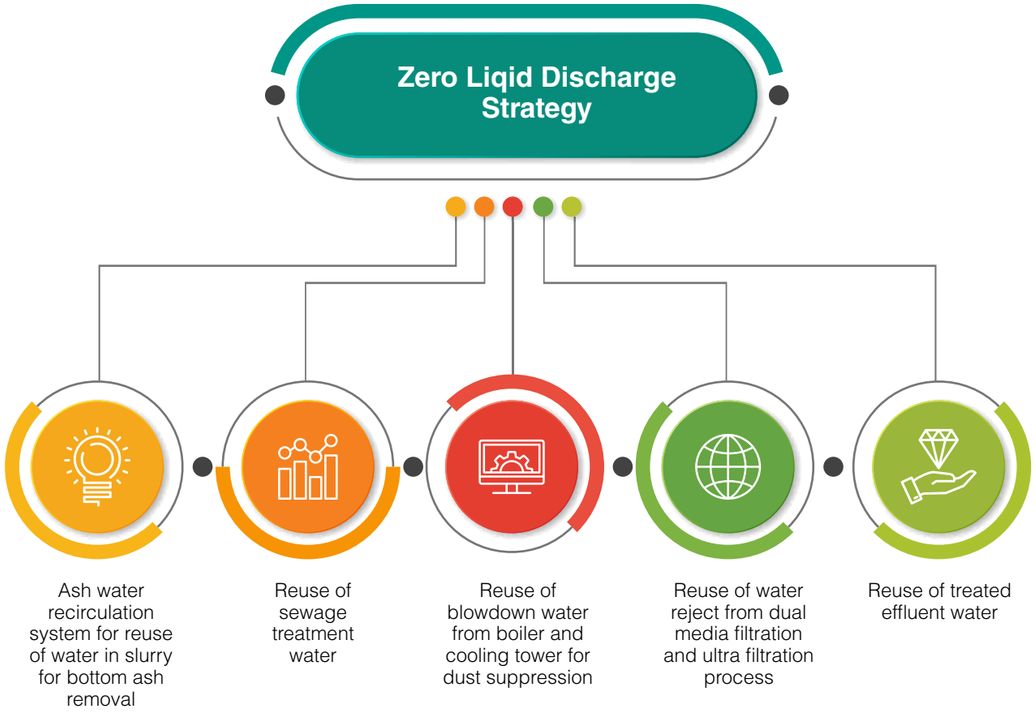
Going beyond our operations we have developed rainwater harvesting structures. Rainwater harvesting is an opportunity to collect, convey and store rainfall to address water shortage and future water stress. HEL has a collection capacity of 1 Lakh cubic metre in two rainwater harvesting ponds while CPL has a collection capacity of 71,000 cubic metre in one rainwater harvesting ponds. In DIL rainwater is collected in reservoirs of 25.3 lakh cubic metre through a natural “nallah” originating from upstream of the plant.

Additionally, rooftop rainwater harvesting systems at BBGS (of 1,954 cubic metre annual harvesting capacity), HEL (of 1,00,000 cubic metre annual harvesting capacity) and SGS (of 3,013.2 cubic meter annual harvesting capacity) have been installed to reduce water withdrawal.

The collected water in such systems finds application in many of our operations such as but not limited to demineralized water production, cooling tower makeup water, ash water tank filling, landscaping purposes and dust suppression of roads.

## Implementing Zero Liquid Discharge

One of our sub targets in meeting our specific water consumption target is achieving Zero Liquid Discharge (ZLD) in all our thermal power plants with freshwater source. We have already implemented ZLD at thermal power plants, BBGS, DIL and CPL. Through ZLD, we have implemented processes that enable 100% reuse and recycle of water in our operations. The processes that have enabled this achievement is illustrated in the figure below:

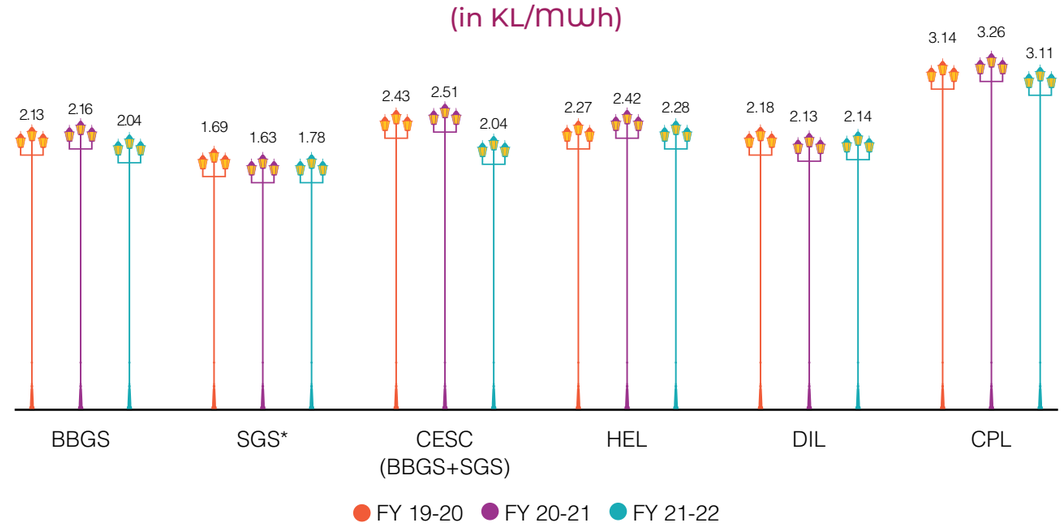



In ZLD, we first arrest oil, grease, suspended and solid particles, before reusing treated effluent water collected in the holding pond. The treated wastewater including water from blowdown operations in boiler and cooling towers is reused for bottom ash collection, dust suppression, ash conditioning, gardening, landscaping and fire hydrant pump sprinkler systems. Further the wastewater as sewage is treated at the sewage treatment plant and reused for landscaping and dust suppression system.

All our efforts, over the years is demonstrated by the decreasing water consumption in some of our generating stations. We feel proud to announce that our generating stations have achieved specific water consumption below the statutory limit of 3.5 cum/MWh.

| Water Consumption (in KL) | | | |
|---|---|---|---|
| **Generating Station/ Company** | **FY 19-20** | **FY 20-21** | **FY 21-22** |
| BBGS | 1,23,38,988 | 1,17,35,835 | 1,13,70,695 |
| SGS | 5,76,211 | 1,47,075 | 2,91,562 |
| CESC (BBGS+SGS) | 1,29,15,199 | 1,36,21,178 | 1,16,62,257 |
| HEL | 1,00,49,535 | 1,01,87,754 | 97,40,909 |
| DIL | 73,69,801 | 90,02,994 | 85,34,342 |
| CPL | 7,00,909 | 12,11,675 | 11,62,928 |

### Specific Water Consumption (in KL/MWh)




For SGS only process water consumption has been considered. Condenser cooling water quantity is being excluded since the generating station has open circuit cooling system.

## Protecting Water Quality

We understand the impact effluents can have on the ecosystem if not discharged responsibly in adherence to the statutory laws of the state pollution control board. Untreated wastewater impacts life in water resulting from dearth of oxygen and increase in neurotoxin producing algae. Chemicals and heavy metals accumulate into the food chain and cause water borne diseases to humans. We follow a robust effluent treatment process to eliminate such impacts. Wastewater entering the effluent treatment plant undergoes the process of physical, chemical and biological treatment until the desired quality is achieved. The quantum of wastewater discharged in the last 3 years for the generating stations at SGS and HEL are as follows:

| Water discharge (in KL) | | | |
|---|---|---|---|
| **Generating Station** | **FY 19-20** | **FY 20-21** | **FY 21-22** |
| CESC (SGS)* | 5,59,78,329 | 1,48,32,379 | 2,70,65,132 |
| HEL | 25,65,801 | 28,82,404 | 30,57,102 |

*Only condenser cooling water discharge considered

The discharge quality is continuously monitored and tested at in-house laboratories to comply strictly with the applicable norms. In FY 21-22, we confirm that there have been no incidents of non-compliance with respect to the water quantity and quality, permits, standards and local regulations.

Through judicious management of natural resources, we are keen to unlock the value of waste streams. The relevant management procedures and initiatives to streamline our waste disposal processes are highlighted in the next section.

# Circular Economy

We recognize that every material has an intrinsic value not only in its use phase but also at the end of life. The generation of any waste materials is a result of significant underutilisation of resources and products. The intrinsic value can be unlocked through efficient and responsible management of waste. We at CESC are committed towards increasing value added utilization to achieve zero waste to landfill.

**2030 Targets**

Achieving

**Zero Waste to Landfill**

through value added utilization

Hazardous waste generated at our generating stations include oil-soaked cotton, used oil, and resins. Due to the highly toxic nature of hazardous waste and its potential impact on the environment and community, we ensure the waste is managed responsibly. Hence, we make sure hazardous waste is handled diligently, diverted to appropriate disposal channels and authorised recyclers as per rules and regulations laid down by SPCB (State Pollution Control Board). The quantity of hazardous waste generated and disposed by us in FY21-22 is given below:

| Type of Hazardous Waste | Treatment of waste | CESC (BBGS + SGS) | HEL | DIL | CPL |
|---|---|---|---|---|---|
| Used oil (KL) | Recycled by authorized vendor | 15.54 | 26.46 | 48.4 | 0.13 |
| Waste oil (KL) | Recycled by authorized vendo | 0.00 | 7.35 | 0 | 0 |
| Waste resin (MT) | Disposed through authorized vendor | 1.00 | 0.1 | 0 | 0 |
| Oil-soaked cotton waste (MT) | Disposed through authorized vendor | 0.47 | 0.3 | 0 | 0 |
| E-waste (MT) | Disposed through authorized vendor | 5.13 | 1.28 | 0 | 6.01 |
| Biomedical waste | Incineration/Autoclaving | 0 | 9.32 | 0 | 0 |

Further, composting machines are installed at generating stations to convert kitchen waste and garden waste into manure, which is utilized in nurseries and gardens, as well as for promoting organic farming. Under the Project Shyamala, HEL has distributed the manure among the village families for kitchen gardening and farming purposes. We are pleased to disclose that there has been no occurrence of significant spillage in FY 21-22.

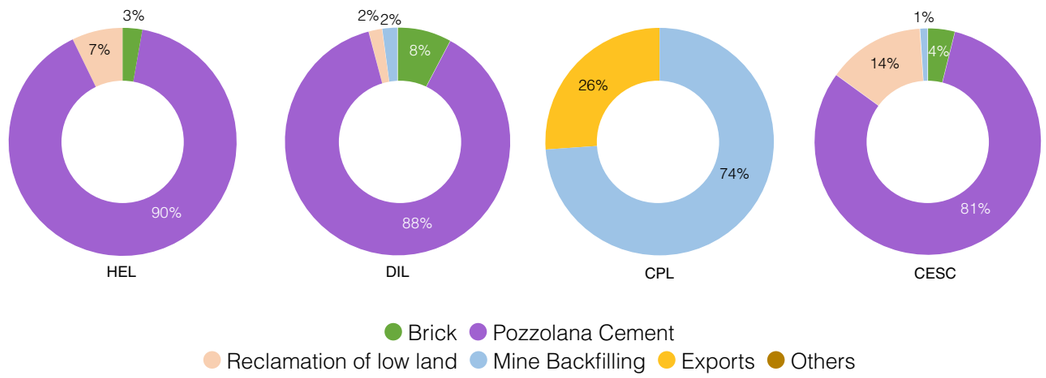
## Ash Management

Ash is a by-product generated from combustion of pulverized coal in boilers of thermal power plants. Handling and long term exposure to fly ash is pernicious. The ash when released into the air and water bodies will subsequently result in bioaccumulation in the food web, which will lead to ailments to the lungs and the heart. Hence, to mitigate these impacts- controlled collection, handling, movement and storage of ash is essential safeguard the environment and public health.

Ash generated from the process of combustion of coal, are of two types. The fine particle ash that rises with the flue gases is known as fly ash while the heavier ash that does not rise is called bottom ash. Fly ash generated is collected at the electrostatic precipitator (ESP) hoppers and is transported in dry form to separate silos for value added utilization. The bottom ash is crushed and mixed with water to form the slurry. A slurry in turn is transported to the ash dyke or dewatering bin from where ash is separated from water through the decantation process and the water is recycled.

The ash generation and corresponding utilization by the generating stations are showcased below.

| Generating Station/Company | Ash Generation in Lakhs (Lakh MT) | Fly Ash Utilization (%) |
|---|---|---|
| CESC | 11.13 | 100% |
| HEL | 10.94 | 100% |
| DIL | 9.51 | 100% |
| CPL | 2.46 | 100% |



The case study below showcases one of our unique innovations in ash utilization

### Case Study: Substitution of Natural River Sand in Concrete by using Bottom Ash of Coal Based Thermal Power Plants

Bottom ash has similar properties as natural river sand which opens the possibilities of using bottom ash as a substitute of natural river sand in making concrete. Based on extensive research, field, and laboratory trials it has been inferred that a maximum of 70% substitution of natural river sand by bottom ash is possible for different grades of concrete used in non-structural and structural applications. Field trials to establish the research findings were executed by construction of M-35 grade concrete roads at DIL, Chandrapur and at BBGS, CESC Ltd, Kolkata by 50% substitution of sand with bottom ash and subjected to 40MT load vehicular traffic. Follow up tests have established higher levels of durability of the bottom ash concrete road as compared with conventional concrete. The novel process has provided substantial cost benefit of approximately 15% in raw materials in addition to reducing the use of natural river sand and thereby conserving the river beds.

We are also exploring farming on ash beds at Haldia in collaboration with Bidhan Chandra Krishi Viswabidyalaya, Kalyani, an agricultural institute in West Bengal.

# Biodiversity Conservation

As an environmental steward, we are fully complaint with all environmental regulations governing conservation of wild habitats, species of flora and fauna and forestry in local communities and are committed towards our obligation to safeguard the regenerative processes and interactive ecosystems. We endeavour to understand the risks on biodiversity associated with our business operations and pre-emptively mitigate the threats and impacts. The case study below showcases some of our interventions towards biodiversity conservation.


## Floral Biodiversity

Under the Project ' Rishi Krishi' the HEL facility maintains 77 plant species of medicinal varieties like Mint, Holy Basil and Anantarnool amongst other species like Ficus, Bakul, Arjun. The BBGS facility also maintains 17 varieties of medicinal plants, herbs, shrubs and trees like Aloe Vera and Asparagus and Acorus. In addition to plantation activities, DIL has built an orange orchard and a sandalwood corridor. In 2021-22, total 3,600 saplings were planted across Haldia and Budge Budge, taking total tree plantation at both plants to over one lakh each. HEL has earned the distinction of having over 30% of the plant area under green cover. A total of over 3.5 lakh trees have been planted as part of the green belt drive across all facilities.

## Butterflies

17 butterfly species including blue tiger and lime butterfly from 5 families exist within the operational area. Under the Titli Rani initiative a butterfly garden at HEL accommodates 50 types of nectar plants to attract more butterflies for feeding and spawning

## Birds

Plantations and water bodies in and around the HEL operations are home to 37 species from 30 families of avian birds including migratory species such as Green Sand Piper, Brown Shrike and aquatic birds like Little Grebe and Bronze winged Jacana. At DIL, a swan park is also maintained, with waterfowl species enhancing the biodiversity in CESC's operations.

## Mammals

Wildlife in the form of Golden Jackal, Jungle Cat and Small India Civet are common species that are provided a secure habitat.

Our commitment towards enhancing biodiversity value, highlights our endeavours as an environmental steward beyond environmental compliance. The next section of the report discusses on the systems and processes upholding environmental compliance.

*Greenery at HEL*

# Environmental Compliance Management

In a constant endeavour to protect and preserve ecological goods and services through judicious use, we ensure compliance to applicable environmental regulations in India and de risks its operations from potential risks through a sound Environmental Management System. These processes are periodically audited internally, external certification bodies and local regulatory authorities.  We are proud to announce that during FY 21-22, there has been no cases, show cause notices and fines levied for non-compliance with environmental norms and standards.

## Enhancing Environmental Value Beyond Operations

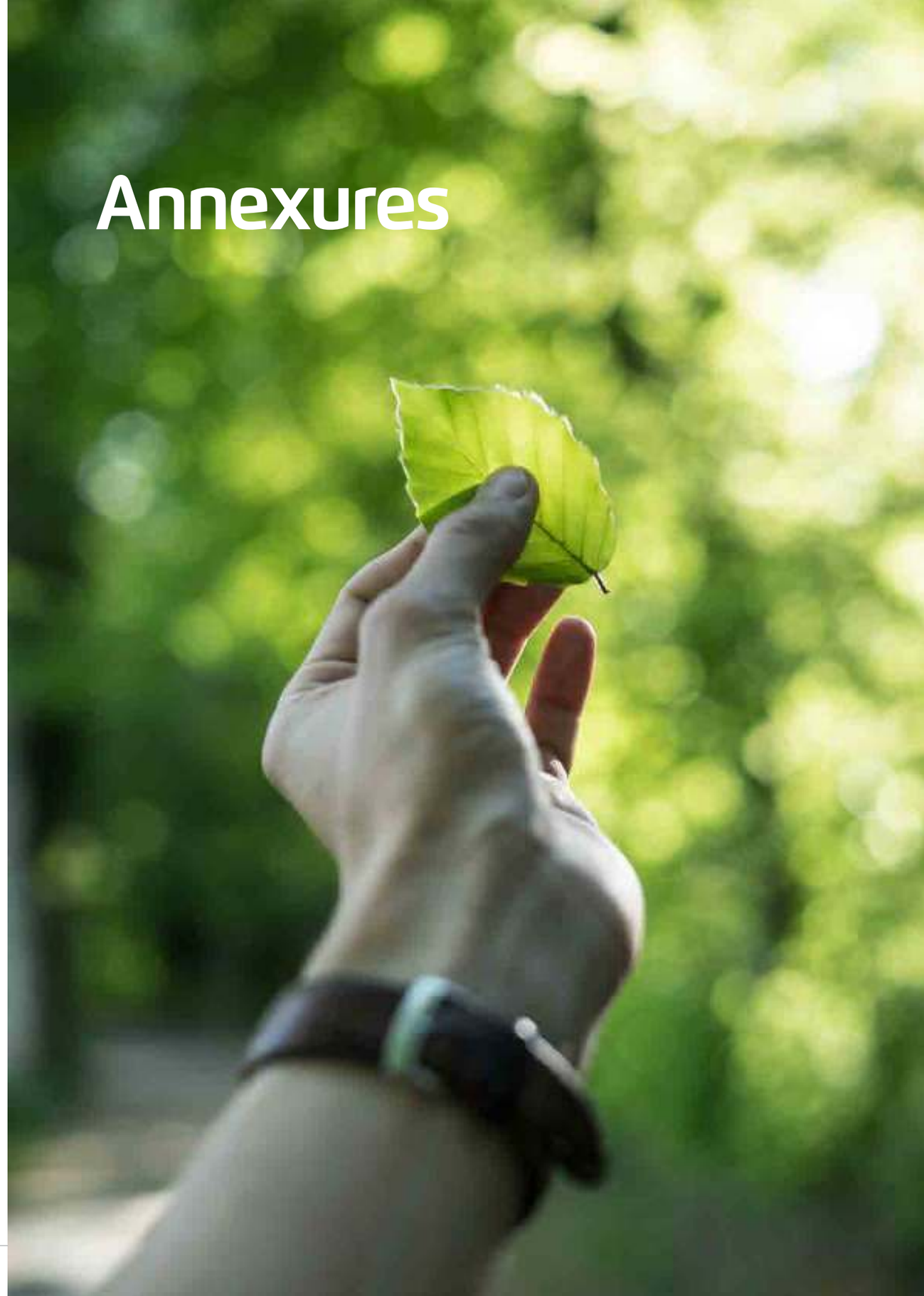
Our commitment towards enhancing environmental value extends beyond our operations. Through projects 'Basundhara' and 'Urja Chetna', we aim to nurture the clean and green consciousness among children at HEL and CESC respectively. Under these initiatives we engage with several local schools in our locality through environmental education programmes. Students are mobilized towards scientific enquiry into environmental problem and motivated to imbibe habits and lifestyle for minimum waste generation.

A unique feature of our initiatives is the Eco-clubs which have been instituted in each school with the purpose of empowering students to participate and take up meaningful environmental activities and projects. It is a forum through which students can reach out to influence, engage their parents and neighbourhood communities to promote sound environmental behaviour.

The programmes have witnessed children undertaking mass plantation drives, cleanliness drives and promote innovative concepts like kitchen gardening, vermincomposting, paper recycling and rainwater harvesting through demonstrations, organizing competitions, drama and rallies.

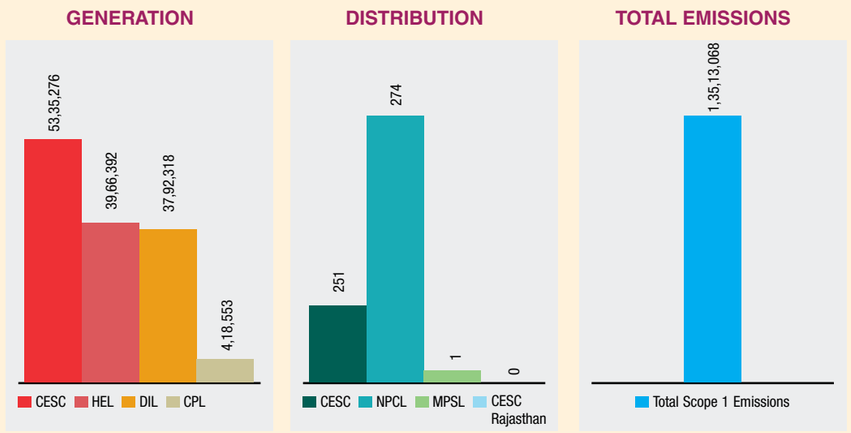


# Annexures

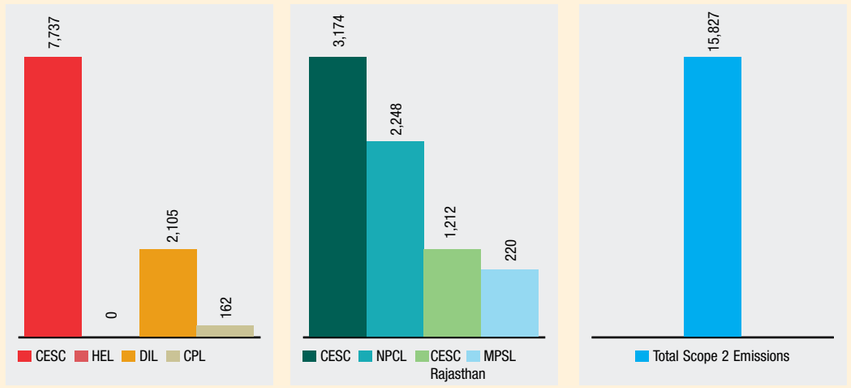


# Annexure A: Organization wide Carbon footpirnt

## GHG Scope 1 Emissions ($tCO_{2eq}$)




## GHG Scope 2 Emissions ($tCO_{2eq}$)




### Generation

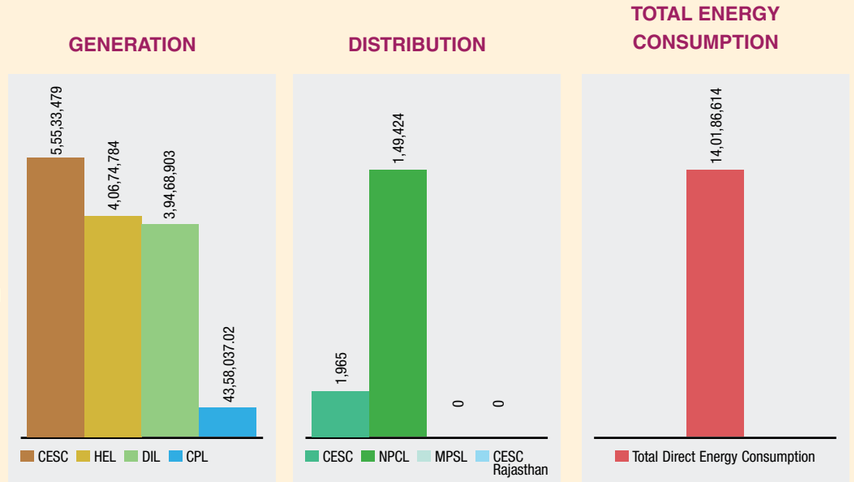
- Scope 1 sources- The different sources include fossil fuels like coal (sub-bituminous), High Speed Diesel (HSD), Light Diesel Oil (LDO) and Liquified Petroleum Gas (LPG).
- Scope 2 sources- Includes total electricity purchased for generation activities.

### Distribution

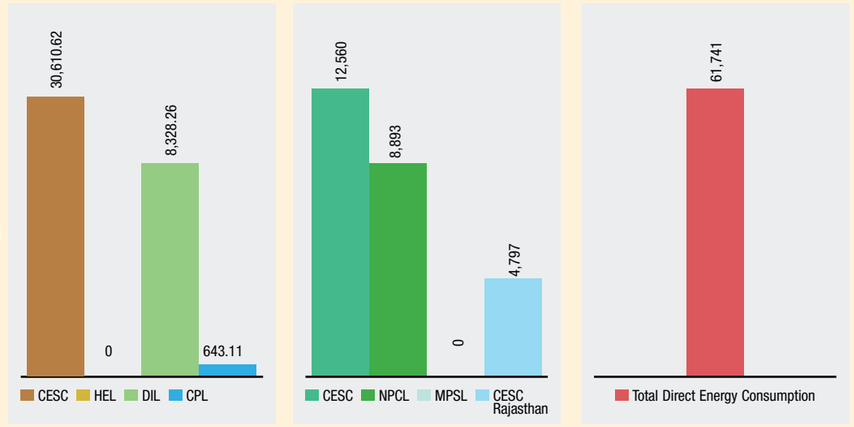
- Scope 1 sources- The different sources include fossil fuels like diesel, petrol, Pressurized Natural Gas (PNG) and Compressed Natural Gas (CNG).
- Scope 2 sources- Includes total electricity purchased for distribution activities and auxiliary electricity consumption within offices and substations from non-renewable sources.

# Annexure B: Organization wide Energy Intensity

## Total Direct Energy Consumption (GJ)




## Total Indirect Energy Consumption (GJ)



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