

# 2023

## CEM Sustainability Report



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澳門電力股份有限公司  
Companhia de Electricidade de Macau - CEM, S.A.



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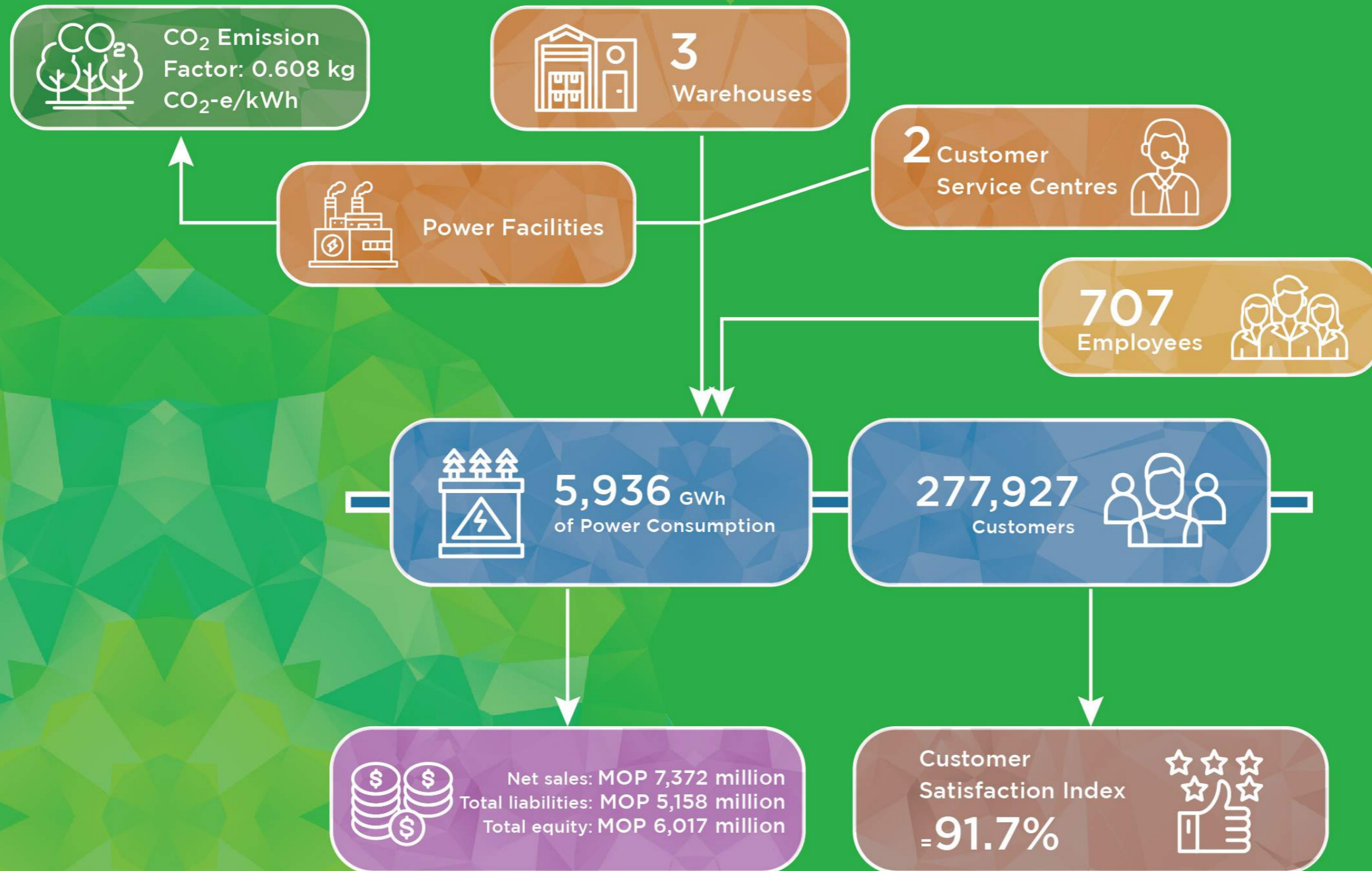
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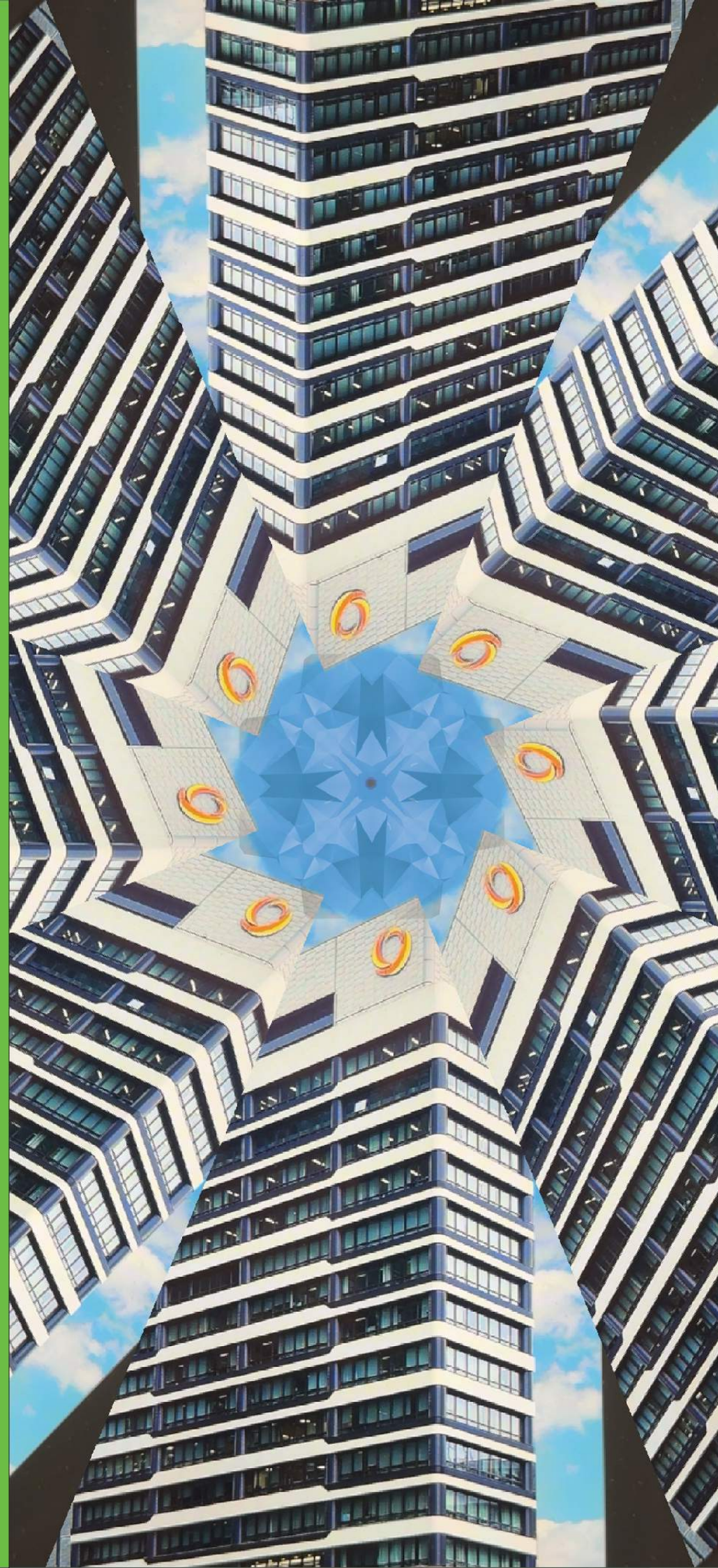
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# 2023 at a Glance in CEM





# Chairman of the Executive Committee's Message



Sustainability is a journey. As a responsible business organization, CEM maintains its efforts to govern with accountability and to reduce the impact of its activities in the community and on the environment. We are therefore delighted to present the CEM Sustainability Report 2023, in which we reveal our strategic direction and performance in areas of environment, social and governance (ESG) in 2023. The CEM Sustainability Report is developed considering the guidelines of the GRI Standards and the G4 Electric Utility Sector Supplement.

2023 brought positive changes to Macau. In January 2023, the Macau Health Bureau declared the downgrade of the COVID-19 pandemic to endemic disease and eased most of the COVID-19 pandemic controls imposed on the city and the community, including the travel restrictions and the quarantine guidelines for infected patients. Consequently, Macau saw an upturn in the economy. CEM followed closely the guidelines stated by the Macau SAR Government and strived to provide excellent services throughout the ever-shifting transition period. We believe this goal has been reached, as for the fourth consecutive year, the performance of the Average System Availability Index (ASAI) was 99.9999<sup>1</sup>, while the Customer Average Interruption Duration Index (CAIDI) reached 14.31 minutes<sup>1</sup>. Our customers show awareness of our efforts and high-level results, as in 2023 we reached our highest-ever Customer Satisfaction Survey Index result of 91.70%.

CEM keeps pace with the Macau SAR Government's urban development in the medium to long-term development plans for the city by planning and constructing infrastructure needed to meet the forecasted electricity demand. CEM's power network infrastructure was expanded further to address the demand for energy in several new residential and commercial buildings like the Government Residence for the Elderly, New Urban Zone A, the fourth bridge connecting Macau and Taipa, and others. On 21 September 2023, CEM signed the contract for the "Design, Supply and Installation Services of the Common Services Tunnel (CST) Auxiliary Systems of New Urban Zone A". The CST infrastructure will house power, water and telecommunication cables and pipelines. With CST, not only will the installation and maintenance costs of pipes and cables be decreased, road excavation works and the associated environmental impacts of air and noise pollution will also be minimized, which is in line with CEM's sustainable development strategy.

The environment is always at the forefront of the mind of the company. CEM continued to work ambitiously to realize CEM's green development plan. Therefore, CEM continued its efforts to follow the green mobility policy of the Macau SAR Government. The electric vehicle (EV) charging station infrastructure now covers 97% of the city's car parks, with more than 2,000 charging points available for EV owners. On the other hand, the Advanced Metering Infrastructure (AMI) expanded as well in 2023. Deployment of the AMI improves both operational efficiency as well as occupational health and safety conditions at CEM, by replacing needs of site work with remote operations. Currently, the company can retrieve data from more than 210,000 smart meters effectively and the total number of smart meters will be more than 270,000 by end of 2024.

We keep developing our occupational health and safety system, with special emphasis on risk control, commitment and teamwork, aiming to enforce safety procedures and enhance safety culture in the company. We will also maintain our efforts with contractors and suppliers to have them aligned and committed to our policy. In 2023, one of our employees suffered an injury that required 42 days of absence. An investigation was done immediately and the investigators recommended a few improvements to reduce hazards in the workplace and enhance work procedures. We spare no efforts in conveying the high importance of safety in our policies and procedures for the benefit of all. We will continue to implement changes in our processes aiming to increase the safety levels in CEM installations.

Looking forward to 2024, CEM still strive to tackle the challenges ahead to meet our customers' expectations, ensure a stable and reliable power supply to our customers and contribute to Macau's urban development. I would like to express my sincere gratitude to all our stakeholders and partners, who enable CEM to fulfill all commitments to our customers and Macau.

**Bernie Leong Wa Kun**  
Chairman of the Executive Committee



<sup>1</sup> Outages under CEM responsibility

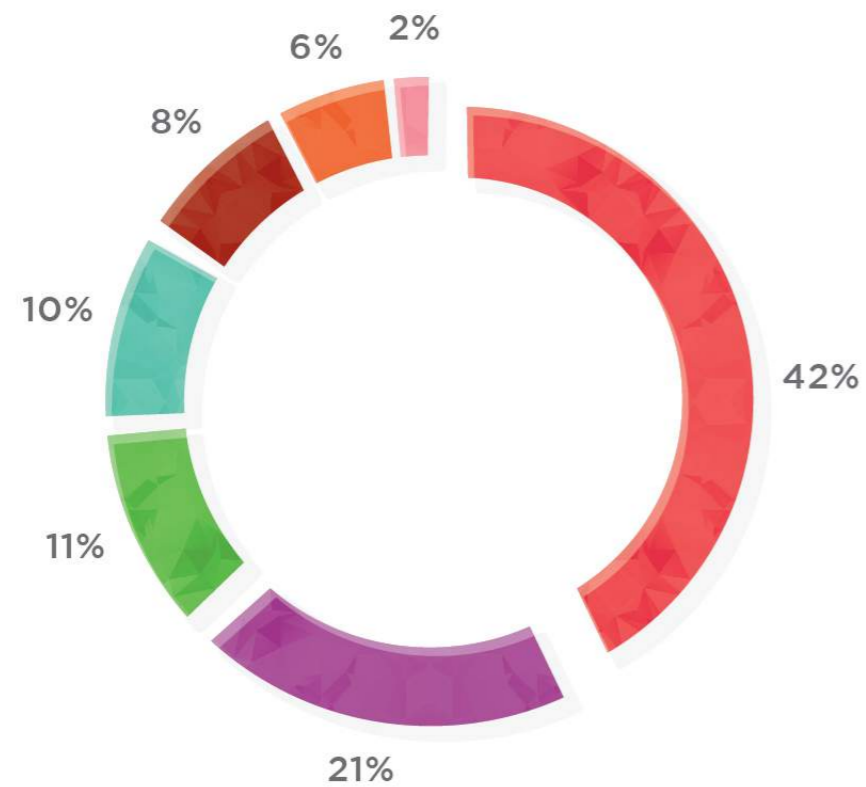


# Our Corporate Governance



Companhia de Electricidade de Macau – CEM, S.A. (hereinafter “CEM”) is a public utility company with the sole concession for the transmission, distribution, and sale of high, medium, and low-voltage electricity in Macau. CEM also owns power generation facilities. CEM is owned by a diverse range of entities, between various institutional investors and the Macau SAR Government, among others.

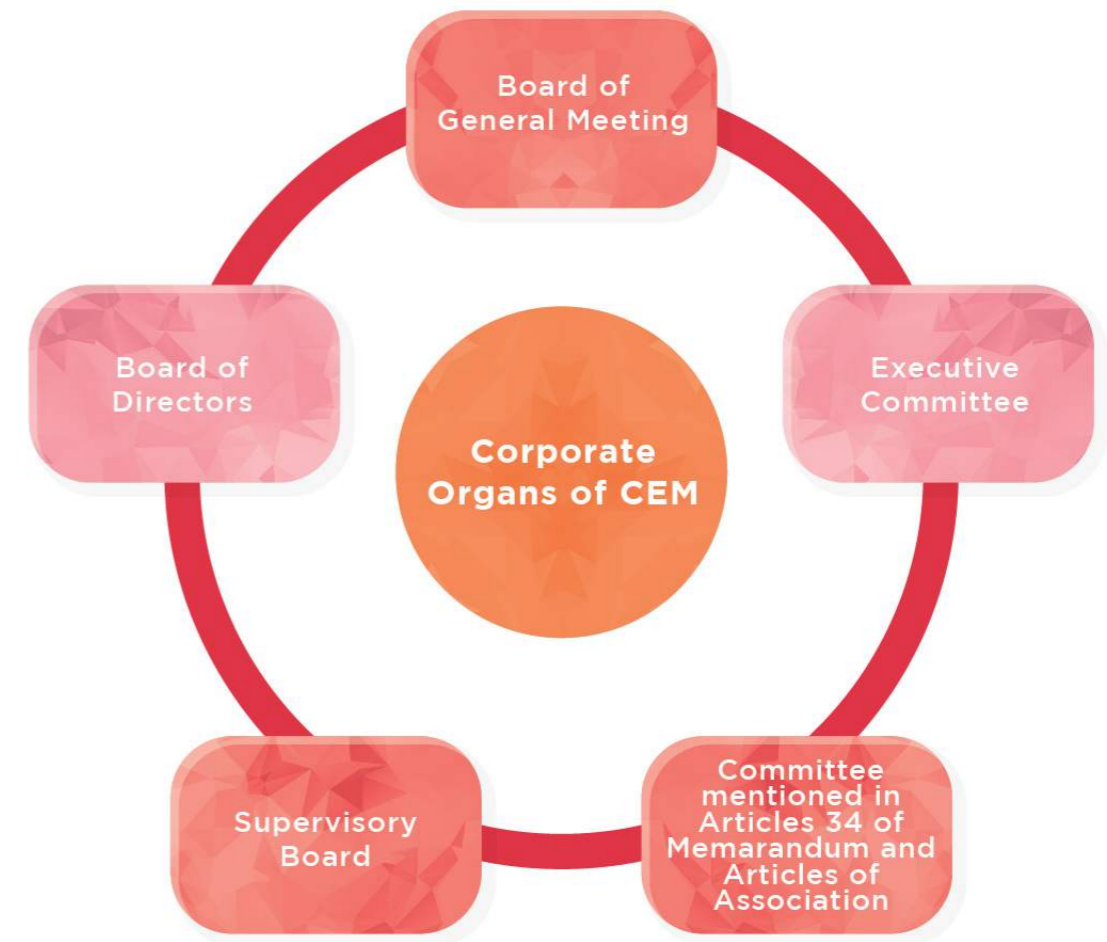
**Shareholder pattern of CEM**



- Nam Kwong Development (H.K.) Limited
- Energy Asia Consultancy, Limited
- Polytech Industrial Limited
- Asiainvest - Investments Company Limited
- Macau SAR Government
- China Power International Holding Ltd.
- Other Investors

Five corporate organs are in place to ensure that CEM operates in an efficient manner and at proficient level, reflecting the stakeholders’ interests.

**CEM’s corporate organs**



The Board of Directors and the Executive Committee are responsible for the management of the company. The Executive Committee oversees the day-to-day matters in CEM and proposes the strategic direction of the company that is approved by the Board of Directors. The Board meets at least four times

per year, to discuss topics like review and approval of accounts, approval of development plans and dividend distribution. Other topics are widely reviewed as well. A major example is the corporate performance indicators results of the year, which include network reliability, safety, and financial indicators.



## Compliance

The CEM Concession Contract states the terms and conditions of the sole concession licensed to the company by the Macau SAR Government. It has numerous reporting obligations for various operational activities, performance and results to CEM's regulator, which guarantees prominent transparency at all levels of operation from the company.

Moreover, the CEM concession contract has the stipulation that the company must measure, monitor and report ten performance indicators on a regular basis, two of which relate to network reliability and the other eight to customer service. In 2023, just like in previous years, CEM performance exceeded the limits set by the regulator.

**CEM Service Quality Indicators in Concession Contract**

Indicator	Target (2021-2022/ 2023)	Result		
		2021	2022	2023
ASAI <sup>2</sup> (%)	99.9900	99.9999	99.9999	<b>99.9999</b>
CAIDI <sup>2</sup> (min)	19.00	6.68	7.95	<b>14.31</b>
Connection of Supply (%)	96.00	100.00	99.96	<b>100.00</b>
Supply Reconnection (%)	98.00	99.92	99.97	<b>99.97</b>
Bill Correction (%)	95.00 / 96.00	100.00	100.00	<b>100.00</b>
Complaint Handling (%)	95.00	100.00	100.00	<b>100.00</b>
Appointment Time Schedule (%)	96.00	100.00	100.00	<b>100.00</b>
Emergency Service (%)	90.00 / 91.00	99.38	99.85	<b>99.79</b>
Supply Restoration (%)	95.50	99.88	100.00	<b>99.91</b>
Public Lighting (%)	96.00	100.00	100.00	<b>100.00</b>

<sup>2</sup> Outages under CEM's responsibility

The company's processes and systems are managed and controlled by the Integrated Management System (IMS) which was established more than 15 years ago. CEM's IMS framework covers the requirements of five ISO standards and the resulting unified system shares policies, documentation,

procedures and processes, enabling the company to work as a single unit with unified objectives. The integrated approach, by reducing inefficiencies and maximizing resources, allows working with more effectiveness towards a common goal.



**ISO 9001 Quality Management System**



**ISO 14001 Environmental Management System**



**ISO 45001 Occupational Health and Safety Management System**



**ISO 14064-1 Greenhouse Gases Management System**



**ISO 20000-1 IT Service Management System**

CEM has in place the Safety, Health, Environment and Quality (S.H.E.Q.) Policy from which objectives and targets are set every year, touching on various aspects of relevant S.H.E.Q. issues or matching the key direction of the company. Management programs and procedures are developed to translate our goals into actions.

In late 2023, CEM submitted to the yearly surveillance audit by an external party and successfully retained the five ISO certifications already awarded. This achievement shows our persistent commitment to operational excellence.



## Ethics

Businesses around the world recognize the various benefits of ethics in the workplace in the lives of employees, customers, partners and other stakeholders. First and foremost, employees' engagement and satisfaction levels increase when a code of ethics is implemented fully and properly. Moreover, legal compliance of operations is easier to maintain, it improves the company image, and can facilitate conflict management.

CEM established the Code of Ethics a decade ago, to help the company to maintain detailed guidelines for accountability, responsibility, professionalism and more in the workplace. Moreover, CEM's Internal Audit carries out independent audits of purchase and works contracts and medium to large scale projects.

First page of the various "CEM Ethics" materials, distributed in 2023



In 2023, CEM invited the Commission Against Corruption (CCAC) of Macau to conduct an in-house seminar with the theme "Work Integrity". More than 60 employees joined the seminar. Moreover, CEM also distributed materials from CCAC relating to integrity

through CEM's various internal communication channels, namely "Trade Secrets for Profits?" in March, "Concealing the Truth" in April and finally "Be Careful when Accepting Gifts" in September 2023.

## Stakeholder Engagement

We have identified eight groups of stakeholders, internal and external, that have an interest and can affect or be affected by CEM's operations. The company endeavors to establish positive

relationships with all of them, through proactive communication and by meeting their needs and expectations.

### Stakeholders and engagement methods

Stakeholder Groups	Engagement Approach	Topics & Concerns
Government and regulator	<ul style="list-style-type: none"> <li>Annual general meeting</li> <li>Quarterly board of directors meeting</li> <li>Monthly supervisory board meeting</li> </ul>	<ul style="list-style-type: none"> <li>Extension of concession contract requirements</li> <li>Legislations and regulations</li> <li>CEM tariff</li> <li>Management of the company</li> <li>CEM services</li> </ul>
Shareholders and providers of capital	<ul style="list-style-type: none"> <li>Annual general meeting</li> <li>Quarterly board of directors meeting</li> <li>Monthly supervisory board meeting</li> </ul>	<ul style="list-style-type: none"> <li>Company and financial performance</li> <li>Strategic plan</li> <li>Annual budgets</li> </ul>
Customers	<ul style="list-style-type: none"> <li>Quarterly customer liaison committee meetings</li> <li>Media releases</li> <li>Promotional leaflets and posters</li> <li>Annual customer satisfaction survey</li> </ul>	<ul style="list-style-type: none"> <li>CEM activities and promotions</li> <li>Environmental protection</li> <li>Quality services</li> <li>Reliable power supply</li> <li>Tariffs</li> <li>CEM services</li> </ul>
Local communities	<ul style="list-style-type: none"> <li>Regular social events</li> <li>Visits</li> <li>Safety checks and free repairs for elders, low-income families, and citizens with special needs</li> <li>Education and awareness raising programs</li> </ul>	<ul style="list-style-type: none"> <li>Social affairs</li> <li>Power supply quality</li> </ul>
Suppliers and contractors	<ul style="list-style-type: none"> <li>Contractor induction</li> <li>Bi-annual SHE awards to contractors</li> </ul>	<ul style="list-style-type: none"> <li>CEM policies</li> <li>Health / Safety / Environment requirements</li> </ul>
Associations and non-governmental organizations <sup>3</sup>	<ul style="list-style-type: none"> <li>Bi-annual Conference on Electric Power Supply Industry (CEPSI)</li> <li>Participating in meetings and other activities</li> </ul>	<ul style="list-style-type: none"> <li>Sustainable development of power supply business</li> <li>CEM events</li> </ul>
Media	<ul style="list-style-type: none"> <li>Press conference whenever necessary</li> <li>Media press release</li> <li>CEM events</li> <li>Advertisement</li> <li>Interviews</li> </ul>	<ul style="list-style-type: none"> <li>Power supply quality</li> <li>Accidents / incidents reports</li> <li>Public relations</li> <li>Company activities</li> <li>Company policies</li> <li>CEM services</li> </ul>
Employees	<ul style="list-style-type: none"> <li>Regular company-wide communications such as staff newsletter, email, Intranet, posters, meetings, etc.</li> <li>Training and seminars</li> <li>Internal campaigns</li> <li>Employee's survey</li> <li>Company events</li> </ul>	<ul style="list-style-type: none"> <li>Company objectives and targets</li> <li>Health and safety performance</li> <li>Company internal news</li> <li>Employee's suggestions</li> </ul>

<sup>3</sup> Examples of these associations are Association of the Electricity Supply Industry of East Asia and the Western Pacific (AESIEAP), Macau Association of Environmental Protection Industry (MEPI), Energy Procurement Supply Association (EPSA), Asia-Oceania Regional Council (AORC) and International Council on Large Electric Systems (CIGRE).



Our Facilities



## Power Infrastructure

CEM has all operations and facilities, including its headquarters, in Macau. The company's power infrastructure is complex and covers the whole city of Macau.



### Power Station

- Coloane Power Station A
- Coloane Power Station B



### Customer Substations

- 1,718 Customer Substations



### Primary Substations

- 27 Primary Substations
- 8 HV Switching Stations



### Electric Vehicle (EV) Infrastructure

- 2,030 EV chargers for e-cars
- 600 charging sockets for e-motorcycles

CEM is continuously evaluating its different power resources. Based on the ongoing network master plan, the planned power supply capacity will be able to fully meet the

growth of electricity demand in Macau in the next few years. The local power generation is managed by the Coloane Power Station which has an overall capacity of 408 MW.

### Capacity of power station

Power Station	Unit	Generator Type	Fuel	Installed Capacity (MW)
Coloane Power Station A (CCA)	G01	Steam Turbine	Heavy Fuel Oil	20
	G02			20
	G03	Low Speed Diesel	Heavy Fuel Oil Diesel Oil	24
	G04			24
	G05			39
	G06			39
	G07			53
	G08			53
<b>Subtotal</b>				<b>271</b>
Coloane Power Station B (CCB)	GT1	Combined Cycle	Diesel Oil Natural Gas	45
	GT2			45
	ST1			46
<b>Subtotal</b>				<b>136</b>
<b>Total</b>				<b>408</b>

Most of the power network is comprised of underground cables. In the end of 2023, the power network consisted of 1,074 km of high-voltage (220kV, 110kV and 66 kV) cables, 2,691 km of medium-voltage (11 kV and 22 kV) cables and 1,027 km of low-voltage cables.

### Lengths of HV, MV and LV cables of CEM power network

	2021	2022	2023
<b>High-voltage (HV) Cables (km)</b>			
Total length of HV cables	1,030	1,060	1,074
Total length of 220kV HV cables	116	122	123
Total length of 110kV HV cables	329	353	366
Total length of 66kV HV cables	585	585	585
<b>Medium-voltage (MV) Cables (km)</b>			
Total length of underground MV cables	2,503	2,595	2,691
<b>Low-voltage (LV) Cables (km)</b>			
Total length of LV cables	985	1,005	1,027
Underground LV cables	910	930	954
Overhead LV cables	75	75	73
<b>Public Lighting (PL) Cables (km)</b>			
Number of PL poles	11,366	11,660	12,010
Number of wall-mounted PL	4,552	4,559	4,561
Total length of PL cables	580	591	663
Underground PL cables	517	527	601
Overhead PL cables	63	64	62



# Our Operations



## Financial Performance

CEM monitors the economic performance carefully to ensure the enduring success of the business and good partnerships with customers, employees, suppliers, contractors

and other stakeholders. The table below outlines the financial performance overview of CEM for the past three years.

### Financial indicators of the year

	2021 (million MOP)	2022 (million MOP)	2023 (million MOP)
Revenues	6,943	8,273	8,981
Operating costs	4,630	5,845	6,324
Payments to providers of capital	627	701	731
Employee wages and benefits	463	484	427
Payments to government	209	193	184
Community investments	1	1	1
Economic value retained	2,313	2,429	2,658

CEM's financial statement does not include other entities and in 2023 CEM did not receive any financial assistance from the Macau SAR Government, just like in previous years.

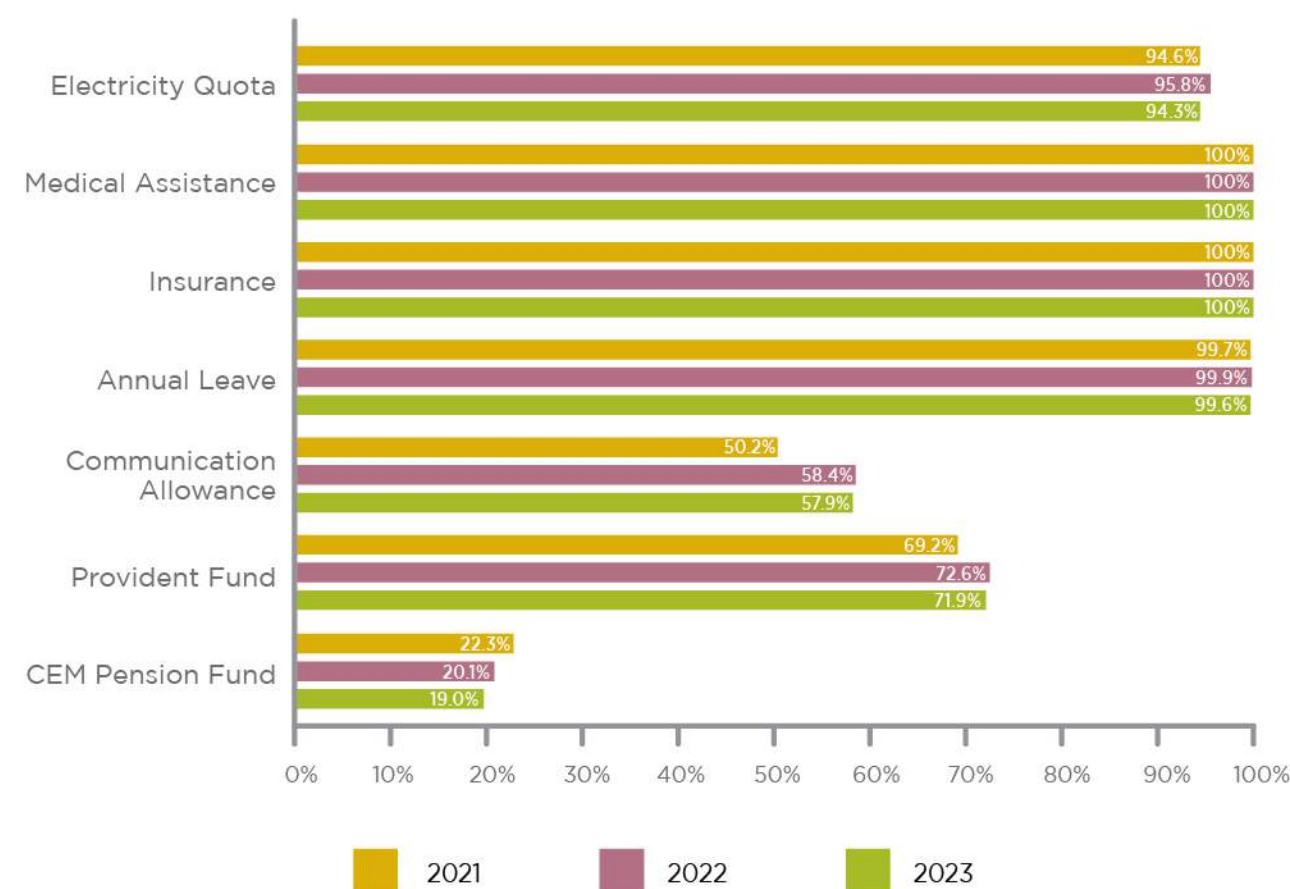
Our employees are one of the most important assets of the company, and CEM offers a variety of benefits to increase staff retention rates and employees' engagement. CEM was able to meet the benefit plan's liabilities, estimated to be at MOP 447 million in 2023. This figure was estimated during the financial

audit performed every year of the company's financial data, with the most recent one being completed in December 2023, and reported in the Actuarial Report.

The pension plan contribution rates are 4.5% and 76.6% for the employee and employer, respectively.

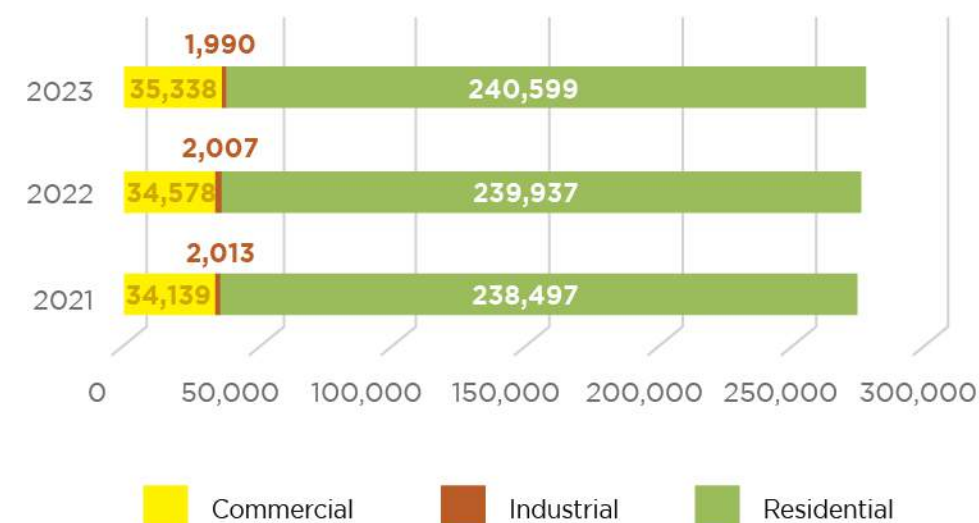
The next graph shows the coverage of the benefit plans within the company.

### Percentage of coverage of fringe benefits in CEM.



There was no significant variation in the number of customers in CEM compared with last year.

### No. of customers' installations by customer class

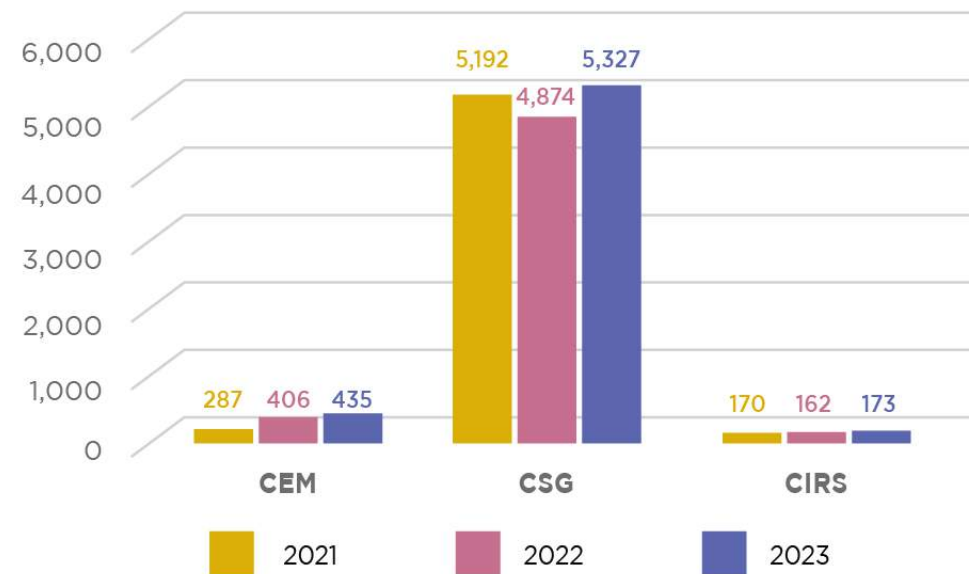


## Power Generation

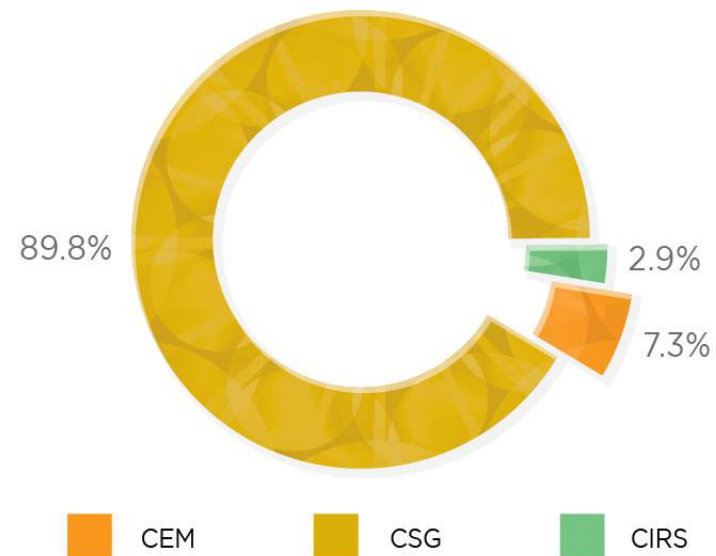
In 2023, CEM generated 435 GWh of electricity (an increase of 7.2% when compared with 2022's figures) and imported 5,327 GWh of energy from the China Southern Power Grid (CSG). The electricity imported from China represented 89.8% of the total energy consumed by Macau. The company purchased an additional 173 GWh from the Macau Refuse

Incineration Plant (CIRS). In addition, CEM's installations - CEM Headquarters, Power Station, Substations, Customer Centres, CEM warehouses, etc. - consumed a total of 192,352 MWh (or 692,466,120 MJ) of electricity, which corresponds to a 3.5% year-on-year increase.

Energy generated, imported and purchased (GWh)



Energy mix 2023



## Power Network

Several projects of the power network infrastructure development were initiated, ongoing and completed in 2023.

CEM's medium-voltage (MV) network was expanded further with a 3% increase in the number of transformers, to address the demand for energy in several new residential and commercial buildings and new areas, like the Government Residence for the Elderly, New Urban Zone A, the fourth bridge connecting Macau and Taipa, and others. Furthermore, 50 transformers and 27 RMUs were replaced and overhauled in 2023, to ensure the reliability of our MV and LV (low-voltage) distribution network.

The energizing of high-voltage (HV) cables for the new CIRS and Macau Power Station substation was completed in mid-2023. Moreover, 127 sections of MV cabling were diagnosed for performance to ensure life expansion, and 115 sections were replaced.

In 2023, more than 1,000 customer substations in the distribution network have been upgraded to fiber. Moreover, CEM performed and implemented several pilot projects to retrieve telemetry data from these substations.

The expansion project of the data center was completed successfully in 2023. Additional OT systems can be supported, and CEM is able to reinforce the asset management of OT systems and MV equipment.

Another project concluded in 2023 with success was the upgrade of the SCADA hardware. This will allow not only the existing SCADA system to cope with the currently expanding power grid, but also to address the problems associated with the aging of the SCADA hardware.

CEM continues to implement the requirements of the Macau Cybersecurity Law in full. This includes improving asset management and upgrading the infrastructure of the power network, reviewing the documentation that relates to SCADA and AMI cybersecurity, and executing plans to boost the staff's cybersecurity awareness, by evaluating existing contingency plans and executing corresponding drills, among others.

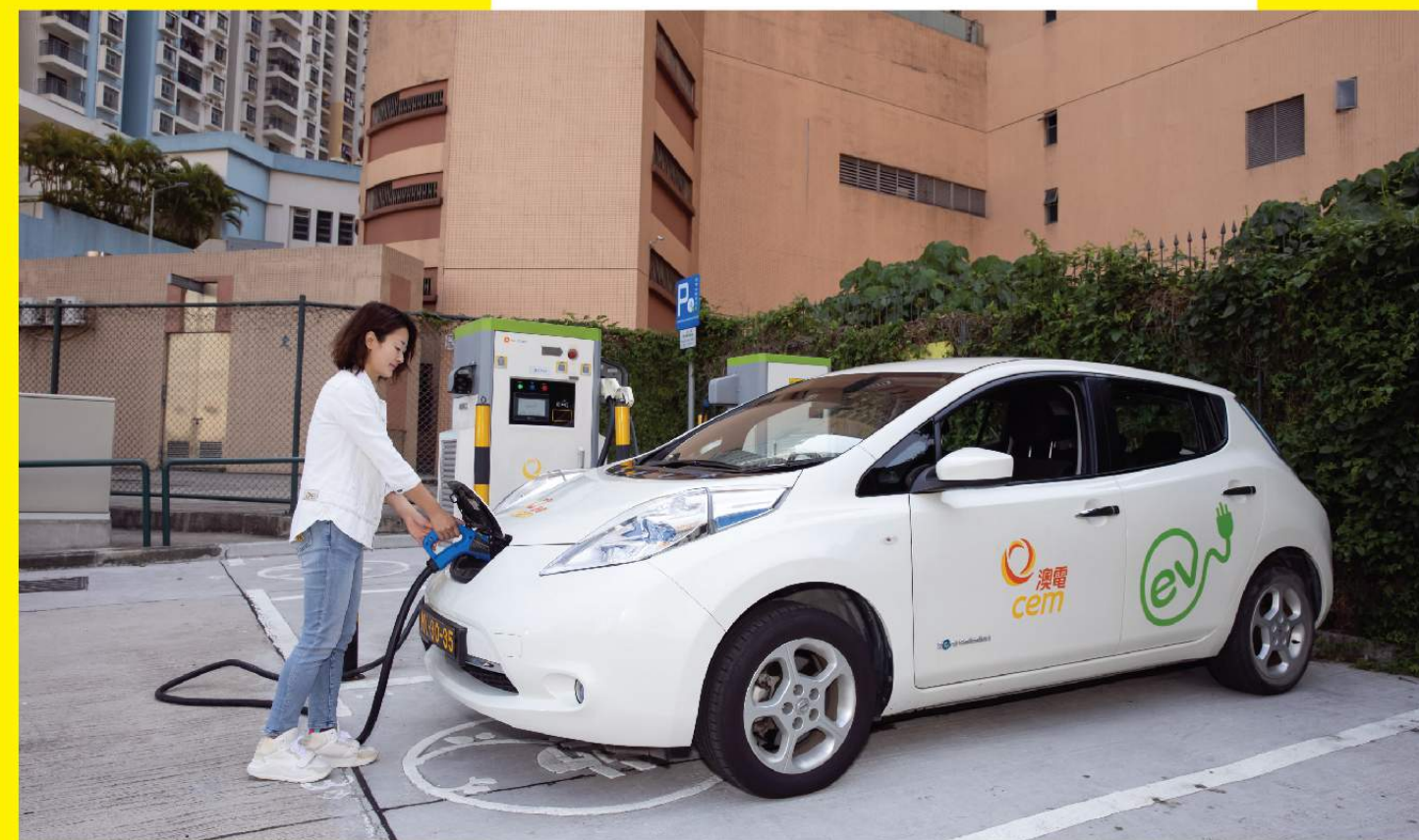
The Optical Time Domain Reflectometer (OTDR) system is used to characterize, troubleshoot and maintain optical telecommunication networks. Currently, CEM is growing the optical fiber network to improve asset management and ease the assessment of the stability of the communication. Finally, the ongoing project of the data communication network was finalized and commissioned in 2023.

The implementation of the Advanced Metering Infrastructure (AMI) has been significant to CEM. The configuration of the power data network and the associated communication equipment was completed. Currently, the company can effectively retrieve the data from more than 210,000 smart meters, from which over 450 and over 1,000 customer substations are connected through the fiber communication and 4G networks, respectively. The data provided includes alerts regarding overloading and information regarding the utilization of transformers, which are valuable to monitor the performance of the distribution network. It simplifies the network planning. As such, the implementation of AMI can assist in improving supply reliability and optimizing the distribution network.

## Electrical Vehicle (EV) Charging Station Infrastructure

CEM continues to follow closely Macau SAR Government's environmental policies, including the one regarding green mobility. The company continued the effort to enlarge the EV charging station infrastructure of Macau, which now covers 97% of the city's public car parks, with more than 2,000 charging points on hand for EV drivers. Furthermore, currently, 60 public car parks have available both quick and standard charging options with IEC, CHAdeMO and GB/T<sup>4</sup> standards. Moreover, 100 new electric motorcycle charging sockets have been added in 49 car parks, to address the needs of the growing population of EV motorcyclists of Macau.

On 1 October 2023, the new version of the "Technical Specification for Low-voltage Electricity Supply to Buildings" came into effect. This document states that new buildings are required to equip all parking spaces with EV charging power sources with individual electricity meters. The plan is for the owners of each car park to be able to charge their EV, after applying for energy supply in their car park space with CEM.



<sup>4</sup> International Electrotechnical Commission, Japanese/Korean and Chinese national standards, respectively



# Our Risk Management






CEM's risk management framework considers the external context of the company, the current operational conditions, audits, training results and other inputs, to identify and assess external and internal risks in operational, financial, and reputation areas, among others. Then, each individual risk is rated across several dimensions, considering their probability and severity. The framework also will consider

and document include mitigating measures and potential opportunities for improvement for the risks. Our management oversees this process carefully and the risk assessment exercise is done annually.

In 2023, the top risks in CEM maintained the same as in previous years.

Risk	Description	Mitigation Strategies
<p><b>Failure of Critical Power Assets: Age and Extreme Weather</b></p> 	<p>CEM spares no efforts to replace assets that have been in operation for decades, whenever necessary. Advance aging and the worse condition of the assets of the power station and the power network will foster higher operating costs and lead to decreased supply reliability.</p> <p>One more factor poses a high risk for the failure of our power assets: inclement weather. Super-typhoons, floods, and other extreme weather events are becoming more and more common due to climate change. These changes in weather patterns represent a considerable threat to our power network, and the damages can cause massive outages throughout Macau.</p>	<p>CEM has been replacing aging equipment from primary and customer substations alike. Moreover, studies are being carried out to retrofit some of the older primary substations with newer technology. In addition, from 2020 to 2023, CEM had in place the "Safety Upgrade Subsidy Program for Communal Electrical Installations in Low-rise Aging Buildings", funded by the shareholders, where the company improved communal electrical installations in poor condition and eliminated potential safety hazards for residents.</p> <p>To reduce the adverse impact of extreme weather events, CEM has redesigned new and existing installations. In addition, during super typhoons, the company may suspend the power supply in low-lying areas based on the flooding conditions, thereby avoiding damage to the power facilities and expedite the power restoration after the flood water has receded. In addition, the Outage Management System is currently being revamped to enable a better approach to manage customers' outages.</p>
<p><b>Major Health Crisis</b></p> 	<p>In January 2023, Macau SAR Government started slowly to lift COVID-19 pandemic restrictions to the local population and incoming travelers alike, culminating at the end of April when the usage of face masks indoors became voluntary, except in medical institutions and other exceptional cases.</p>	<p>As usual, CEM followed all measures released from Macau SAR Government closely and adopted it throughout the company accordingly. The requirements in place, like mandatory face masks, high frequency of disinfection of workplace areas and compulsory quarantine imposed to infected staff, were relaxed and dropped. However, CEM still urged caution to employees, by restating the advantages of vaccination and other methods of respiratory diseases prevention.</p>

Risk	Description	Mitigation Strategies
<p><b>Investment in Concessionary Assets</b></p> 	<p>To ensure that the development of power infrastructure keeps pace with Macau's urban and economic growth, while maintaining a safe and reliable power supply, CEM's capital investment consistently stays at a high level. Yet, the investment in the upkeep, improvement, replacement and expansion of concessionary power assets must consider the essential balance of several factors.</p> <p>However, the investment of power assets often inevitably precedes business growth, especially when it involves power infrastructures that are needed to prepare for developing districts like the newly reclaimed areas in various parts of Macau. Coincidentally, borrowing costs in this prolonged and rapid rate hike cycle will inevitably exert pressure on the overall financial outlook of the company, and attention to this is duly called for.</p>	<p>The continuous expansion in assets calls for a steady rate of business growth that is commensurate with the program of capital investment, to provide, on one hand, sufficient internal financing and, on the other hand, sustainability of the Tariff Stabilization Provision (TSP). The TSP acts as a buffer to prevent sharp fluctuations in tariff rates when there is a mismatch between the need for capital investment and the pace of business growth, and the mechanism of the Scheme of Control works effectively when the lag between power asset investment and business growth remains relatively short-lived. The longer the lag, the higher the likelihood that the TSP will be depleted, imposing a need to adjust electricity tariffs to cover the shortfalls.</p> <p>To counteract the delay in power demand growth and the pressures of rising financing costs due to the interest rate hikes, CEM has been carefully controlling its costs, pacing its concessionary capital investment, and scrutinizing the size and composition of its investment portfolio. Perhaps the most effective countermeasure is yet to be able to introduce tariff adjustment such that the timely implementation of important projects will not be compromised. On such note, CEM will continue to actively communicate and work closely with the government authorities at stake. In the medium run, reviewing the basic tariffs and the tariff structure as well as the upper limit of the TSP will provide the required foundation for the TSP to deliver its effectiveness and proper stimulus towards attaining medium to long-term balance of the aforementioned factors.</p>

Risk	Description	Mitigation Strategies
<p><b>Market Uncertainties</b></p> 	<p>The current outlook for the macroeconomic landscape remains highly obscure. In terms of supply, the prolonged military conflict in Europe has been exacerbating supply chain challenges and oil price hikes worldwide. Some of the western countries' convergent approach over security, trade and technological issues with China has led to the continuous tightening of market access and supply chain restrictions on China, further complicating the outlook in this respect. Man-made segmentation and reshape of the supply chain may eventually affect the availability and price of primary energies and key components such as network and power plant equipment for Macau. Meanwhile, rising inflation, which is not supported by solid economic growth, is forcing some central banks to continue raising rates to curb rising prices and avoid a hard landing or even worse – stagflation. After many rounds of interest rate hikes, although prices have seen some moderate containment, they have not come down to the desired range. By now, the market becomes more and more convinced of a hard landing. Increasingly higher borrowing costs are hurting economic growth and potentially destabilizing banks that have come to depend on historically low rates. Thus, stress within the banking sector has developed into a significant downside economic risk worldwide.</p>	<p>As far as CEM is concerned, increase in the US interest rates has implications on several fronts. On one hand, rising interest rates are favorable to the valuation of the company's obligations related to employees' post-retirement benefits such as the pension fund and the medical benefit scheme. On the other hand, the Federal Reserve's move to raise interest rates in parallel with shrinking its asset portfolio has injected considerable volatility into the equity market, which in turn is hurting the performance of our pension fund assets. Furthermore, rising interest rates can destabilize banks, thereby posing risks to the financial system and our pension fund assets. Moreover, the persistent increase in the U.S. interest rates has pushed up benchmark rates in Macau and elevated our borrowing costs. Apart from the fluctuation of the Renminbi, the resumption of normality in the post-pandemic period is injecting some upside momentum into the prices in Macau. When inflation in Macau starts to pick up, pressure will mount on our operating costs. CEM will monitor the market closely and manage its costs as best as possible, although market risks are mostly non-diversifiable in nature and the tariff structure as well as the upper limit of the TSP will provide the required foundation for the TSP to deliver its effectiveness and proper stimulus towards attaining medium to long-term balance of the aforementioned factors.</p>

Risk	Description	Mitigation Strategies
<p><b>Cyber Attacks and Failure of IT Infrastructure</b></p> 	<p>Cyberattacks on critical systems are another top-rated risk in CEM. These attacks happen when cybercriminals attempt to hack into networks and websites, steal sensitive corporate business and personal data information. Then, cybercriminals may encrypt data, disrupt networks and paralyze various IT and OT systems to ransom the corresponding decryption key. Such scenarios could lead to business discontinuity, affecting the provision of services to the public community and customers, tangible financial and asset losses, and jeopardize the corporate image and the trust of the customers.</p>	<p>CEM has adopted a comprehensive security strategy and an IT management system that is in line with the Macau Cybersecurity Law and the ISO 20000-1 Management System. CEM continually enhances its security measures by deploying advanced firewalls, applications security gateway and management tools, dedicated communication networks and data encryption, etc. CEM also runs a Security Operation Center to monitor IT network status around the clock and takes immediate responsive actions for detected threats and alerts. Moreover, regular system risk assessments are performed on critical assets to identify vulnerabilities and implement corresponding mitigation solutions. The company also organizes various training sessions on the subject to maintain competence levels of the IT staff. For all other general staff, cybersecurity awareness training is being provided with regular refreshment sessions.</p>
<p><b>Safety At CEM's Works</b></p> 	<p>In CEM, safety in the workplace is a paramount concern. CEM is proactive in this regard, recognizing that identifying and minimizing hazards before they cause injuries or illnesses is a far more effective approach than applying corrective actions after accidents occur. On 10 August 2023, CEM unfortunately suffered one work accident, with 42 days of absence due to injury. The work accident was immediately followed-up by an investigation led by the company's safety engineer to ascertain the root cause and provide recommendations for improvement. The report was then reviewed by management who then included more comments where appropriate. We always follow this procedure after accidents to reduce the likelihood of similar incidents re-occurring in the future.</p>	<p>CEM has been awarded the ISO 45001 Occupational Health and Safety Management System for more than 15 years. As such, CEM regularly reviews its safety procedures and instructions, organizes several safety training sessions for staff, performs inspections at several CEM installations with different frequencies, etc. Furthermore, CEM conducts a "Employee Safety Culture" survey every two years. This study aims to understand the employees' behavior and constraints regarding safety in the workplace, the research results are carefully obtained, discussed at several levels of management and improvements are implemented accordingly.</p>

## Business Continuity and Emergency Preparedness

CEM's approach to business continuity starts with investment in a safe and reliable grid. We continuously maintain and upgrade the power network infrastructure, including adapting it to the effects of climate change that are prevalent in Macau – typhoons and floods. CEM is working alongside the Macau SAR Government to respond to these events, by following the emergency response steps as stated in the contingency plans, mobilizing personnel and other resources where needed, to guarantee continuous energy supply in Macau. Additionally, the company conducts joint drills with the relevant governmental entities to review and update the emergency response plans where necessary. Drills with the Guangdong Power Grid are also performed to test the response to incidents and accidents in the interconnection lines and internal power grid. Furthermore, CEM is proactive when preparing for emergencies. We have in place several emergency plans responses for various scenarios not only for the above-mentioned typhoons and floods but also for other scenarios like fire, leakages or spills, and epidemic diseases, among others. Another example of this is CEM, in a joint effort with the Macau SAR Government, building a customer substation on higher ground and cancelling the monoblock next to an important area of downtown Macau that is prone to flooding, to enhance the supply reliability in that area during extreme weather events.

CEM acquired in 2023 a Mobile Battery Energy Storage System (ESS), which is an innovative technology application where electrical energy is stored in rechargeable batteries and released when necessary. The whole system is portable, which makes ESS ideal to be utilized during emergencies to provide a temporary energy supply to targeted areas of the LV distribution network as needed. The ESS has the additional advantage of being greener since its operation produces lesser amounts of air and noise pollution.

CEM continues to test the feasibility of the emergency plans in place by conducting at least one drill with a “crisis” scenario every year so that all staff can continue to improve their ability to cope with super typhoons and work together to deal with possible storm and flooding crises. The typhoon crisis drill was performed on 16 May 2023, and focused on the response of protection of power generation and power network equipment, power restoration work in low-lying areas, internal cross-departmental communication, and external communication mechanisms, among others. Finally, the company's tasks of the established 10-year disaster reduction plan continue to be in progress.



Macau was hit by serious typhoons three times in 2023, and, on 2 September, super typhoon Soala raged in Macau, and typhoon signal no.10 and a red surge warning went into effect. CEM was fully prepared for this event. Ultimately the de-energization of some vital facilities was not implemented as the flooding did not reach the required level of severity for it to be executed.

CEM has set up various channels of communication with the customers, namely the CEM corporate website and several social media platform channels such as Facebook and WeChat that assist with communication of important information during emergencies, especially typhoons no. 8 and above and serious floods. All information is provided in English and Chinese, with the addition of the Portuguese translation for the corporate website, to address the diversity among our customers in Macau.

The peak of demand happened in May 2023 in Macau. At the time, the company found that certain substations were reaching significantly high levels of loading. Overloading can lead to transformer failures, impacting power supply; as such, after studying the operational conditions at hand, the company adjusted and optimized the substation load distribution, and established and implemented the appropriate load transfer plan, to ease this operational risk. CEM had also in place contingency and power supply security measures for major events in Macau, including but not limited to Labor Day Golden Week and People's Liberation Army Opening Day in May 2023, National Day in October 2023, 70<sup>th</sup> Macau Grand Prix in November 2023, and Macau Handover Anniversary in December 2023.





# Our Impact



## Greenhouse Gas (GHG) Emissions

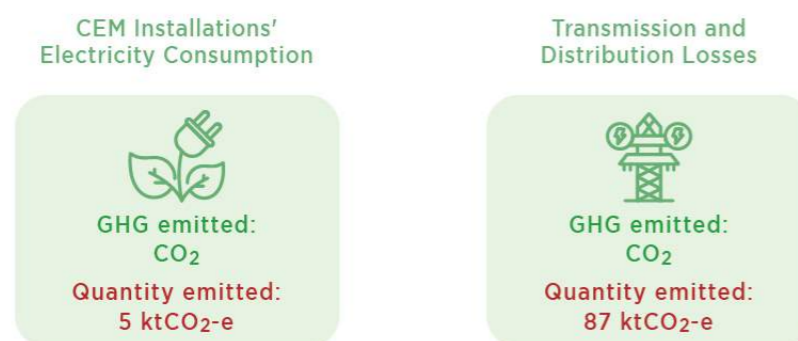
Global warming and climate change effects on our planet have been raising alarms with each passing day. Major organizations understand that the reduction of GHG emissions in their operations is a must and ignoring the calls for carbon dioxide (CO<sub>2</sub>) emission reduction may have a major impact on their business and the sustainability of their operations.

CEM has always been mindful of climate change effects in Macau. As such, CEM has been measuring and quantifying its GHG emissions based on ISO 14064-1 Greenhouse Gases framework every year since 2010, measuring the totals of CO<sub>2</sub>, methane (CH<sub>4</sub>), nitrous oxides (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF<sub>6</sub>) produced by the company's activities.

### Direct GHG emissions and removals<sup>5</sup>



### Indirect GHG emissions from imported energy



### Indirect GHG emissions from transportation



### Indirect GHG emissions associated from products used by CEM



### Indirect GHG emissions associated with the use of products from CEM

None

### Indirect GHG emissions from other sources

None



<sup>5</sup> All Greenhouse Gas Global Warming Potentials (GWP) for a 100-year time horizon used in this calculation were published by the Intergovernmental Panel on Climate Change (IPCC) in their revised 2021 reporting guidelines (6<sup>th</sup> Edition) for national GHG gas inventories.

## Atmospheric Emissions

CEM monitors very closely the quantities and concentrations of the atmospheric emissions produced by the energy generation process. The stacks of the Coloane Power Station have analyzers that are associated with the Continuous Emissions Monitoring System

(CEMS), which monitors the quantities and concentrations of five main air pollutants every 15 minutes, namely nitrogen oxides (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), particulate matter (PM), carbon monoxide (CO) and CO<sub>2</sub>.

The Power Station follows very closely the reporting obligations and legal limits of the air emissions, as stated in the Administrative Regulation No. 24/2019 "Air Pollutant Emission Standard for Power Plant". CEM prepares and sends environmental performance reports that are required to the Macau Environmental Protection Bureau (DSPA) and other external entities as required, and CEM has currently

been providing DSPA with real-time air emissions monitoring data as well. Moreover, air pollutant emission tests were conducted by a CNAS<sup>6</sup> - accredited laboratory in May, June, September and November 2023. This is also a reporting obligation for CEM. All reports show that CEM is in full compliance with the air emission law limits.

**Atmospheric NO<sub>x</sub> emissions levels in Coloane Power Station**



**Atmospheric PM emissions levels in Coloane Power Station**



**Atmospheric SO<sub>2</sub> emissions levels in Coloane Power Station**



## Wastewater Discharges and Waste Handling

The Coloane Power Station has two wastewater treatment plants (WWTP), to ensure our wastewater will not have an adverse impact when the effluent is returned to the water cycle. The treatment in the WWTP aims to put the levels of six main parameters - total

suspended solids (TSS), detergent, chemical oxygen demand (COD), pH, biochemical oxygen demand (BOD) and oils and greases - within the legal limits stated in Decree No. 46/96/M. The following two tables show the results of the past three years.

<sup>6</sup> China National Accreditation Service for Conformity Assessment

**Average levels of the wastewater parameters of CCA**

Parameter	Unit	Limit	2021		2022		2023	
TSS	mg/L	60	19.13	✓	22.70	✓	30.50	✓
Detergent	mg/L	2	0.42	✓	1.00	✓	1.00	✓
COD	mg/L	150	39.26	✓	44.20	✓	42.80	✓
pH		6-9	8.00	✓	7.00	✓	7.20	✓
BOD	mg/L	40	13.74	✓	11.80	✓	13.70	✓
Oils and Greases	mg/L	15	8.00	✓	5.30	✓	2.80	✓

**Average levels of the wastewater parameters of CCB**

Parameter	Unit	Limit	2021		2022		2023	
TSS	mg/L	60	16.40	✓	15.30	✓	12.30	✓
Detergent	mg/L	2	0.30	✓	0.80	✓	1.00	✓
COD	mg/L	150	26.00	✓	19.80	✓	20.00	✓
pH		6-9	7.30	✓	7.40	✓	8.00	✓
BOD	mg/L	40	7.48	✓	16.10	✓	10.60	✓
Oils and Greases	mg/L	15	8.00	✓	4.90	✓	2.30	✓

CEM's routine activities produce solid waste that undergoes the company's defined waste management process. The produced waste is segregated and in a posterior stage, will be disposed, incinerated or sold, depending on the nature and/or residual value of the waste. In 2023, CEM continued to fully support

DSPA's city-wide recycling program. As such, paper, metal, plastic waste, batteries, light bulbs and other waste continue to be segregated and collected from several CEM premises and are delivered to a DSPA-authorized recycling station to be handled further.

**Different waste handled and recycled in CEM**



Lastly, there has not been any significant leakage or spill to report in the past years.

## Environmental Initiatives

Several initiatives were put in place in 2023.

### CEM Green Culture Survey

In 2023 the company organized the “Green Culture Survey”, with the aim to evaluate CEM’s green corporate culture. We were glad to have a high response rate of 85.3%. The survey results were analyzed by different parties, including upper management, and an improvement action plan was implemented where necessary and currently undergoing implementation.

### EV in CEM

CEM purchased four additional electrical vehicles in 2023. Currently, the company’s vehicle fleet composes of 13.6% of EV. To address the need of the company and the growing percentage of employees who are EV drivers, CEM installed additional EV charging stations in CEM headquarters. CEM started permitting employees to use the energy quota to pay for the EV charging fees in early 2023.

### Customer PV Program

Further steps have been taken regarding renewable energy usage in Macau. At the end of 2023, the total customer solar photovoltaic generation facilities connected to CEM’s low-voltage network produced a total of 383.3 MWh, which represents a 131% year-on-year increase.

### Light Bulbs Replacement

The renovations in the company’s headquarters continued in 2023. As is our usual practice, all faulty lighting was replaced with more environmental-friendly LED bulbs. Furthermore, in the car parks, the LED lighting installed was fitted with motion sensors, to further reduce energy consumption.

### Promotion of E-billing in Macau

CEM is an advocate of e-billing due to the higher speed and lower costs associated with this type of billing for customers. However, the past decade showed slow growth in e-billing subscriptions among CEM’s customers, at around 4%. CEM then decided to launch several initiatives to promote the e-bill application, stating that not only would the process become paperless, but the customers with e-bills would also find the process to be more convenient and reliable, as customers can review their electricity bills anytime and anywhere via mobile phone or web, and the bills would arrive immediately after issued instead of needing to wait for the post. Moreover, customers can bind CEM WeChat or download the CEM APP to receive reminders and alerts, reducing the chances of late fees or missed payments. At the end of the promotion program, the e-bill subscription rate was raised to 15%.

### New Sea Water Cooling System in Power Station

The Coloane Power Station’s cooling system relied on the adjacent body of water for its cooling processes. However, that body of water has decreased in size throughout the years due to the expansion of the neighbors: DSPA’s landfill and Macau International Airport. Therefore, the New Sea Water Cooling System (NSWCS), a large-scale engineering project that operates under relatively complex conditions, was proposed to solve this problem. An environmental impact assessment was performed prior to the construction, and during the execution of the project, the water quality was monitored carefully at different locations to ensure the protection of the marine environment, including Chinese white dolphins and finless porpoises, that are recorded to be found in the waters south of Macau. The project was concluded in 2023 and all environmental reports and results show the care for the environment during the project’s implementation. The records will be kept for reference in future projects of similar stature.

### In-house Repair - Transformer Oil Leakage

The transformers of the distribution network are essential equipment for the supply of energy to the customers, and leakage of the inner insulation oil can become a major problem. Not only the leaked oil can contaminate the soil, but also the leakage can lead to problems in the performance of the equipment itself. In 2023, CEM decided to overhaul the overall process, by formalizing and standardizing the maintenance of the transformers, and training the staff to increase their competence to perform in-house transformer repairs. This overhaul was beneficial for the management of this type of asset, since the transformer lifecycle is now extended, the risk of failure is reduced considerably which in turn will decrease maintenance costs. In addition, there are the obvious environmental upsides of minimizing oil leaks in transformers.







# Our Service to Customers



There were in place several initiatives to facilitate the Macau residents' access to electricity.

<b>Government Electricity Subsidy Program</b>	This government-funded subsidy has been in place since April 2008 and targets all residential contracts. The current monthly subsidy amount is MOP200 and can be used only to settle bills related to electricity consumption.
<b>Senior Citizen Support Program</b>	This is a program established by CEM that targets Macau's senior citizens with residential contracts. In this scheme, an 11% reduction in price is granted on the first 88 units of electricity consumption.
<b>Social Welfare Tariff</b>	A special rate is applicable to electricity contracts for Not-For-Profit usage. Any private or public entities with related documents from the Social Welfare Institute (IAS) and with electricity contracts under certain conditions can benefit from a special energy rate equivalent to an 8.2% reduction.
<b>Social Support Tariff</b>	Residential customers that receive social assistance support of IAS, whose electricity contract with a subscribed demand is up to 6.9 kVA and have a monthly consumption that does not exceed 120 kWh over the previous six months can benefit from a special energy rate equivalent to 55.5% reduction.
<b>Social Assistance Aligned Bill Issuance</b>	Electricity bills addressed at government public housing are issued on particular days so that tenants receiving social assistance support from IAS may see their payment grace period aligned with the government subsidy funding timing.

With the lifting of the COVID-19 restrictions in the first quarter of 2023, the Customer Service Centers amended the customer entry requirements. Face masks became optional, and customers did not have to present the Macau Health Bureau's health code with the COVID-19 status or have their temperatures

checked anymore. Furthermore, the frequency of disinfecting areas resumed to pre-pandemic levels. Finally, in October 2023, the Customer Service Centres removed the protective plastic panels from the service counters.

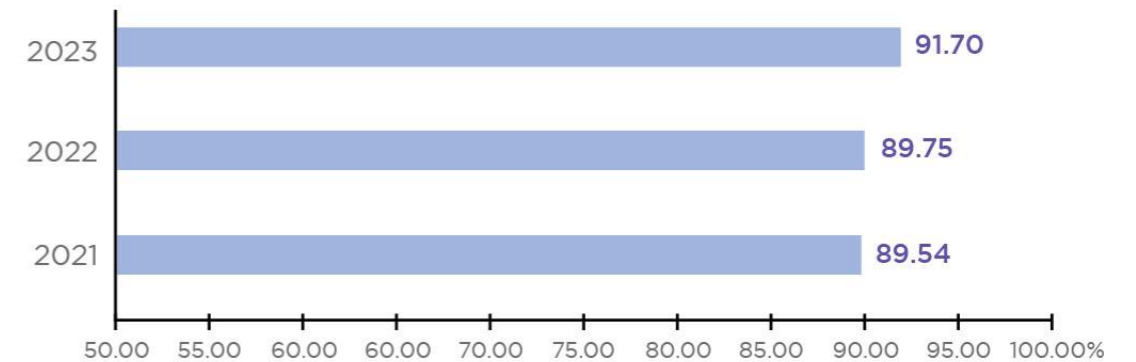
## Customer Satisfaction Survey (CSS)

CEM has been performing the CSS every year for more than two decades. The results of the survey help the company gauge customers' expectations, their perception of CEM's services and brand, identify shortcomings, improve customer experience and ultimately improve the business.

As such, in June and July 2023, CEM performed face-to-face and phone interviews with customers and 1,000 responses were used in the survey. The respondents gave the feedback on ten service areas, including reliability of power supply, stability of electrical power, billing service, and Info Line, among others.

In 2023, we received our highest result ever: 91.70%. The results showed improved satisfaction levels in most areas while the results of the categories "corporate image" and "billing services" remained approximately constant. Overall, the customers commented on high quality, speed and efficiency of the company's services. The respondents also provided some suggestions for improvements that were useful for CEM. The company analyzed them carefully and developed and implemented action plans to address the feedback.

Customer Satisfaction Survey Index



## Customer Privacy

Data privacy is a critical issue that must not be overlooked. In today's digital age, CEM, as most companies, retains a rising amount of personal information of the customers and employees, such as names, addresses, date of birth, Macau ID numbers, and bank account information, among other sensitive data. While it is important for CEM to maintain this data in their databases to perform routine services like electricity billing, the public may be concerned about how the data is used and protected, and who has access to it.

CEM understands these concerns about privacy and security, as personal information is often vulnerable to being misused, hacked,

or otherwise compromised. As such, CEM has put several measures in place to address these issues. Limited accessibility to personal data is one of the measures. Employees who perform tasks that require personal information are the only ones with access to the databases. Moreover, in case of transfer of duties or resignation, the access is terminated without delay. Furthermore, our IT infrastructure is well-defended against cyberattacks and data theft, and associated staff have the necessary competence to deal with these risks.

Just like in the past, we have not received any complaints regarding breaches of customer privacy in 2023.



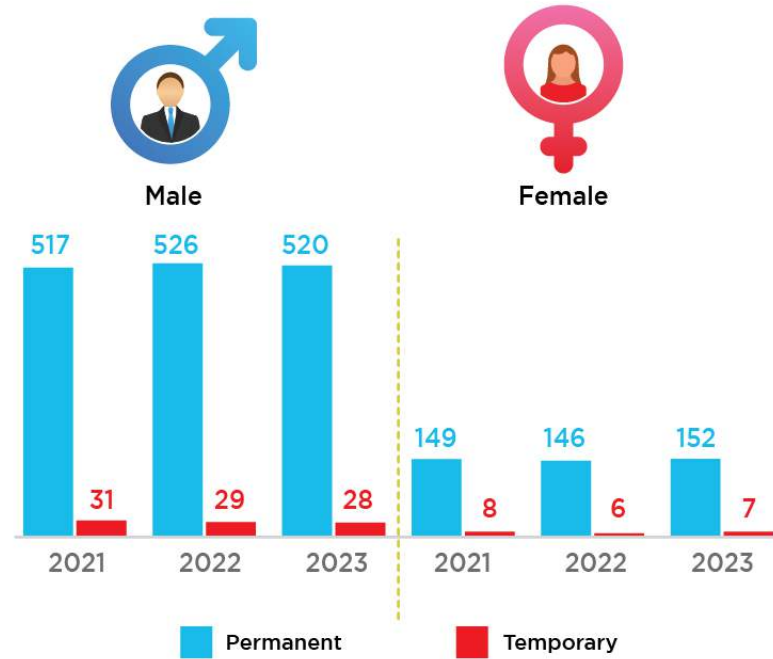
Our People



CEM believes that the foundation of a successful company always begins with its employees, and the skills, knowledge, and expertise they bring to the table are invaluable. CEM endeavors to provide an

equitable and healthy workplace that enables the employees to flourish, increasing productivity and reducing turnover. In 2023, the company employed 707 employees.

Number of employees in CEM, by contract and by gender<sup>7</sup>



We were pleased to receive the awards “Excellent Family-Friendly Employer”, “Breastfeeding Support Award” and “Epidemic Collaboration Award” in the 4<sup>th</sup> edition of the ‘Family-Friendly Employer Award Program 2021 - 2023’, organized by the Women’s

General Association of Macau. This event recognizes CEM for the second time. These honors show CEM’s commitment to providing the best workplace conditions to the employees through the years.

‘Family-Friendly Employer Award Program 2021 - 2023’ Ceremony



<sup>7</sup> Part-time employees are not counted.

The impact of the COVID-19 pandemic on the company lowered significantly in 2023. Following the Macau SAR Government’s lead, CEM began lifting the pandemic restrictions in the first quarter, by relaxing the requirement of face mask usage in the company’s premises, and then by returning the frequency of disinfection of workplace areas to its pre-pandemic levels. Furthermore,

face-to-face gatherings and meetings were open to all. Moreover, in case an employee tested positive for COVID-19, the company deemed unnecessary to quarantine. However, employees presenting respiratory-like symptoms still must follow some cautionary requirements like wearing masks, among others, and seek immediate medical treatment.

## Occupational Health and Safety

CEM’s safety culture is grounded on the fact that working with safety is everyone’s right and responsibility. Managers, engineers and frontline workers all do their part in maintaining a safe workplace, by identifying risks, minimizing hazards, and providing sufficient resources to establish and implement safe procedures. We understand that safety is a never-ending endeavor; consequently, several measures are in place to ensure safety remains a top priority at all levels of the hierarchy.

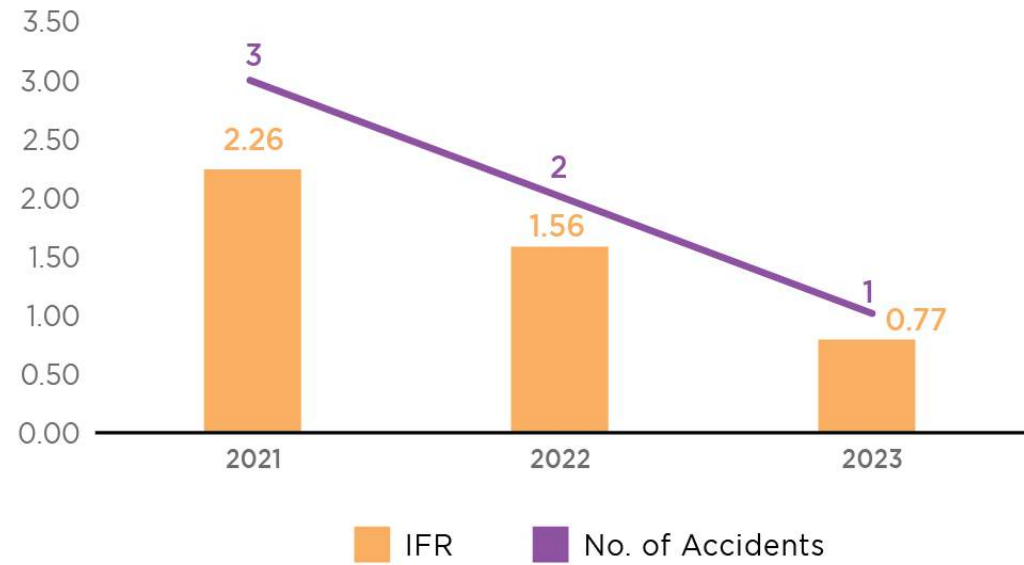
We continue to focus on providing our staff with the technical knowledge, skills and ability to help them to do their tasks safely. Refresher sessions are organized to assist in knowledge retention and ensure safe work practices. Safety, Health and Environmental (SHE) training is included in the New Employee Orientation Program. Training materials are then also distributed and depending on the importance of the subject, uploaded to the company’s Intranet for staff’s later reference. In 2023, CEM delivered almost 1,800 hours of safety training to our employees.

The Occupational Health and Safety Committee was established in 2009 and it is still a major player in safety in CEM. The committee performs regular visits to different CEM premises, evaluates the workplace and identifies areas of improvement whenever necessary. The committee is currently composed of 14 members from different Departments and is led by the Employee’s Representative. In 2023, the committee performed 12 site visits and inspections of the Coloane Power Station, primary substations and other CEM Installations.

In 2023, a CEM employee suffered injuries in a work accident, which caused them to have 42 days of absence. The accident triggered an immediate investigation led by the company’s safety engineer. The investigation report was then reviewed by management and distributed to other parties for their reference, as CEM believes that experience sharing between departments raises everyone’s safety awareness. The recommendations for improvement were implemented timely.



**Number of accidents and IFR<sup>8</sup> results of employees**



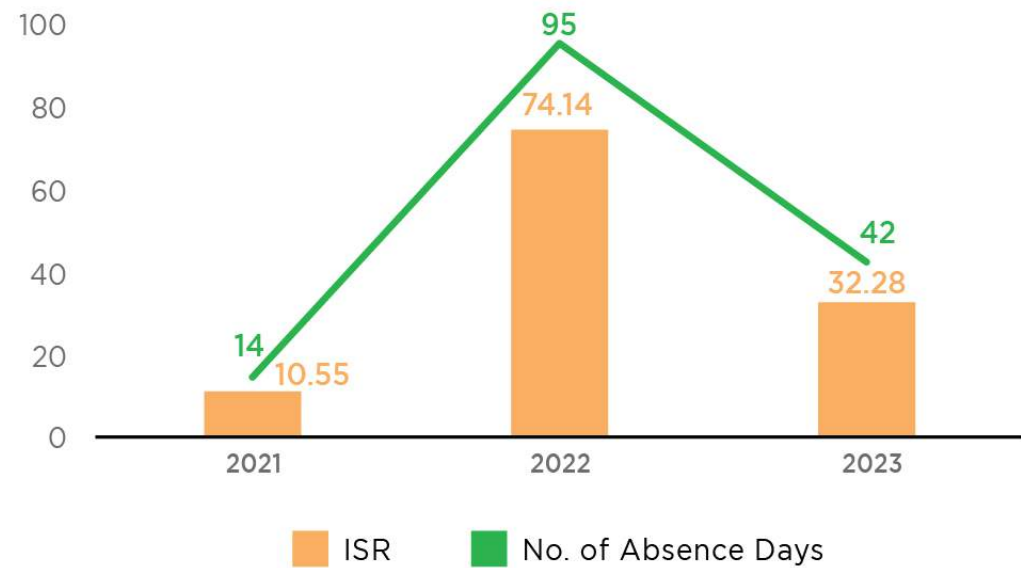
For more than two decades, CEM has in place the CEM Occupational Health Services (OHS). They consist of two clinics, located in CEM Headquarters and another in the Coloane Power Station, staffed with medical personnel. The employees can book a consultation and if necessary, are led to a specialist that is part of the company's medical network package. Moreover, every three years, the OHS clinics will organize the "Employee Health Evaluation", which is an overall checkup of all active employees of the company, through analysis of results of blood and urine tests, chest X-rays, electrocardiograms, among others.

vaccination in the combat of this disease to all employees. Moreover, in December 2023, CEM organized the "Flu Vaccination" event in the company, where employees were able to book and receive their flu vaccine from medical personnel from the Macau Health Bureau. On the other hand, staff was also able to attend the seminar "Awareness on Hepatitis B and C", organized on CEM premises in October 2023.

CEM also promoted other initiatives related to health. While the COVID-19 pandemic restrictions were lifted early in the year, in May 2023 CEM reiterated the importance of

Areas with high noise levels that may be damaging to the employees' hearing are demarcated and identified as "Ear Protection Zones" through signs and notices, and the employees working in these areas are monitored by CEM OHS doctors through regular audiometric tests.

**Number of absence days and ISR<sup>9</sup> results of employees**



**Entrance of an "Ear Protection Zone" in the power station**



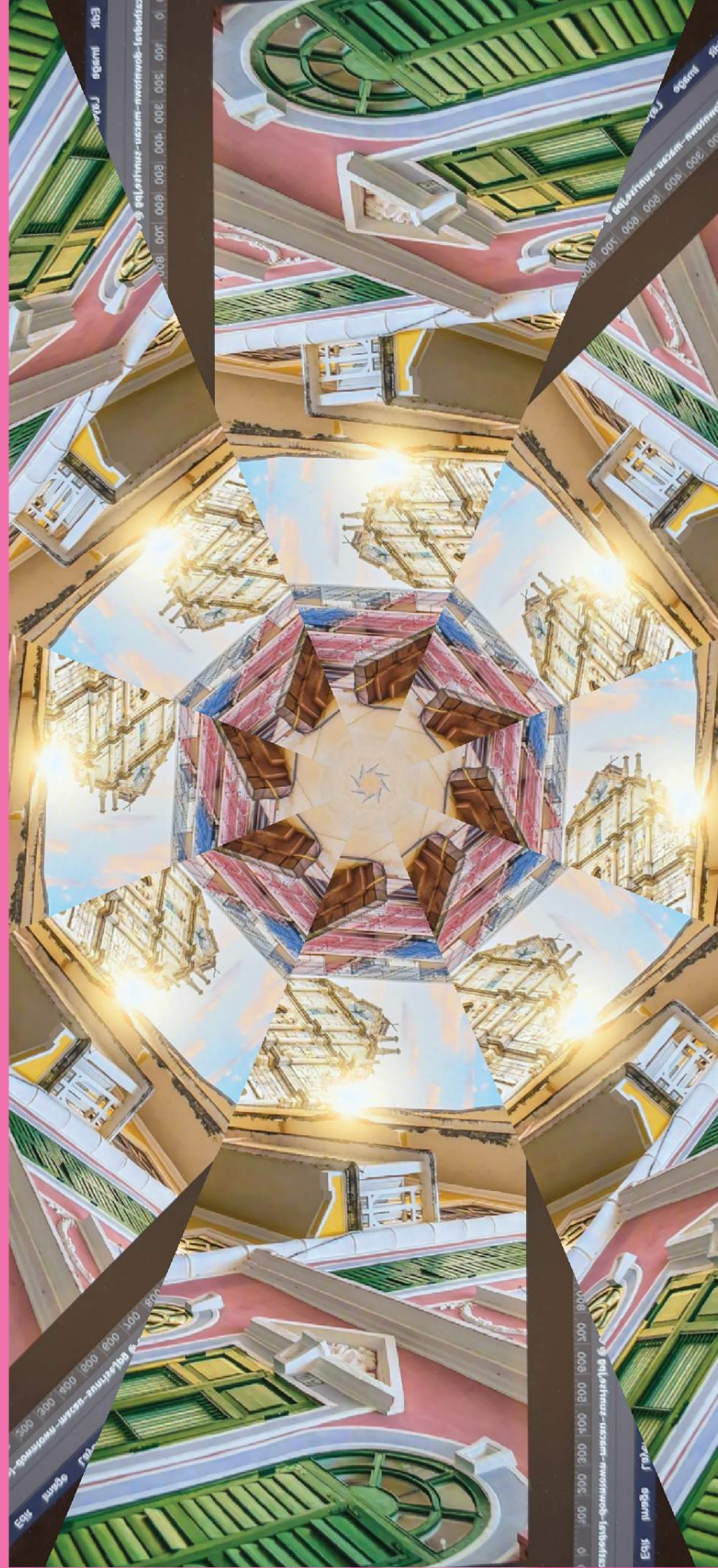
$${}^8_{\text{IFR}} = \left( \frac{\text{Number of work accidents}}{\text{Total number of hours worked}} \right) \times 1,000,000$$

$${}^9_{\text{ISR}} = \left( \frac{\text{Number of work days lost}}{\text{Total number of hours worked}} \right) \times 1,000,000$$





# Our Partners



## Suppliers and contractors

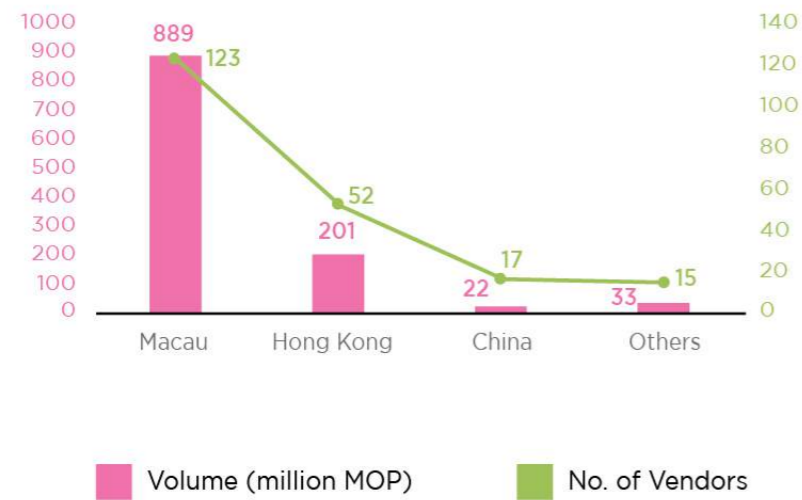
In 2023, 207 and 304 companies provided services and materials to CEM, respectively. Our priority is to source local suppliers and contractors, to reduce cost and our carbon

footprint. In 2023, up to 59.4% of the services were provided by local companies and 60.0% of the materials were sourced from Macau.

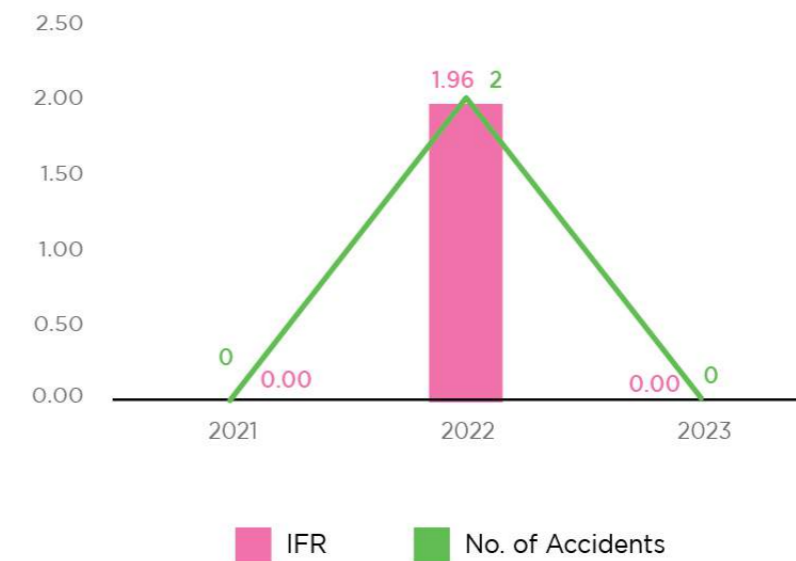
The contractors' safety is of paramount importance to CEM. As such, CEM mandates all contractors to follow similar safety procedures and requirements as the ones adopted internally, by including the "Health, Safety and Security Rules" in the contracts. Moreover, CEM performs regular and

Moreover, CEM performs regular and ad-hoc onsite visits and inspections of the contractors' worksites to ensure the safety procedures are followed. We are pleased to report that this year, there were no work accidents among CEM contractors' staff within CEM premises.

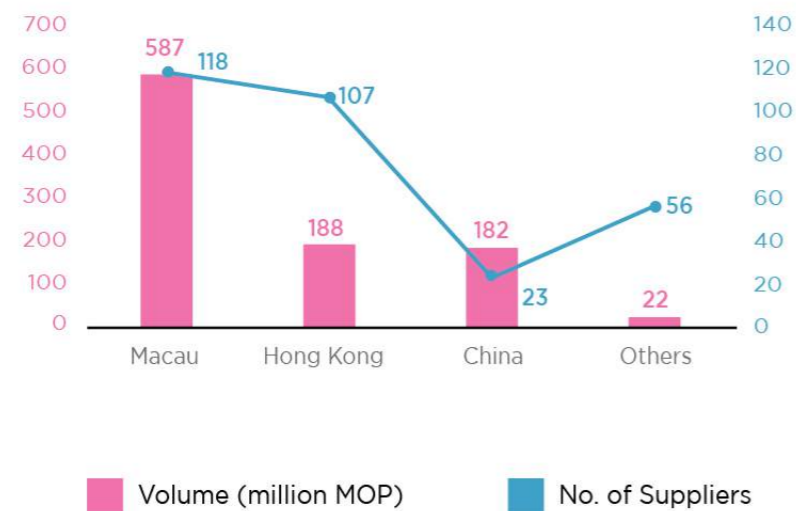
Service contractors used by CEM



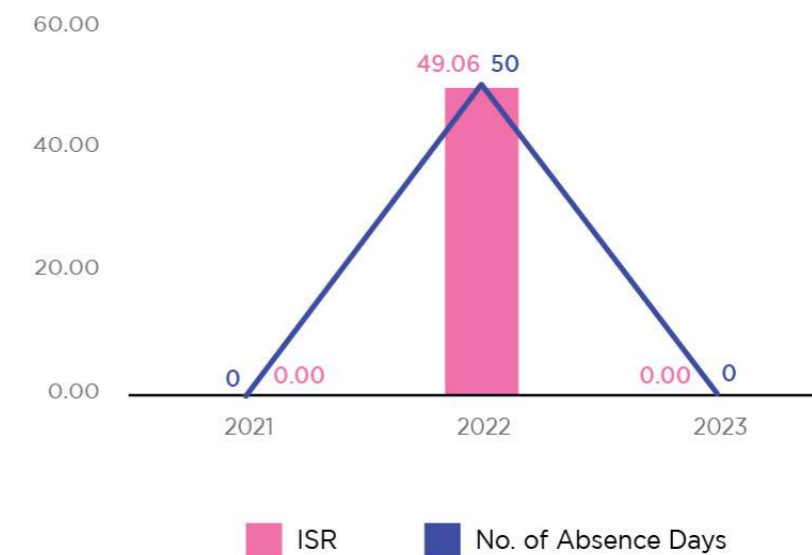
Number of accidents and IFR results of contractors



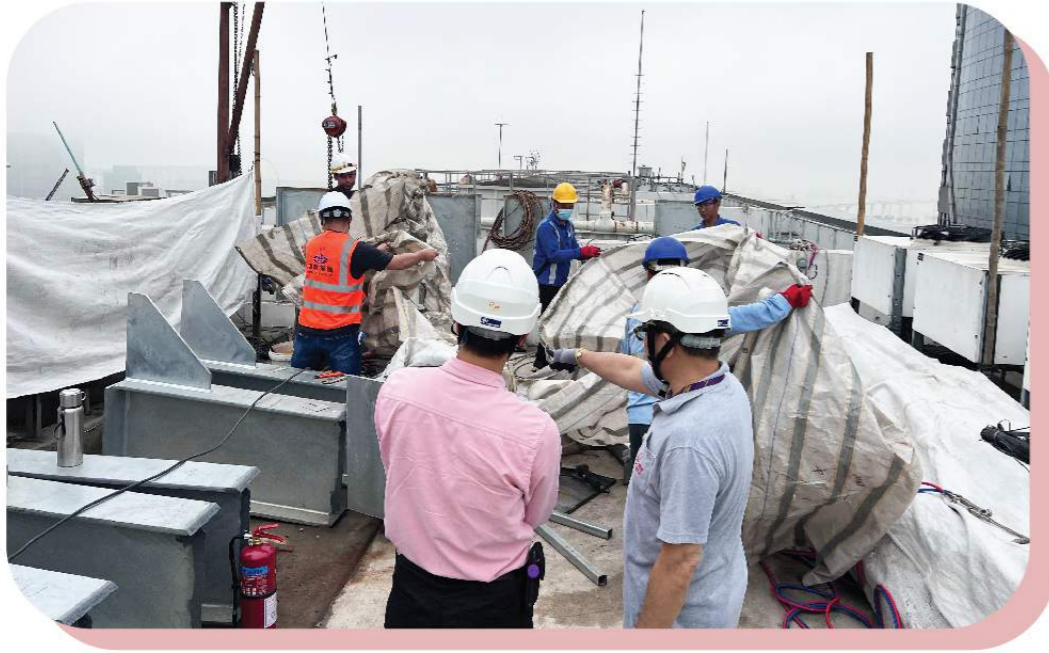
Material suppliers used by CEM



Number of absence days and ISR results of contractors



**Ad-hoc inspection to verify the work of the contractors.**



CEM held the “Safety Training for Contractors” once again in 2023. This event organized by the company for almost a decade has always been well-received by the management and employees of our

contractor companies alike, and this year was attended by almost 100 people among CEM contractors’ staff.

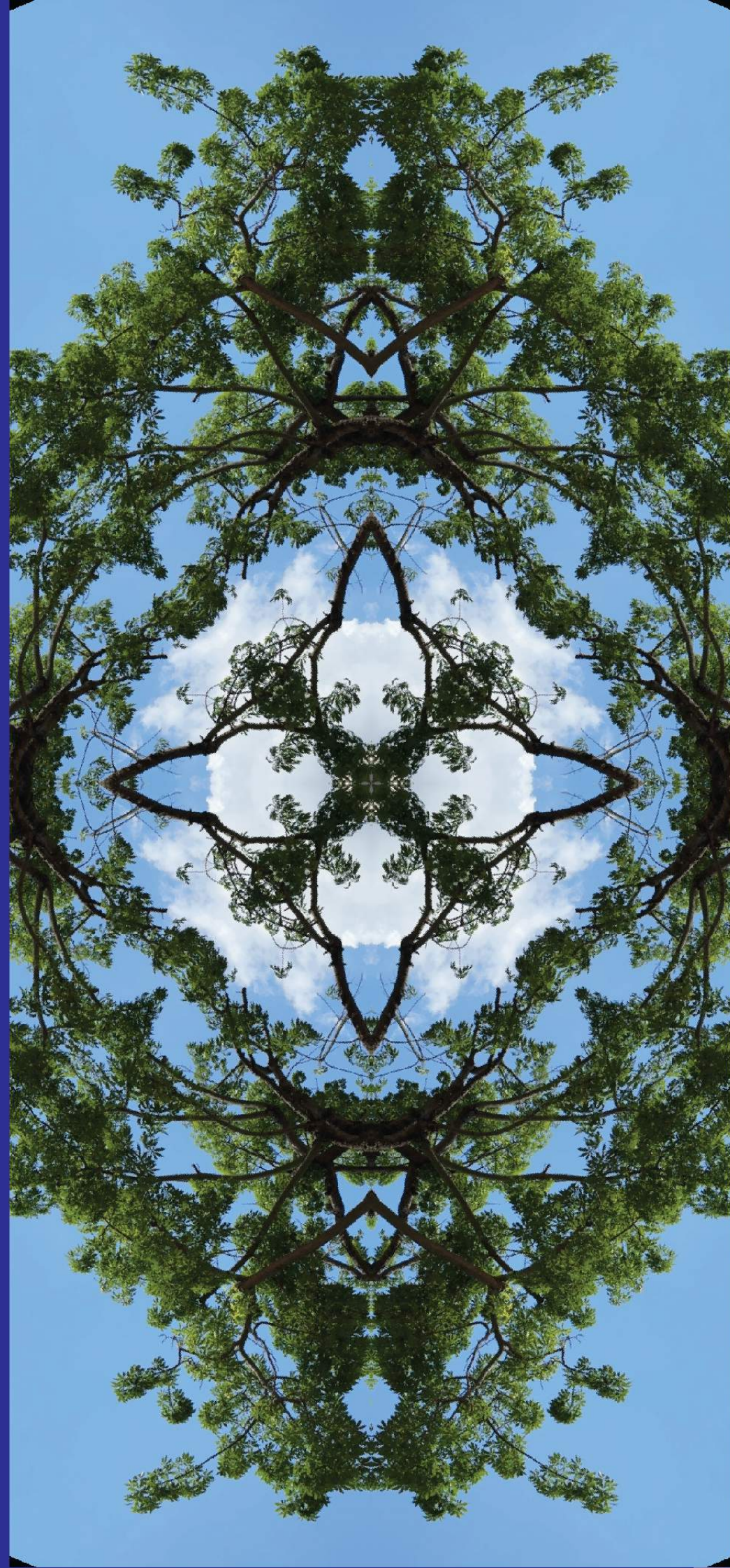
**Safety Training seminar for contractors in 2023**







# Our Sustainability Report



The CEM Sustainability Report is developed and published every year. The current report provides information about the company from 1 January 2023 to 31 December 2023. There are no re-statements from this Report, as there are no significant changes in the scope, boundary, or measurement methods applied to it. As in the past few years, we did not seek external assurance.

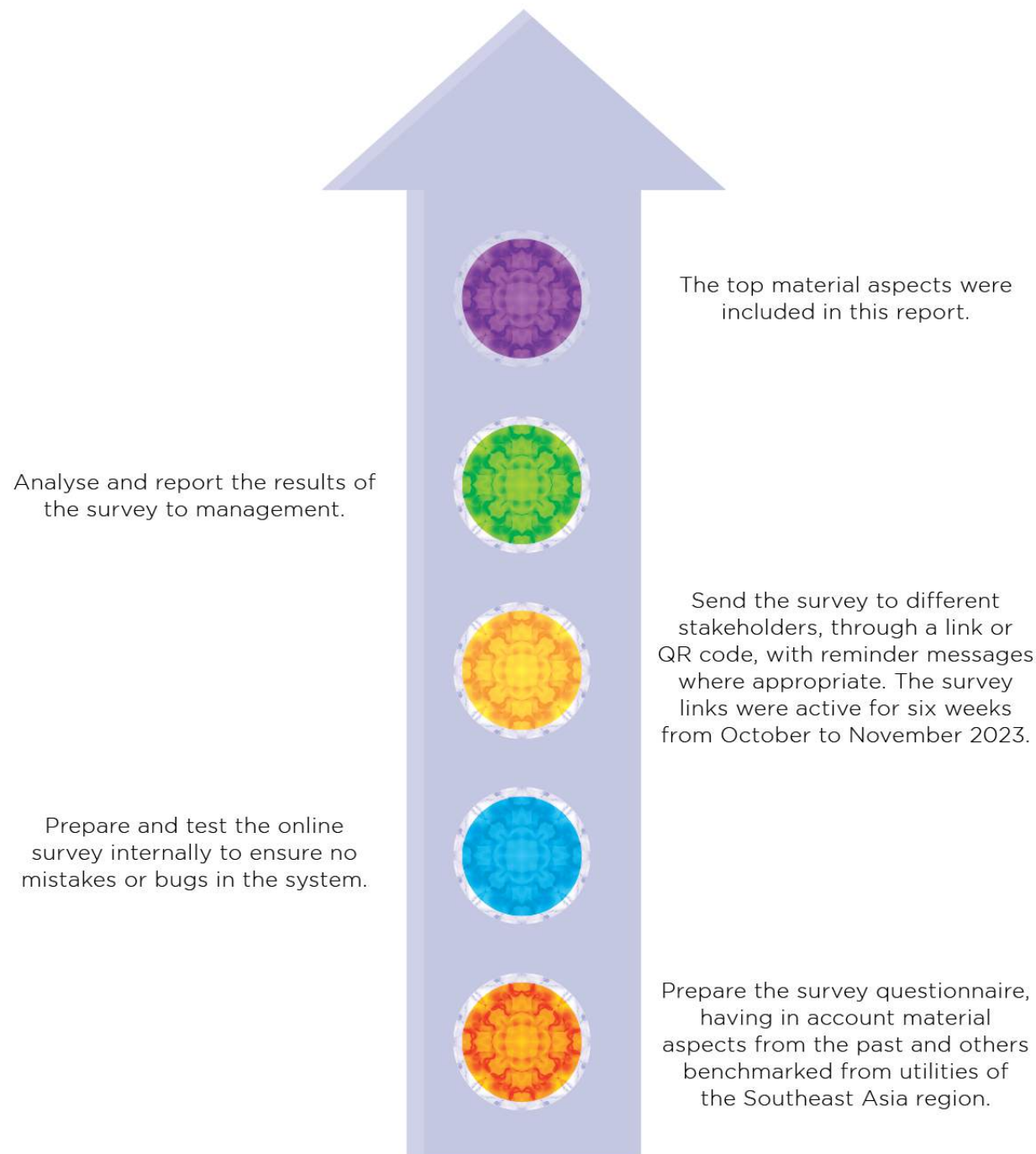
To follow the global trend of reporting, just like in previous years, we are following the Global Reporting Initiative's GRI Standards and the

G4 Electric Utility Sector Supplement. We believe that following the guidelines of reporting from GRI allows CEM's performance to be benchmarked more easily. When developing this report, the overall approach was to display our social, environmental, and economic performance that is most pertinent to the stakeholders of the company. As such, a materiality study had to be performed, and in 2023 we conducted a survey to ascertain what aspects were more significant to our shareholders and would be then included in the sustainability report of 2023

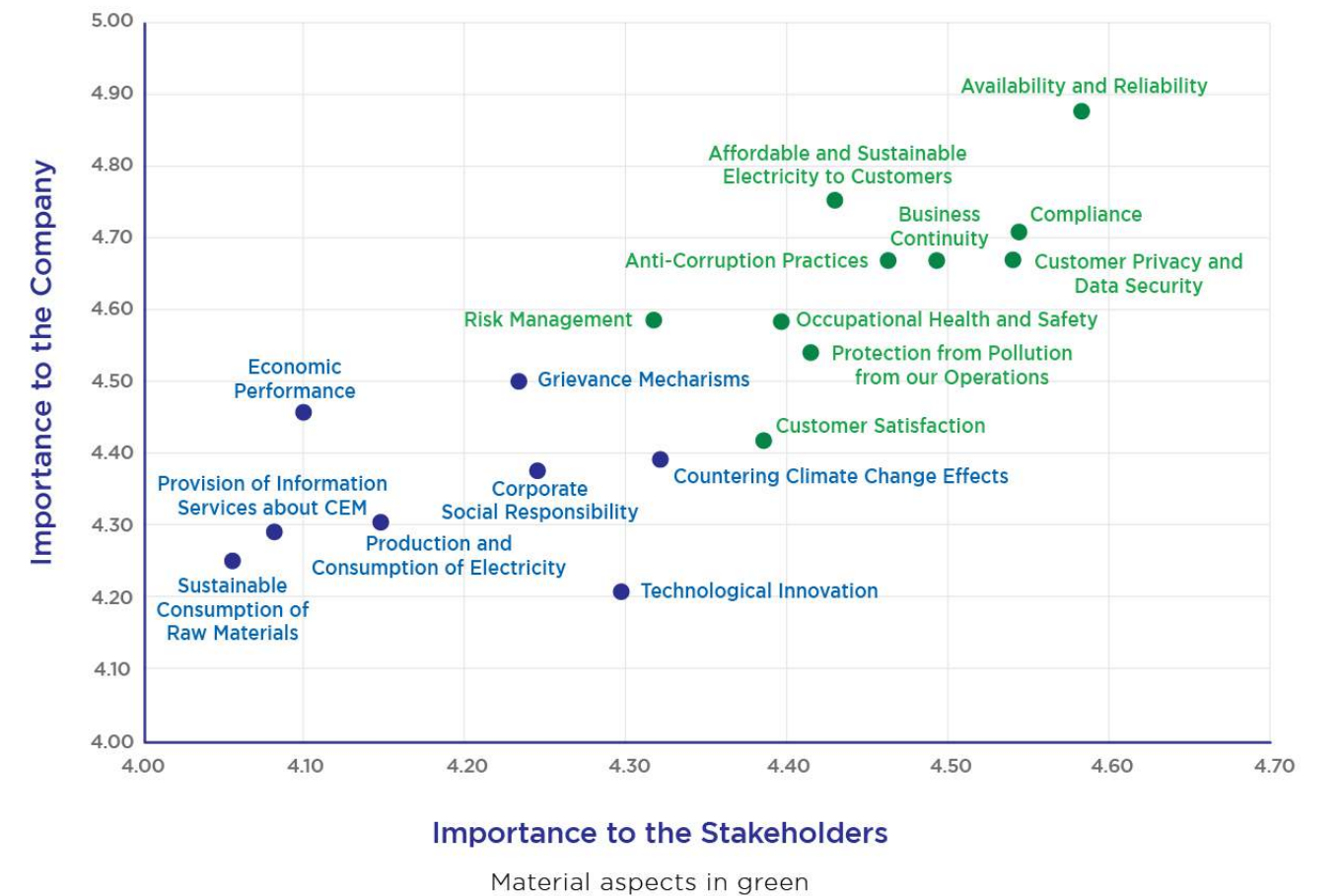
More information on the company's performance is available in the CEM Annual Report 2023. Same as this sustainability report, the CEM annual report is available to all interested parties on the company's website [www.cem-macau.com](http://www.cem-macau.com).

Your views are important for our continual improvement. We encourage you to send your comments to enable us in making improvements in our reporting.

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**Materiality Matrix 2023**





# GRI Table Index



<b>Statement of use</b>	CEM has reported following the GRI Standards for the period from 1 January 2023 to 31 December 2023.
<b>GRI 1 used</b>	GRI 1: Foundation 2021

<b>GRI STANDARD</b>	<b>DISCLOSURE</b>	<b>CHAPTER</b>
GRI 2: General Disclosures 2021	2-1 Organizational details	2023 at a Glance in CEM Our Corporate Governance
	2-2 Entities included in the organization's sustainability reporting	Our Sustainability Report
	2-3 Reporting period, frequency and contact point	Our Sustainability Report
	2-4 Restatements of information	Our Sustainability Report
	2-5 External assurance	Our Sustainability Report
	2-6 Activities, value chain and other business relationships	2023 at a Glance in CEM Our Corporate Governance
	2-7 Employees	2023 at a Glance in CEM Our People
	2-8 Workers who are not employees	—
	2-9 Governance structure and composition	Our Corporate Governance
	2-10 Nomination and selection of the highest governance body	—
	2-11 Chair of the highest governance body	Our Corporate Governance
	2-12 Role of the highest governance body in overseeing the management of impacts	Our Corporate Governance
	2-13 Delegation of responsibility for managing impacts	Our Corporate Governance
	2-14 Role of the highest governance body in sustainability reporting	Our Corporate Governance
	2-15 Conflicts of interest	—
	2-16 Communication of critical concerns	Our Corporate Governance
	2-17 Collective knowledge of the highest governance body	Our Corporate Governance
	2-18 Evaluation of the performance of the highest governance body	—

<b>GRI STANDARD</b>	<b>DISCLOSURE</b>	<b>CHAPTER</b>
GRI 2: General Disclosures 2021	2-19 Remuneration policies	—
	2-20 Process to determine remuneration	—
	2-21 Annual total compensation ratio	—
	2-22 Statement on sustainable development strategy	—
	2-23 Policy commitments	—
	2-24 Embedding policy commitments	—
	2-25 Processes to remediate negative impacts	—
	2-26 Mechanisms for seeking advice and raising concerns	Our Corporate Governance
	2-27 Compliance with laws and regulations	Our Company
	2-28 Membership associations	—
EUSS General Disclosures	2-29 Approach to stakeholder engagement	Our Corporate Governance
	2-30 Collective bargaining agreements	—
	EU1 Installed capacity	Our Facilities
	EU2 Energy output	Our Operations
	EU3 Customer installations	Our Operations
	EU4 Length of underground transmission and distribution lines	Our Facilities

GRI STANDARD	DISCLOSURE	CHAPTER
GRI 3: Material Topics 2021	3-1 Process to determine material topics	Our Sustainability Report
	3-2 List of material topics	Our Sustainability Report
	3-3 Management of material topics	Our Sustainability Report
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	2023 at a Glance in CEM Our Operations
	201-3 Defined benefit plan obligations and other retirement plans	Our Operations
	201-4 Financial assistance received from government	Our Operations
GRI 204: Procurement Practices 2016	204-1 Proportion of spending on local suppliers	Our Partners
GRI 302: Energy 2016	302-1 Energy consumption within the organization	Our Operations
	302-2 Energy consumption outside of the organization	Our Operations
GRI 303: Water and Effluents 2018	303-2 Management of water discharge-related impacts	Our Impact
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	Our Impact
	305-2 Energy indirect (Scope 2) GHG emissions	Our Impact
	305-3 Other indirect (Scope 3) GHG emissions	Our Impact
	305-5 Reduction of GHG emissions	Our Impact
	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	Our Impact

GRI STANDARD	DISCLOSURE	CHAPTER
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	Our People
	403-2 Hazard identification, risk assessment, and incident investigation	Our People
	403-3 Occupational health services	Our People
	403-4 Worker participation, consultation, and communication on occupational health and safety	Our People
	403-6 Promotion of worker health	Our People
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Our People
	403-8 Workers covered by an occupational health and safety management system	Our People
	403-9 Work-related injuries	Our People
	403-10 Work-related ill health	Our People
	GRI 418: Customer Privacy 2016	418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data
EUSS Availability and Reliability	EU10 Planned capacity against projected electricity demand	Our Operations
EUSS Access	EU28 Power outage frequency	Our Corporate Governance
	EU29 Average power outage duration	Our Corporate Governance