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## 0.1 About This Report

Starting with the 2002 Environmental Report, China Steel Corporation (CSC) has widened the scope of non-financial reporting to all aspects of corporate social responsibility (CSR) and sustainability. Since 2010, CSC has been publishing annual Sustainability Reports in accordance with the Global Reporting Initiative (GRI) guidance. In 2012, the CSC CSR website was launched for more assessable, transparent, timely, complete, and interactive reporting. Sustainability Reports and the CSR website are important communication channels as well as CSC's integral approaches to continual improvement of sustainable operations.



CSR Core Working Group Members include the Human Resources Dept., Public Affairs Dept., Marketing Administration Dept., Finance Dept., Secretariat Dept., Industrial Safety and Hygiene Dept., Environmental Protection Dept., Utilities Dept., Iron and Steel R&D Dept., CSC Labor Union, and CSC Group Education Foundation. The Environmental Protection Dept. is in charge of the overall planning, compiling, coordinating, and editing.

For any comments or questions regarding this report, please contact us at Environmental Protection Dept., China Steel Corporation



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CSC CSR Website

## 0.2 About CSC 0.2.1 Chronicle

CSC was founded in December 3rd, 1971. After four phases of expansion along with Dragon Steel Corporation's stage II construction, the annual production capacity (in terms of crude steel) of CSC Group has reached nearly 16 million tons (Mt). The Board of Directors approved the initiation of the revamp of the coke ovens (phases I and II) in 2017, and the group's operating revenues in 2018 set the record of exceeding 400 billion TWD for the first time. CSC is not only the foundation of Taiwan's industrial development, but an important promoter of Taiwan's economic miracle.



#### 0.2.2 Business and Scale

CSC is a world-class steel corporation with an annual production capacity (in terms of crude steel) around 10 million tons. According to the report published by World Steel Association (worldsteel), the crude steel production of CSC was ranked 22nd among all worldsteel members in 2017. Moreover, CSC's competitiveness was ranked 18th among 35 steel corporations by World Steel Dynamics (WSD) in June, 2018.

In order to enhance its operational synergy, CSC group has diversified its businesses into five business areas: Steel, Engineering & construction, Industrial materials, Logistics, and Services and investments. There are more than twenty thousand employees in CSC Group.



197*′* 

1972

1974

1975

1977

1978

1982

1984

1988

1993

### **O OVERVIEW**

#### December 3

CSC is officially registered, with head office located in Taipei.

#### September 16

Kaohsiung Plant Site Office is established.

#### September 1

Phase I construction commences.

#### December 26

CSC stock is listed on Taiwan Stock Exchange Corporation.

#### September 15

Head office relocates to Kaohsiung. Plant Site Office closes.

#### July 1

CSC becomes a state enterprise.

#### December 16

Phase I is completed, with capacity of 1.5 Mt (in terms of crude steel) per year.

#### July 1

Phase II construction commences.

#### June 30

Phase II is completed. Capacity reaches 3.25 Mt per year.

#### July 1

Phase III construction commences.

#### April 30

Phase III is completed. Capacity reaches 5.652 Mt per year.

#### July 15

Phase IV construction commences.



#### April 12

CSC is privatized.



998

2006

#### May 31

Phase IV is completed. Capacity reaches 8.054 Mt per year.

#### June 2

CSC Group's corporate identity system is formally introduced to the public.

#### April 15

Annual production capacity is officially raised to 9.86 Mt owing to success in equipment renovations and improvements carried out over the years.

#### November 22

Groundbreaking for the China Steel Building takes place.



#### October 6

Dragon Steel Corporation (DSC) becomes a wholly owned subsidiary of CSC.

#### June 30

DSC's stage II phase 1 expansion project is completed. CSC Group's capacity reaches 13.36 Mt per year.

#### March 5

DSC's stage II phase 2 expansion project is completed. CSC Group's capacity reaches 15.86 Mt per year.

#### October 22

China Steel Building is inaugurated.

#### December 20

The Board of Directors approves the initiation of the revamp of the coke ovens (phases I and II).

#### December 31

CSC Group's operating revenues in 2018 sets the record of exceeding 400 billion TWD for the first time.



2008



2017

2018



## **Production Work Flow**



#### Sintering

Iron ore, flux, and coke breeze are mixed, granulated, and then charged into the sintering machine, where coke breeze is ignited. The hot sinter clumps go through crushing, cooling, and screening processes. They are then sent to Blast Furnace as the main material for ironmaking.

#### Coking

Coking coals are mixed, crushed, and then charged into the coke oven. Dry distillation in oven produces hot coke and crude coke oven gas.

#### Blast Furnace

Iron ores, cokes, and fluxes are charged into BF from the top to react with the hot air flow introduced from tuyeres. Molten hot metal and slag are produced.

#### Basic Oxygen Furnace

Hot metal is sent to a pretreatment station for de-S/de-P and then sent to BOF for oxygen blowing. According to the characteristics of steel and quality demand of each order, it is sent for secondary refining for composition adjustment and then sent for continuous casting.

#### **Continuous Casting**

A ladle filled with liquid steel is transferred to turret from upstream plant by crane, charged into a tundish, and distributed into molds. It then cools down, solidifies, and comes to complete solidification through secondary cooling. It is then straightened and, according to each order, cut into blooms (with a square cross section) or slabs (with a rectangular cross section). The semi-finished products are conditioned if necessary and then sent for rolling.

#### Rolling

Semi-finished products are inspected and grinded/scarfed to remove surface defects. They are then rolled into bars, wire rods, plates, coils, and sheets.

## **0** OVERVIEW

## **0.3 Sustainability Performance** 0.3.1 Sustainability Performance Overview



MM: Million; k: 1,000; t: ton; tCS: ton Crude Steel





### **O** OVERVIEW







## 0.3.2 Awards and Recognitions

#### Sustainability

- >>> RobecoSAM Gold Class Sustainability Award
- >>> Dow Jones Sustainability Indices (DJSI) Industry member in DJSI-Emerging Markets
- >> Management level for CDP Climate Change and Water
- "The Most Prestigious Sustainability Award Top Ten Domestic Corporates", "Corporate Sustainability Report Award - Traditional Manufacturing", "English Report Award", "Sustainable Water Management Award", "Climate Leadership Award", "Growth through Innovation Award", "Circular Economy Leadership Award" and "Talent Development Award" of Taiwan Corporate Sustainability Awards
- >> "2018 Sustainable Navigator Award" from BSI
- "2018 Corporate Citizen Award " from CommonWealth Magazine, ranked top 25 among the top 100 big business

#### Economy

- The top 20% of listed companies in "Corporate governance evaluation" from TWSE, and achieved the top 5% second time in 2018
- Constituent of "TWSE Corporate Governance 100 Index"
- >>> Constituent of "FTSE4Good Emerging Index"
- >>> Constituent of "FTSE4Good TIP Taiwan ESG Index"
- >>> "Authorized Economic Operator (AEO)" from Customs Administration, Ministry of Finance
- >>> "2018 Golden Vessel Awards" from Taiwan International Ports Corporation, Ltd.
- In 7th place of "2018 Taiwan Intellectual Property Office Top 100 patent applicants" and 1st place in category of domestic traditional industries
- "2018 National Invention and Creation Award", one gold and two silver medals from Ministry of Economic Affairs.

#### Environment

- "2018 Model of GHG reduction performance" from Industrial Development Bureau, Ministry of Economic Affairs
- The excellent two-star award for "2018 Annual Waste Resource Recycling Economic Evaluation" from Environmental Protection Administration (EPA)
- >> "Commendable Unit of Green Procurement" from EPA
- "2018 Annual Water Environment Patrol Award" from EPA
- "2018 Annual Water Environment Patrol Award" from Environmental Protection Bureau Kaohsiung City Government (KSEPB)
- >>> "Commendable Unit of Green Procurement" from KSEPB
- >> Participated in cross section GHG reduction collaboration hosted by KSEPB
- "King of Auction" Excellence Award and First Prize Award of 2018 Taiwan Power Corp. (Taipower) Demand Bidding Measures
- "2018 Energy Saving Silver Medal Award" for Steelmaking Department from Ministry of Economic Affairs
- "Enclosed sinter storage"won the excellent construction site award of 2018 issued by KSEPB
- >> Calculated carbon footprint (CFP) of 23 products and verified by third party

#### Society

Ranked the 7th in the Top 100 most desirable corporations and the 1st in the traditional manufacturing category selected among the young generations by Cheers Magazine in 2018.



"2018 Sustainable Navigator Award" from BSI"



"King of Auction" Excellence Award of 2018 Taipower Demand Bidding Measures



"2018 Energy Saving Silver Medal Award" for Steelmaking Department from Ministry of Economic Affairs

# Sustainable Operation

- 1.1 Message from Top Management
- 1.2 Operation Concepts
- 1.3 Sustainability Directives
- 1.4 Stakeholder Engagement
- 1.5 Material Topics



#### **1** SUSTAINABLE OPERATION

## 1.1 Message from Top Management



Chao-Tung Dorg

Steel is an important resource for economic development in Taiwan, it is also an important material for building up circular economy and low carbon society. CSC aspires to be a trustworthy steel company of global distinction that pursues growth, environmental protection, energy saving, and value innovation. To implement corporate social responsibility and build up social, environmental, and economic environment of sustainable development, CSC committed to increase the value of steel industry, and promote 5G strategy (Green Processes, Green Products, Green Businesses, Green Partners, and Green Living) actively. In 2018, CSC efforts to the three pillars of sustainability which are included:

#### **Green Energy Development**

To response to the National Green Energy Policy and commit to renewable energy development, the PV installation of solar energy at CSC group has reached 30MW in 2018. CSC group will continue to dedicate our efforts to develop the solar energy.

For offshore wind power, CSC helps the government pragmatically to implement the policy of promoting industrial localization. CSC uses zone #29 project as a localized training field and result application field. By playing a key role of "barrel hoop", CSC cooperated with Metal Industries Research & Development Centre to help the component manufacturers improving their abilities of QCD (Quality, Cost, and Delivery), which makes them enter the international supply chain of wind turbine manufactures and build up a high quality localized supply chain. On the other hand, CSC focuses on building up the production line of underwater foundation to supply the requirement of offshore wind power in Taiwan.

#### **Energy and Environmental Protection**

CSC is the first and biggest corporate user of reclaim municipal wastewater. Fengshan Creek Reclaimed Water Plant officially supplied reclaimed water to CSC as industrial supplementary water in 2018. From early August to December 31, 2018, CSC recovered approximately 3,466 million liters of Fengshan Creek reclaimed water, accounting for approximately



17% of the total water consumption of CSC. In air pollution control, CSC has complied with the policy of Kaohsiung City government for emission reduction in fall and winter by arranging the production reduction and annul maintenance of process in winter to reduce emission. Besides, CSC has planned the projects for coke water quenching change to coke dry quenching of coke ovens (phase I and II) and raw material yards enclosed. CSC also committed to rail engineering development, working with local governments to promote a safety, comfortable, and environmental light rail.

#### **Succession and Inheritance**

CSC makes strategy for retirement tide by making an inventory of human resource gap, to recruit and train staff early. In order to increase competitiveness of steel industry in Taiwan, CSC plans to organize industry service teams by retirees and professional managers. By combining external experts, CSC provides comprehensive service to downstream customers and leading the transformation and upgrade the steel industry.

Looking forward to 2019, CSC is on the occasion of the 48th year of establishment, it is imperative to implement replacement of equipment, environmental improvement projects and human inheritance. CSC sets the 2019 business directives as:

Improve Work Safety and Environmental Conservation to Promote Zero Accident

Enhance Quality and Reduce Cost to Achieve High Performance



Develop Intelligent Production and Sales Technique to Advance Benefits

Inherit Cultural and Experience to Stabilize Business Operation



#### SUSTAINABLE OPERATION

CSC considers energy conservation, carbon reduction and sustainable management as a long-term responsibility. CSC will insist on 5G sustainable development concept, cooperate with corporates, governments and all walks of life to create social sustainability and achieve sustainable future of the country.



Based on CSC vision "We aspire to be a trustworthy steel company of global distinction that pursues growth, environmental protection, energy saving, and value innovation." and CSC values "teamwork, entrepreneurial approach, down-to-earthiness, and pursuit of innovation", CSC actively implements its operation concepts of "improving social wellbeing, implementing actual performance, exerting group strength, and stressing human management."

In order to strengthen long-term competitiveness and sustainable development, CSC maps out its five years operation and development strategies in steel business year by year, roots its core steel businesses deeply by new technologies and management schemes, and adheres to integrity and fairness. CSC constantly endeavors to align with Group's vision as "Bases the foundation in Taiwan, develops in Asia and integrates diverse businesses of steels and materials, engineering and services, mines and resources with philosophies of environmental protection and energy saving."

## **1.3 Sustainability Directives**

The Sustainable Development Goals (SDGs) announced by the UN in 2015 are the guiding principles of the members for the next 15 years. In the spirits of the worldsteel Sustainable Development Charter, CSC developed the Corporate Social Responsibility Policy in 2012, and set Corporate Social Responsibility Practice Principles in 2017. Through responsible for corporate citizenship and enhancing national economic contribution, CSC improves the living quality of employees, community, and society to promote the competitive advantages of corporate social responsibility.

CSC examined the CSR Policy and found it to correspond to the SDGs. In view of industrial/regional characteristics and existing performance indicators and with the use of SDG Selector and the steps of SDG Compass, CSC's significant contributions and approaches towards the SDGs are summarized below.

For more details thttps://www.csc.com.tw/csc\_e/hr/csr/sus/sus2.htm





## **1** SUSTAINABLE OPERATION



## Core SDGs

## SUSTAINABLE GOALS

SDG	Targets	Taiwan SDG	Highlights  •Performance  Approach	Chapter
	8.1 Sustainable economic growth	8.2	In 2018, orders for premium products of 5.41 Mt, reached 104% of the	2.1
	8.2 High value-added sectors	-	annual target.	3.3
8 DECENT WORK AND ECONOMIC GROWTH	8.3 Support productive activities, decent job creation, and entrepreneurship	-	<ul> <li>Initiate the first stage of industry upgrading in 2006 and the second stage in 2017. Launch the task of industry service teams in 2018 to help customers promote their operational efficiency.</li> <li>Launched 16 R&amp;D alliances with 66 companies and 8 academic institutes.</li> </ul>	4.2
	8.5 Employment and equal pay	8.5	<ul> <li>Employees are hired only by expertise and by experience.</li> <li>In 2018, there was no violation of human right or discrimination regarding employee hires.</li> </ul>	6.1 6.2
	8.7 Human rights	-	<ul> <li>In 2018, the starting points for basic- and professional- level employees were 28,500 and 38,400 TWD per month, respectively.</li> </ul>	6.3
	8.8 Workplace safety	8.7	In 2018, work environment inspection was completed on 3,275 testing points, 6 enterprise-wide emergency drills were held, and safety observation and audit of site by managers totaled 38,634 times.	4.1 6.4
	11.2 Sustainable cities and communities	11.6	▲ Develop pollution countermeasures which were included in the EMS for audit tracking, devoting to reduce the harmful impact on the city environment.	5.2
11 SUSTAINABLE CITIES		11.7	<ul> <li>Sponsor the greening and beautification of roads in Kaohsiung City.</li> <li>Encourage employees to commute by Kaohsiung Rapid Transit (KRT).</li> <li>In 2018, 4,558 monthly KRT cards were sponsored and 71,032 persons were served with free shuttle bus services from KRT R3 Station to CSC.</li> </ul>	7.2
	12.2 Efficient use of resources	12.5	<ul> <li>Promote District Energy Integration to increase energy efficiency, reduce resources consumption, and lessen environmental impact.</li> <li>In 2018, 1.672 Mt steam sales, reducing about 0.383 million tCO<sub>2</sub> emissions.</li> </ul>	4.4
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	12.4 Waste management	6.d 12.4	<ul> <li>Through recording, tracking, and statistics to self-control, and commit to develop recycled technology.</li> <li>Recycling properly of industrial waste and achieving 95% recycling rate.</li> <li>No hazardous waste was disposed in 2018.</li> </ul>	4.4 5.2
	12.6 Sustainability reporting	12.6	Publish annual CSR Reports and use the CSC CSR website for more assessable, transparent, timely, complete, and interactive reporting.	0.1
			Calculate and obtain verifications for carbon and water footprint.	3.4
	12.8 Sustainable education	-	▲ Use CSC EIP to raise employee awareness of environmental marks, electricity and water saving, and green construction materials.	7.4

# Other SDGs

## SUSTAINABLE GOALS

SDG	Targets	Taiwan SDG	Highlights  •Performance  Approach	Chapter
3 GOOD HEALTH AND WELL-BEING	3.6 Reduce traffic accidents	3.6	<ul> <li>Reinforce traffic violation warning and inspections in- and near- plant and raise traffic safety awareness of employees.</li> <li>Set up various routes of return shuttle bus to Kaohusing, Tainan, and Pintung.(Number of passengers: 1,200 people/month)</li> </ul>	6.4
-w•	3.8 Good health and well- being	3.4	In 2018, 5,683 employees participated in health promoting activities and 4,326 employees received special health examinations.	
	4.3 Vocational training	4.3	By the end of 2018, 226 students had been recruited via various industry-academy cooperations.	6.1
4 QUALITY EDUCATION	4.a Lifelong learning	4.6	<ul> <li>Invite retirees to CSC activities and lectures; recruit retirees to join volunteer of environmental education.</li> <li>CSC Group Education Foundation develops and implements education activities upon holistic social education.</li> <li>In 2018, 15,000 participants in 11 categories of activities targeted for students and the general public.</li> </ul>	7.3 7.4
5 GENDER EQUALITY	5.a Gender Equality	-	Equal basic salary for male and female employees of the same position and grade.	6.2
6 CLEAN WATER AND SANITATION	6.3, 6.4, 6.5 Sustainable management of water	6.4 6.3	<ul> <li>Enforce effective water management and use of recycled water.</li> <li>Reached 98.5% in process water recycling rate.</li> <li>The first to support the administrative policy as the first and biggest corporate user of recycled municipal wastewater.</li> </ul>	5.2
7 AFFORDABLE AND CLEAN ENERGY	7.2, 7.a Sustainable 7.2 energy	▲ Develop renewable energy including solar power and wind power.	3.4	
	7.3 Improve energy efficiency	-	<ul> <li>In 2018, 113 energy saving projects were completed, saving 1,154,000 GJ.</li> </ul>	5.2
9 INULSITY INNOVATION AND INFRASTRUCTURE	9.1 Resilient infrastructure	9.1	<ul> <li>Support government policy to involve engineering construction, continue promote light rail and wind power project.</li> <li>Promote the 3 ongoing light rail projects: Danhai, Kaohsiung, and Ankeng.</li> <li>Involve in offshore wind power development and substructure manufactured in Xingda Port.</li> </ul>	3.4
	9.4 Innovation	-	▲ Product development, product application, process development, enabling technology, and energy conservation and environment protection are the major research objectives for the iron and steel field of R&D.	3.3
	9.2 Sustainable industries	13.a	<ul> <li>Construct industry ecological network to ensure effective use of energy and resources so as to improve operating condition and competiveness.</li> <li>In 2018, the CSC-centered industry ecological network included 20 enterprises.</li> </ul>	4.2 4.4



#### SUSTAINABLE OPERATION

# Other SDGs

## SUSTAINABLE GOALS

SDG	Targets	Taiwan SDG	Highlights  •Performance  Approach	Chapter
13 climate	13.1 Resilience and adaptive capacity	13.1	<ul> <li>Cooperate with ITRI to establish life cycle CO<sub>2</sub> reduction assessment methodology of H beam steel, process saving steel, anti-corrosion steel, advanced electrical steel, and high strength steel.</li> <li>In 2018, 3.94 Mt green products helped save energy and reduce carbon emissions to an estimated 7.328 Mt.</li> </ul>	5.2
	13.3 Climate change education	-	<ul> <li>In 2018, Environmental Education Bus brought science education to over 6,300 participants with 59 tours and 93 volunteers.</li> </ul>	7.4
15 UFE ON LAND	15.5 Protect biodiversity	6.b	<ul> <li>Participate in River Watch of KSEPB to patrol Yanshuigang River 3 times a day.</li> <li>286 tree species and 80 bird species.</li> </ul>	7.2
16 PEACE, JUSTICE AND STRONG INSTITUTIONS	16.5 Reduce all forms of corruption	-	▲ Continue ethical conducts through inheritance of corporate culture and prevent malpractice with regulations and various control mechanisms.	2.4
17 PARTINERSHIPS FOR THE GOALS	17.17 Partnerships	-	<ul> <li>Participate in activities organized by domestic and international industry unions, institutes, and associations.</li> <li>Member of worldsteel, SEAISI, WorldAutoSteel (WAS); participate in the meetings of the OECD steel committee under the instruction of the MOEA.</li> </ul>	4.3

## 1.4 Stakeholder Engagement

CSC values the rights and opinions of its stakeholders and sets proper communication channels to promptly understand and address stakeholder expectations and demands. To appropriately respond to the relevant concerned issues of stakeholders, each department of the company divides the work to take responsibility for stakeholder communication and reports to the board irregularly.

Besides the Annual Report and Operation Report, CSC also publishes the annual CSR Report and updates websites timely (via the corporate website, CSR website, etc.) to disclose the information about corporate governance, energy and environment management or social involvement. CSC uses the websites not only to enhance information accessibility, transparency, timeliness, completeness, and interactivity status, but also to improve reader satisfaction by collecting feedbacks online.

#### Stakeholder Identification

For stakeholder identification, CSC refers to experiences of its departments and international steel industries and applies AA1000 Stakeholder Engagement Standard (AA1000SES). CSC's key stakeholders include employees and contractors, customers and traders, governmental authorities, suppliers, shareholders, steel industry peers, local communities, media press, academic researchers, and NGOs/NPOs.

Stakeholder Group or personal which influences CSC or is affected by CSC.

#### **Communication Channels and Effectiveness**

CSC values the rights and opinions of its stakeholders and sets public, direct communication channels by providing related information of sustainable development in CSC, timely understanding and replying the concerned topics from stakeholders, and continually viewing and improving the achievement of corporate social responsibility.

Employees	Concerned Topics	<ol> <li>Employee Wages and Benefits</li> <li>Labor/Management Relations</li> <li>Operating Financial Performance</li> </ol>
	Communication Channels	<ul> <li>// Board representation by CSC Labor Union (all times).</li> <li>// Management-Labor Union Committee meeting (every month).</li> <li>// Departmental communication meeting, Labor Safety and Health Committee meeting (every 2 months).</li> <li>// Pension Fund Supervisory Committee meeting (every 3 months).</li> </ul>
	Engagement Highlights in 2018	Started the negotiation on the Fifth Collective Agreement with CSC Labor Union on in 2017, and had accomplished first round negotiation on Dec. 7th, 2018.
Contractors	Concerned Topics	<ol> <li>Employee Wages and Benefits</li> <li>Labor/Management Relations</li> <li>Operating Financial Performance</li> </ol>
	Communication Channels	<ul> <li>// Contractor job safety meeting, Contractor environment, safety and health meeting, Contractor Safety and Health Committee meeting (monthly).</li> <li>// Joint-work negotiation meeting, Outsourcing management meeting (annually).</li> <li>// Contractor trainings (irregular).</li> </ul>
	Engagement Highlights in 2018	<ul> <li>Communicated and promoted safety and health issues in monthly Contractor Safety and Health Committee meetings and Scheduled Maintenance negotiation meetings.</li> <li>Ensured outsourcing unit price and common contract terms amendments.</li> <li>Trained contractors in safety regulations and certified for technical proficiencies.</li> </ul>
	Concerned Topics	Customer Services Management     ② Operating Financial Performance     ③ R&D/Product Quality

The I	O	// Production-sales meeting (every 3 months). // Customer satisfaction survey (every year).
Customers and	Channels	<ul> <li>// Customer feedback through exposition (irregular).</li> <li>// R&amp;D alliances, workshops, market investigation, visits, interviews (irregular).</li> <li>// Processed customer feedback and adopt for improvement of products and services quality (irregular).</li> </ul>
Traders	Engagement Highlights in 2018	<ul> <li>40 joint production and marketing meetings for import and 4 for export.</li> <li>The overall satisfaction score of the customer satisfaction survey was "good" in 2018.</li> </ul>



## **1** SUSTAINABLE OPERATION

	Concerned Topics	<ol> <li>Operating Financial Performance ② Air Pollutants Management</li> <li>Hazardous Substance Management ④ Labor/Management Relations</li> </ol>
Individual Shareholders	Communication Channels	<ul> <li>// Free service line (886-0800-746-006) and email (f1000@mail.csc.com.tw) (all times).</li> <li>// Publicly discloses operating revenues and preliminary result on the Market Observation Post System and CSC website (every month).</li> <li>// Convenes shareholders meeting in the second quarter and adopts e-voting with full shareholder participation in the voting process and announces results on Market Observation Post System and CSC website (every year).</li> <li>// Issues online and paper versions of Annual and Operation Reports (every year).</li> </ul>
	Engagement Highlights in 2018	Seventh year of e-voting adoption, utilization rate increased to 54.78% of total issued shares and over 90% for foreign investors.

	Concerned	Operating Financial Performance ② Air Pollutants Management
	Topics	③ Hazardous Substance Management ④ Labor/Management Relations
		// Announces monthly operating results and list prices (every month).
、 🗎	Communication	// Communicates with domestic and international institutional shareholders through visits, conference
	Channels	calls, and video conferences (irregular).
Institutional		// Participates in domestic and international investor conferences (irregular).
Shareholders		
	Engagement	Omore than 100 receptions and conference calls for domestic and international institutional
	Highlights in	shareholders.
	2018	Participated in 10 investor conferences (irregular).

	Concerned Topics	<ol> <li>Occupational Safety and Health ② Labor/Management Relations</li> <li>Employee Wages and Benefits</li> </ol>
	Communication Channels	<ul><li>// Participates in workshops (averages 20 per month).</li><li>// Visits, forums, provisions of safety design specifications (irregular).</li><li>// Local supply partnerships (irregular).</li></ul>
Suppliers	Engagement Highlights in 2018	<ul> <li>Discussed specifications, terms, and price.</li> <li>Visits for production and quality status.</li> <li>Communicated and discussed market information.</li> <li>Assessed and awarded suppliers for local purchase.</li> </ul>

Governmental authorities	Concerned Topics	<ol> <li>Occupational health and safety</li> <li>Product Environmental Footprint</li> <li>Environmental Policy/Management System </li> <li>Community Involvement and Charity</li> </ol>
	Communication Channels	<ul> <li>// Actively visits national and local legislators and the authorities to communicate about reasonable regulations and policies.</li> <li>// Participates in research discussions, forums, public hearings, training courses, and informal exchanges regarding a variety of policies and regulations (irregular).</li> <li>// Participates in symposiums, seminars, and assessments held by the authorities (irregular).</li> </ul>
	Engagement Highlights in 2018	<ul> <li>Actively participated in all public hearings of environmental related draft regulations.</li> <li>Engaged in GHG related meetings held by government.</li> <li>Coordinated with KSEPB and ICLEI KCC to host "Kaohsiung Low Carbon City 2.0 visiting" to communicate the low carbon city strategy.</li> </ul>

Topics         ③ Community Involvement and Charity           Visits and negotiates with the communities and local organizations through following units and local organizations and local organizations through following units and local organizations and local or	
Visits and negotiates with the communities and local organizations through following un	
	its(Irregular):
// The Public Affairs Department,	
// The CSC Group Education Foundation,	
// The CSC Union,	
// Clubs at CSC.	
A total of 400 visits and negotiations were conducted by the Public Affairs Departme	nt.
Engagement Oconducted a total of 12 communication exchanges and visits regarding environment	ental protection
Highlights in facilities in collaboration with academic institutions.	
<sup>2018</sup> Or Participated in a related meeting held by the Southern Branch of the Toxic and Chen	nical
Substances Bureau.	
Concerned ① R&D/Product Quality ② Customer Services Management	
Topics ③ Career Development and Training	
// Participates in meetings held by the Taiwan Steel & Iron Industries Association, we	orldsteel, South
East Asia Iron and Steel Institute (SEAISI) (irregular).	
Steel Industry // Bilateral and multi-lateral communication, official visits and meetings (irregular).	
Peers 🕑 12 technical seminars with renowned steel companies in Japan, South Korea, South	heast Asia and
Engagement	
Lingagement China.	
China. Highlights in 2018 O Participated in the World Steel Association Council and various steel committees.	
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## **1.5 Material Topics**

Besides daily practices of stakeholder engagement, CSC has set materiality analysis procedures in line with GRI Standards and AA1000SES. CSC adopts the principles of stakeholder inclusiveness, materiality, and completeness to identify issues of materiality through collecting and review, prioritization and identification, and validation. For topics of high concern and high impact, CSC discloses its management approach and performances in this report and online. These serve to provide context and reflect CSC's impact in the value chain and serve as means for comprehensive examination and continual improvement.



#### **Prioritization and Identification**

Materiality analysis is based on the results of questionnaire. To find out the concern levels of stakeholders for each sustainability topic, survey is open all year round on the CSC CSR website and stakeholders were invited by CSC departments to participate in the 2018 survey from 7 Dec. 2018 to 4 Jan. 2019. 465 responses were collected and the results of stakeholder concern level was then weighted based on AA1000SES assessment results. For each topic, the impact of CSC was evaluated by all departments in the sense of economic, environmental, and social impacts and considering the probability of impact. The topics are plotted by the concern of stakeholders and the significance of impact into a materiality matrix.



1-14: Topics of high concern and impact are thoroughly disclosed in this report and online.15-28: Topics of low to medium concern and impact are disclosed to the corresponding degree.



#### **Material Topics and Value Chain Context**

The materiality analysis for 2018 yielded 14 material topics, the management of these topics stems from CSC Values and Operation Concepts and is incorporated into the CSR Policy and risk management strategies. By aspect, the economic topics are managed by annual business directives and targets; the environmental topics and the social topic, Occupational Safety and Health, are by the EHS Policy; the other social topics are by the social participation concepts. The sustainability context of material topics, including positive and negative impacts CSC directly causes and indirectly contributes to through a business relationship, management approaches, and performance, are disclosed in respective chapters. The corresponding material topics and GRI Standards can refer to Appendix 1 in this report.

Aspect	Meaning for CSC	Material Topic <sup>1</sup>	Value Chain Impact Boundary <sup>II</sup> <ul> <li>Direct Impact</li> <li>Indirect Impact</li> </ul>			Chapter
			Upstream	csc	Downstream	
	Financial performance is the	Sustainable Development Strategy*	O	•	0	1.1/1.3
	stability and efficiency. Product quality control and innovation	Operating Financial Performance*		•		3.1
Economic	is to create value and improve competitiveness with customers.	R&D/Product Quality*	0	٠	•	3.3
Aspect	The continued growth of the company is also derived from the implementation of the sustainable development strategy, good with society and the environment.	Hazardous Substance Management*	O	•	•	3.3
	Energy and resources are obtained from the environment.	Air Pollutants Management *		•	•	5.2
	From raw materials to process	Waste Management *		٠	O	5.2
Environmental Aspect	and terminal disposal are related closely. Be a friendly corporate citizen to the earth by using energy and water resource efficiently and reducing environmental impacts to enhance corporate	Environmental Policy/ Management System *		•		5.1
		Water Management *		٠		5.2
		GHG Emissions Management		•	O	5.2
	competitiveness.	Energy Management *		٠	O	5.2/4.4
Human resources are the		Occupational Safety and Health *		•		6.4/4.1
Social Aspect	foundation of business operations. Create a happy workplace and ensure a safe working environment, and protect employee rights by a sound system to attract and retain	Labor/Management Relations *		•		6.3
		Employee Wages and Benefits		٠		6.2
	talents. Let employees suit for the jobs and play their talents to keep competitiveness of the company.	Talent Recruitment and Retention		•		6.1

Note: I. Topics that are material for 2017 and 2018 are denoted by\*. There were no significant changes in topic boundaries

II. Refer to Taiwan industry value chain information platform, OECD steel industry workshop, and international peers for identifying value chain impact boundary of CSC. The core of value chain is CSC, and is included to employees. The upstream is suppliers of raw material like ore, and the downstream is included to customers and local communities.

#### **Supplementary Explanation for Report Arrangement**

In addition to material topics survey, CSC sets up a media database and holds expert forum every year to keep concerned issues and public opinions instantly. CSC explains the concern issues to stakeholder proactively by the new column "Special Topic" in the report this year.

The full content for analysis result of media database and external expert forum please refer to: thttps://www.csc.com.tw/csc\_e/hr/csr/sus/sus4.htm

Sustainable topics for non-material topics are mainly disclosed at CSR website of CSC. If there is a high relevance to the company's operation, the summary is explained in this report. Following websites are provided to stakeholders who care all kinds of topics about CSC.

Sustainable issues for non-material topics		Website
Risk Management	⊕	https://www.csc.com.tw/csc_e/hr/csr/gov/gov12.htm
Corporate Governance	⊕	https://www.csc.com.tw/csc_e/hr/csr/gov/gov.htm
Code of Ethics	⊕	https://www.csc.com.tw/csc_e/hr/csr/gov/gov5.htm
Product Environmental Footprint	⊕	https://www.csc.com.tw/csc_e/hr/csr/in/cm8.htm
Material Management	⊕	https://www.csc.com.tw/csc_e/hr/csr/env/env2.htm
Supply Chain Management	⊕	https://www.csc.com.tw/csc_e/hr/csr/par/par5.htm
Employee Satisfaction Survey	⊕	https://www.csc.com.tw/csc_e/hr/csr/em/em2.htm
Stakeholder Engagement	⊕	https://www.csc.com.tw/csc_e/hr/csr/sus/sus3.htm
Career Development and Training	⊕	https://www.csc.com.tw/csc_e/hr/csr/em/em6.htm
Customer Service Management	⊕	https://www.csc.com.tw/csc_e/hr/csr/in/cm5.htm
Recruitment and retention	⊕	https://www.csc.com.tw/csc_e/hr/csr/em/em.htm
Community Participation and Social Welfare	⊕	https://www.csc.com.tw/csc_e/hr/csr/soc/soc4.htm
Gender Equality	⊕	https://www.csc.com.tw/csc_e/hr/csr/em/em2.htm
Biodiversity	⊕	https://www.csc.com.tw/csc_e/hr/csr/soc/soc3.htm

# 2 Corporate Governance

- 2.1 Strategies and Targets
- 2.2 Organization Chart
- 2.3 Board of Directors
- 2.4 Ethical Conduct
- 2.5 Risk Management

## 2.1 Strategies and Targets

#### 2.1.1 Annual Business Directives and Performances

Executive Results of 2018

Directives for 2018	Performances in 2018
Smart manufacturing to improve production and sales efficiency	Constructed the intelligent production-sales platform to promote intelligent product design, scheduling, unmanned Electric overhead traveling (EOT) crane, equipment supervision, process control, and ship scheduling to improve production and sales efficiency and customer satisfaction. In 2018, the delivery quantity of steel products reached 9.96 million tons (Mt), achieved 106% of the annual target.
Energy consumption reduction to promote circular economy	<ul> <li>Promoted "cost reduction activities", "five-year energy saving action plan" and "district energy integration in Linhai Industrial Park" constantly, as well as improving energy efficiency and reduce cost by equipment update.</li> <li>&gt;&gt; In 2018, the reduction of costs is 4.69 billion TWD, achieving 123% of the annual target.</li> </ul>
Innovative technology to enhance grade and quality	<ul> <li>Cooperated with business development strategies and industry trends to complete the 5 R&amp;D main plans (core technologies of electric vehicle industry, Intelligent production technologies, environmental protection and emission reduction technologies, development of key industrial materials, development of key materials for the 5+2 industries) to strengthen the technology foundation for sustainable development.</li> <li>In 2018, orders for premium steel products of 5.41 Mt, reached 104% of the annual target.</li> </ul>
Inheritance and advance the core values	Conducted various training programs and succession plans to inherit the corporate culture and emphasize career development of employees. In order to strengthen safety awareness, CSC has conducted a number of safety and health educations and trainings that exceeded 5,000 trainees.

#### **Business Directions of 2019**





#### 2018 Performances and 2019 Targets



\*Revised as departmental goals

### 2.1.2 Five-year Strategies

CSC maps out its 2019-2023 operation and development strategies in steel business as follows:



#### 2.1.3 Response to Major Impacts

According to the "Global Economic Outlook" published by International Monetary Fund (IMF) in January 2019, the estimations of global economic growth rates in 2019 and 2020 are 3.5% and 3.6% respectively, lowered by 0.2% and 0.1% than the estimation last Oct. It is mainly due to the slowdown of external demand in Germany automobile manufacture section, and the increased risk of sovereignty and financial in Italy. Despite the growth of the US economy, the positive impact faded substantially due to the cancellation of fiscal stimulus. In emerging and developing economies, capital flows reduced because of the depreciation of currencies. IMF also pointed out that the enhancement of trade conflict and exacerbation of financial are the major risks of the global economy. Moreover, the economic slowdown in China, the

uncertainty of Brexit and the government shutdowns in the US will also influence future economic growth.

World Steel Association predicts that the steel demand in 2019 is fewer than in 2018. While global steel demand is remaining strong, rising protectionism and possibilities of hiking interest rate in EU and the U.S still are wild cards. For the sales target for 2019, CSC is set to increase orders by establishing marketing channels, increasing overseas sales spots, and stabilizing customer relations. For increasing orders of high-end products, CSC will continue to strengthen customer relations, increase the supply of high-end and strategic steel products, dislodge production equipment bottlenecks, increase new equipment, and replace old equipment.

Potential Major Impacts	CSC Countermeasures
	Improving the ratio of high-end products to segment the market.
Steel capacity exceeds the demand in global markets.	Establishing strategic partnerships with important clients to expand market.
	Setting production bases, sale spots and coil centers in regional economic cooperation systems.
International trade protectionism keeps happening all	Actively developing emerging markets with explosive growth such as India.
economies take the measures of antidumping, anti- subsidies importing safeguards to limit the imports of	Creating value by development and trial production of new products.
steel products, which is unfavorable for domestic steel mills to expand export markets.	Expanding supply scale of products, focusing on the R&D and supply of high-end industrial steel materials, such as cars, home appliances, and electric motors.
Speedy development of global logistics causes the offshoring of downstream industries and reduction of domestic steel demand.	Actively seeking investment opportunities in downstream steel mills and other steel consuming industries.
The uncertainty caused by China-U. S. trade war and sliding domestic economy, competition in China's steel market is fierce. The drastically fluctuated domestic	With flexible price and high-value product as competition advantage, actively develop long-term relationships with potential customers, to stabilize order and strengthen downstream customer adherence.
steel price in China is unfavorable for Taiwanese mills to expand markets.	Extending the variety of product supply, focus on the development and supply of hot-stamping automobile parts, high-end appliance compressor and motors for electric vehicles.
Owing to the excess capacity situation and policies encouraging steel exportation, China has changed into a net-export nation in steel. Furthermore, China has raised the steel export tax rebate to increase the competitiveness of steel export, resulting in a squeeze on other exporters' global living space gradually. The global steel trade was filled with pressure.	Exporting high value-added and niche steel products, rooted in southeast Asia and explore far distance countries markets.
FTA of other countries and FTA between China and South Korea will affect the export competitiveness of Taiwan.	Assisting the government in FTA promotion.
BOF slag utilization channels were blocked	Enhancing self-management and controlling the flow of BOF slag utilization to reverse the public misunderstanding of BOF slag.
GHG total quantity control	Conducting annual GHG inventory and verification, implementing energy saving projects to extend emission reduction, and cooperating with IDB and EPA.



## 2.2 Organization Chart



## 2.3 Board of Directors

According to Company Act and CSC's regulations, independent and non-independent directors are nominated and elected separately. There are currently 11 directors in the Board of Directors, of whom 3 are independent directors, included 1 female director. The ages of directors are between 49 and 75.

Title	Name	Representative of Juristic Person
Chairman	Chao-Tung Wong	Ministry of Economic Affairs, Taiwan (R.O.C.)
Director	Wen-Sheng Tseng	Ministry of Economic Affairs, Taiwan (R.O.C.)
Director	Feng-Sheng Wu	Ministry of Economic Affairs, Taiwan (R.O.C.)
Director	Horng-Nan Lin	Chiun Yu Investment Corporation
Director	Shyi-Chin Wang	Ever Wealthy International Corporation
Director	Cheng-I Weng	Hung Kao Investment Corporation
Director	Yueh-Kun Yang	Gau Ruei Investment Corporation
Director	Chun-Sheng Chen	Labor Union of China Steel Corporation

Title	Name	Major Education and Current Position
Independent Director	Shyue-Bin Chang	>>> Ph.D.in Mechanical and Aerospace Engineering, Cornell University, U.S.A.
		>> Chair Professor, Vice President, and Dean of College of Informatics, Kao Yuan University
Independent Director	Min-Hsiung Hon	>> Ph.D. in Materials Science and Engineering, North Carolina State University, U.S.A.
		Emeritus Chair Professor, Department of Materials Science and Engineering, National Cheng Kung University
Independent Director	Lan-Feng Kao	>>> Ph.D. in Accounting, National Cheng Kung University
		>>> Professor, Department of Finance, National University of Kaohsiung

Note: Until December 31, 2018, please visit thtp://www.csc.com.tw/csc\_e/cg/bi.html for the latest directors' details,

and thtp://www.csc.com.tw/csc/cg/adv2.html for the training of directors.

#### **Committees of the Board**

For strengthening the operation of the Board of Directors, the Board has two functional committees such as "Audit Committee" and "Remuneration Committee".

#### >> Audit Committee

The committee is composed of all independent directors, one of whom has accounting and financial expertise. Its main responsibility is to assist the Board in overseeing integrity of the company's financial statements, Certified Public Accountant (CPA) appointment (termination) and integrity/performance, internal risk controls, the company's compliance with legal and regulatory requirements, and the company's existing and potential risks. The committee convened 7 meetings in 2018.

#### >>> Remuneration Committee

The committee is composed of all independent directors. The committee shall review and assess the performance evaluation system for commissioned managers, the evaluation results, and related remuneration systems. The proposals drawn from the resolutions of the meetings shall also be presented to the Board. The committee convened 4 meetings in 2018.



## 2.4 Ethical Conduct

#### 2.4.1 Regulations and Implementation

#### **Avoiding Conflicts of Interest**

"The CSC Code of Ethics for Directors" strictly stipulates avoiding conflicts of interest and sets anti-corruption principles. In addition, by Regulations Governing Procedure for Board of Directors Meetings of Public Companies, if there is a conflict of interest for any director with respect to any agenda item at the board meeting, the director must recuse from discussion and voting on that matter and must not exercise voting rights as proxy for another director on that matter. "The Code of Ethics for First-Level Mangers and Above" and "the Ordinance for Avoiding Conflict of Interests" specify the principles and penalty for employees.

#### **Preventing Malpractice**

CSC deems soliciting, accepting, and being bribed with improper benefits from suppliers or stakeholders as serious misconducts. According to "The Principles of Integrity and Ethical Management", all the directors, managers, employees, the mandatory or anyone who de facto controls the management of CSC should not directly or indirectly provide, promise, ask or accept improper benefit, or violate integrity and laws during commercial activities. Complying with Article 7.1.1 of the Political Donations Act, CSC does not contribute to political donations. Political donations of CSC personnel are also bound by the Act and company regulations.

For more details thttps://www.csc.com.tw/csc\_e/hr/csr/gov/gov5.htm

#### **Socializing Guidelines**

- According to "The Directions for Handling on Receiving of Gifts, Receiving of Drinking and Dining Treat, Requests for Intercession through Influence", unless provided otherwise, the gifts received from the stakeholders shall be rejected and returned. When the gift cannot be returned, it shall be reported to the supervisor and deliver it to the General Affairs Department of CSC for further handling.
- >> According to "The Directions for the Staff to Entertain the Guests at Banquets for Business", all staff of CSC shall follow it when performing their duties by developing the external relationships and needs to entertain the guests at a banquet.
- >> The Internal Audit Office (IA) regularly collects lobbying cases from group company and reports to the Chairman and in the board meetings. In 2018, 11 cases were collected, all incorporated into auditing reports for tracking and emailed to independent directors.

#### 2.4.2 Internal Auditing and Correction

IA is under the Board of Directors. The chief auditor reports audit performances to the Audit Committee on a regular basis and attends the board meeting to report the status of internal control. Main purposes of internal auditing are to assist the Board and managers in checking and reviewing defects of the internal control system, to evaluate the effect and efficiency of operations, and to provide timely suggestions of improvement to ensure the continuous practice of internal control systems.

#### **Correction and Operation**

Revise internal control procedures and control key points: IA requested that related units revise internal control procedures and control key points of 12 operations in 2018.

#### Self-Assessment Reports of Internal Control System

IA reviewed "self-assessment reports of internal control system" of departments and subsidiaries in 2018 and prepared a summary report combining all reviews. The summary report serves as the primary basis for evaluating the overall efficacy of all internal control systems and producing Internal Control System Statements.

#### **Eight Transaction Cycles**

Audit items of 2018 include the procedure of eight transaction cycles, crosschecking functions between systems, compliance with the regulations of Financial Supervisory Commission (FSC), and internal control systems of subsidiaries. A total of 49 auditing reports and 439 suggestions of improvement were proposed in 2018, and subjected timely improvement measures by audited units and subsidiaries, and filed in the CSC's IA Management System for follow-up. Audit items are submitted to supervisors and independent directors for review.

#### 2.4.3 Information Transparency

#### Full information ttps://www.csc.com.tw/csc\_e/hr/csr/gov/gov8.htm

CSC regards information disclosure as an essential element of corporate governance. To ensure transparency of information, CSC makes filings through designated online filing system in accordance with Guidelines for Online Filing of Public Information by Public Companies of the Securities and Futures Bureau. Information is also disclosed on CSC website and is accessible through the shareholder service direct line, spokesperson, and designated media contact.

## 2.5 Risk Management

#### 2.5.1 Operating Mechanism of Risk Management

There are three levels for risk control in CSC, and all employees are responsible for each level. Instead of being monitored by one certain department, we believe that the best way to implement the risk management is to prevent layer upon layer through daily routines.

#### **Risk Control Procedure**

Level	Unit	Mechanism
Level 1	Departments	The responsible departments take the responsibility of early risk detection, evaluation, control, and setup of prevention schemes.
Level 2	Committees and Meetings	The President and Vice Presidents hold committees and meetings for risk assessment and feasibility study for the prevention schemes, while the Legal Office and IA provide legal opinions and control points setting.
Level 3	The Audit Committee and the Board of Directors	The Audit Committee and the Board of Directors review and approve the risk assessment and prevention schemes. IA regularly, or from time to time, selectively exams and evaluates the risks and reports to the Audit Committee and the Board.

At the beginning of every year, from bottom up, each department performs risk assessment for operational tasks and compiles self-assessment report for IA to check. Each division assesses business cycles' risk wholly and compiles self-assessment report for the President to review. IA's report and self-assessment reports are comprised major part of the Internal Control System Statements, which will be sent to the Audit Committee and the Board for review and approval.

The Secretariat Dept. leads to set long-term strategies and targets, while the Industrial Engineering Dept. leads to set yearly strategies and targets. Risk assessment is included in the setting and tracking of strategies and targets for each department by the Industrial Engineering Dept. Cross-departmental task forces may be set to perform risk detection, assessment, and prevention. IA periodically audits operational items of business cycles for identification, adjustment, and prevention of risks. The risk management in CSC is rigorous and effective.



### 2.5.2 The Implementation of Risk Management

Туре	Potential Risk	<b>Risk Control Strategies and Measures</b>
ເຈົ້າ Tinancial Risk	Exchange Rate Risk	Adopt hedging operation for foreign currencies of import/export businesses to avoid risk. As well monitor the trend of exchange rate and buy or sell currencies adequately to avoid risk.
		Take out loans of equivalent amounts of foreign currencies or enter forward exchange to avoid exchange rate risk when foreign currencies are demanded at foreign investment or procurement of imported equipment. Meanwhile, constantly adjust the approaches as hedging cost, exchange price trend and foreign currency loans change.
		If new Taiwan dollars were strong when injecting capital for foreign investment, financing cost would be considered and discussed to borrow new Taiwan dollars to settle foreign currency for capital financing.
	Rising Interest Rates	>>> Set a strict tolerance rate for variable interest rate liabilities.
		Issue corporate bonds to lock the mid-term and long-term capital cost and avoid increasing interest rates.
		>>> Use low interest rate commercial papers and short term bank loans for short term financing.
		Adopt adjustable fixed rate commercial papers (FRCP) for long term financing during the time of a relaxed capital market.
	Inflation Risk	Monitor the effect of inflation on company's operation. Since the material price is near the lowest point of recent years, it is unlikely for CSC to face inflation risk.
	Pickup by Customers	Assist customers in increasing bank credit amounts by negotiating with banks for forfaiting of account receivables.
		Use e-commerce and security mechanisms of digital signatures to simplify payment procedures.
	Service Quality& Operational Reporting	Through timely respond from expatriate and weekly report system to monitor financial performance and operational emergency of CSC Group for financial impact report.
		Monitor the correct operation of e-security mechanisms and computerize financial operations to ensure data accuracy and timelines.
	Capital Utilization Efficiency of CSC Group	>>> Use various indicators to regularly analyze financial structures of group affiliates and set up an alarm mechanism.
		>> Conduct real-time monitoring of financial asset values to enhance capital management among group affiliates and improve the capital utilization efficiency.
		Cooperate with energy conservation programs (light rail, wind power, green energy) in funding assistance.
Production Risk	Economic Recession	Simulate and plan for production and sales situations based on orders estimation.
		>> Coordinate slab quota.
		Adjust blast furnace production and maintenance schedule according to storage capacity.
		>>> Adjust production line quarterly/yearly maintenance schedule.
		Adjust storage limits according to the production of molten iron.
		>> Outsource rolling when necessary.
Туре	Potential Risk	<b>Risk Control Strategies and Measures</b>
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	Concentrated sales	Adopt marketing channel strategy of "mainly domestic sales, export sales as a supplement" and make adjustments according to market changes. Set up overseas coil centers to manage and control marketing channels.
Market Risk	Imbalanced Production and Sales	Simulate production and sales conditions based on orders received to timely adjust production plans.
	Shipment of Raw Materials	Review material reserve weekly for optimized transportation planning to avoid material interruption. Based on the capacity needed and economic benefits actively dispatch vessels of long term or temporary contracted. Continuously track the positions of vessels till unloading.
Transportation Risk	Shipment of Finished Goods	>> The buyer bears all risks of loss or damage to the goods from the time they have been delivered on board the nominated vessel. For domestic in-land transportation, all the contractors are requested to provide security deposit in bank for guaranteeing goods reach their destination safely.
	Interruption of Supply	<ul> <li>For suppliers: carefully assess and actively develop material sources.</li> <li>For stocks: maintain adequate stocks for production flexibly.</li> <li>For transportation: operate with own vessels for material shipment and use chartered vessels as alternatives when necessary.</li> <li>Increase self-supply of raw materials.</li> <li>Grasps market conditions by business information collection and investigation of plants.</li> </ul>
Raw Material Source Risk	Raw Material Investment	<ul> <li>Choose carefully miners and/or partners for raw materials resources investment.</li> <li>Hire advisors to assist with project feasibility evaluation.</li> <li>Conduct on-site due diligence on the projects and mine.</li> <li>Convene meetings for comprehensive evaluations.</li> <li>Monitor the operation and development of the invested projects and/or companies.</li> <li>Participate in the decision making of the invested projects and/or companies.</li> </ul>
Information System Risk	Information System Abnormality	<ul> <li>Standardize operation procedures.</li> <li>Enforce disaster prevention, information safety, monitoring, reporting mechanism, abnormality management, and back up.</li> <li>Carry out training and periodic drills.</li> </ul>
ککر Utility Risk	Unstable Supply	<ul> <li>Inspect pipelines to maintain a steady and reliable supply of utilities.</li> <li>Conduct periodic emergency drills.</li> <li>Participate in public sewage treatment plant (Fengshan and Linhai) reclaimed water recycling projects.</li> </ul>
	Stricter Regulations	>>> Comply with regulations to ensure the quality of effluent meets standards.



# CORPORATE GOVERNANCE

Туре	Potential Risk	<b>Risk Control Strategies and Measures</b>
Equipment Maintenance Risk	Machinery Equipment Maintenance	<ul> <li>Spare parts management: Maintain appropriate inventory level based on maintenance experience and spare parts consumption records. Notify designated personnel when inventory level is lower than safety stock to prevent production disruption.</li> <li>Maintenance records establishment: Decrease equipment unscheduled downtimes through equipment shutdown and failure management. Proactively discover equipment abnormalities and implement equipment maintenance records. Strengthen monitoring process of countermeasures and maintenance strategies to systematically and comprehensively retain and pass on maintenance expertise and practices.</li> <li>Online Monitoring Center: Monitor major production equipment's data through system and provide daily and weekly abnormality reports. Develop abnormality countermeasures by production managers and experts for early warning and prevention of possible unforeseen production halt.</li> </ul>
	Electrical Equipment Maintenance	<ul> <li>&gt;&gt; Establish and Practice the IATF 16949 Standard Maintenance Procedure.</li> <li>&gt;&gt; Establish and Practice the ISO 9001 Standard System Development Procedure.</li> <li>&gt;&gt; Establish "Information Safety Management Regulations of Production Division" with reference to ISO 27002.</li> </ul>
Water Risk	Water Resources Management	<ul> <li>Collect rainwater for reuse.</li> <li>Add secondary water sources such as seawater desalination and urban sewage recycling.</li> <li>Examine drainage and emergent submerge pumps for extreme precipitation.</li> <li>Set run-off pools and treatment systems to improve effluent quality.</li> </ul>
Climate Change Risk	Carbon Management	<ul> <li>Develop energy saving and carbon reduction steel products and perform LCA.</li> <li>Develop new green businesses; participate in local and international cooperative initiatives and activities for carbon reduction, capture and storage, and credit.</li> <li>Promote low-carbon lifestyle to CSC Group.</li> </ul>
	Labor Safety Culture	Conduct comprehensive hazard identification and risk assessments; adopt risk mitigation measures; conduct emergency response drills.
다. EHS Risk	Environmental Protection	<ul> <li>Reduce air pollutants and wastewater discharge, and increase water saving and wastewater recycling.</li> <li>Strengthen the risk control of resource utilization.</li> <li>Manage the disposal work of industrial waste properly.</li> </ul>
	Administrative Justice	>>> Watch for the imposition of various types of environmental and energy taxes to ensure that they are just.
Engineering Management Risk	Internal Management	Develop engineering management system and capital expenditure management system for control and management of labor safety, quality, schedules, and budgets.
	Contractor Performance	<ul> <li>Track contractors' financial status by entrusting local investigators and filing investigation results in the engineering management system and integrated platform. Conduct periodic credit checks of specific suppliers.</li> <li>Develop performance assessment mechanisms for the contractors, technical service providers and technical service consultants. The assessments are evaluated by the engineering organizer and filed with the engineering management authority for reference.</li> </ul>

# Value Creation

3.1 Operational Finance

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- 3.2 Product and Sales
- 3.3 Product Quality and Innovation
- 3.4 Green Development



**3 VALUE CREATION** 

# 3.1 Operational Finance 3.1.1 Cost Control

The steel industry is capital-intensive industry that demands huge amount of investment in production equipment, coal and iron materials account for a high percentage of production cost.

To control costs and maintain competitiveness, CSC implements various projects. The initiative of cost saving is an important strategy and the key factor to success in the steel industry. CSC continues to systematically reduce operating costs by using scientific methods, raw materials utilization, process improvement, technology R&D, quality upgrades, management improvement, and intelligent production-sales. Divisions monthly review executive results and quarterly report in Operational Budget Execution Review meetings for timely improvement.

- In 2018, 249 major items of Cost Reduction Activities were planned for implementation with cost reduction target of 3.8 billion TWD. Including the reduction from controllable costs of general affairs, the total cost reduction was 4.69 billion TWD, achieving 123% of the annual target.
- In 2019, 271 major items of Cost Reduction Activities are planned for implementation with cost reduction target of 3.8 billion TWD.

Unit: billion TWD	2014	2015	2016	2017	2018	2019
Target	3.70	3.50	3.80	3.25	3.80	3.80
Performance	4.39	4.84	4.05	3.96	4.69	

### 3.1.2 Business Performances

#### **Operating Revenues**

Unit: 1,000 TWD	2017	2018	Increase / Decrease from 2017 to 2018
Sales Revenues	201,669,087	229,993,271	Due to the increase in sales quantity.
Service Revenues	5,429,543	5,409,880	Due to the increase in construction revenues.
Total Operating Revenues	207,098,630	235,403,151	

Note: For detailed financial information, please visit thtp://www.csc.com.tw/csc\_e/ss/fin/fin.html

#### **Operating Expenses**

Unit: 1,000 TWD	2017	2018	Increase / Decrease from 2017 to 2018	Change Rate (%)
Operating Costs	187,568,805	210,430,943	22,862,138	12.19%
Cost of Goods Sold	181,850,825	203,825,079	21,974,254	12.08%
Service Costs and Others	5,717,980	6,605,864	887,884	15.53%
Operating Expenses	8,101,943	8,591,826	489,883	6.05%
Total	195,670,748	219,022,769	23,352,021	11.93%

#### **Net Profile and Earnings**

Unit: 100 million TWD	2016	2017	2018
Operating Revenues	1,689.27	2,070.99	2,354.03
Net Profit before Income Tax	180.33	185.21	263.97
Net Profit for the year Tax	160.38	169.06	244.54

Note: Numbers are shown according to IFRSs

#### **Dividend Distribution**

In 2018, earnings available for distribution totaled 29.204 billion TWD, with dividend distribution of 1.4 TWD per preferred share and 1.0 TWD per common share.

Dividend distribution and return on investment over the past five years are as follows:

Unit: TWD	2014	2015	2016	2017	2018
EPS	1.43	0.49	1.04	1.09	1.58
Cash Dividend	1.0	0.5	0.85	0.88	1.0
Stock Dividend	0	0	0	0	0
Dividend Payout Ratio (%)	69.90	102.04	81.73	80.73	63.29
ROE (%)	7	3	5	6	8

Note: Dividend distribution of 2018 will be in effect after approval of shareholder meeting on 19 June 2019.

Unit: TWD	2014	2015	2016	2017	2018
P/E Ratio <sup>l</sup>	17.98	46.47	20.96	22.86	15.32
P/D Ratio <sup>®</sup>	25.71	45.54	25.65	28.32	24.20
Cash Dividend Yield <sup>III</sup> (%)	3.89	2.20	3.90	3.53	4.13

Note:

I. P/E Ratio = Average closing price per share for current year / EPS

II. P/D Ratio = Average closing price per share for current year / cash dividend per share

III. Cash Dividend Yield = Cash dividend per share / average closing price per share for current year

According to CSC's Articles of Incorporation Articles, earnings of a fiscal year are distributed in the following order after tax payment, deficits offset, and appropriation of legal reserves: Set aside for special reserves or partial retain when necessary; As dividends for preferred stocks at 14% of par value; The remainder, if any, as additional dividends divided equally between the holders of preference and ordinary shares.

CSC's cash dividend payout ratio is approximately 80% in the last five years. For future dividend distribution, the Company will make best effort seeking balance between long-term growth stability and investor's expected dividend yield.



## 3.1.3 Shareholder Structure and Subsidies



According to Article 10 of Statute for Industrial Innovation, CSC's expenditure on R&D is credited against its income tax payable. CSC does not accept other governmental subsidies. In 2018, the amount of the tax credit applied for R&D expense was 21,011 thousand TWD.

## 3.1.4 Invested Businesses

At present, the scope of CSC Group's business encompasses five major domains including steel, engineering, industrial materials, trading & logistics, and services & investments. The combined annual revenue of the 26 companies in CSC Group is approximately 400.665 billion TWD. In the future, CSC Group will collaborate with group members to heighten the values of products actively and innovatively to enhance international competitiveness. Moreover, we would invest in new businesses with potential domestically and overseas to expand our business territories, which will enable CSC Group to become one of remarkable global groups.



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# 3.2 Product and Sales

The major products of CSC are steel plates, steel bars, wire rods, hot-rolled coils and sheets, cold-rolled coils, electrogalvanized coils, hot-dip galvanized coils, electrical steel coils, and so on. CSC follows the quality policy, "based on customer orientation to keep the innovation of R&D, provides excellent and eco-friendly products and consequently fulfills responsibility to society". In order to win the appreciation and trust of customers and to assist customers to succeed, CSC adopts two policies, "R&D the advanced products to speed up the development of new products and strategic steel products, and upgrade to increase the value" and "Try best to save energy, reduce GHG emissions, and improve the value of by-product gas, and inhibit the hazardous substance, and fulfill corporate social responsibilities" to develop all kinds of operational activities.

### 3.2.1 Major Products and Usage

The production of crude steel in 2018 was 9,430,886 t, increasing by 227,244 t compared to 9,203,642 t in 2017, and the growth rate is about 2.47%. The productivity of employees is 917.76 tCS / man-year.



materials, furniture

etc.

hardware and components,

components, motorcycle fuel

tanks. etc.

#### Production

Unit: 10,000 t	2014	2015	2016	2017	2018
Steel plate	96.4	92.1	95.4	87.2	96.1
😔 Steel bar	62.1	55.3	57.2	61.6	68.4
Steel wire rod	131.7	118.4	129.4	131.9	128.8
L Hot rolled	237.6	202.4	230.2	238.8	268.7
Cold rolled	365.9	310.5	329.1	342.1	332
🗋 Slab	9.8	34.8	72.9	20.5	29
Cast iron	0.5	0.7	0.9	1.1	1.04
Total	904.0	814.2	915.3	883.2	924.0

# 3.2.2 Product Sales

In 2018, the total sales of steel products was 11.242 Mt, with the main items of cold-rolled/coated products 31.31% and hot-rolled products 26.81%. Domestic sales accounted for 70.28% (7.901 Mt) and export sales accounted for 29.72% (3.341 Mt), with the major exporting markets of China, Japan, and Southeast Asia.



#### Product Sales, 2018



#### Export Sales by Country, 2018

# 3.3 Product Quality and Innovation 3.3.1 Quality Control

To cope with the fierce competition in the international steel market, CSC has assisted the downstream industry in value innovation, leading to the prosperity of the steel industry in Taiwan. The principles of CSC's quality control system with product innovation and improvement are as follows:

- Based on the guides of the quality policy, 26 processes are identified for the quality management system; they are 10 customer-oriented processes, 9 supporting processes, and 7 management processes. And the quality policy is promoted through the process approach to demonstrate the effectiveness of the system operation.
- >> Carefully evaluating the company's context and visions, CSC sets operating strategies and provides sufficient resources to each procedure and management activity.
- >> Customer's satisfaction is the target for all the processes; CSC provides high-quality products with no hazardous substances.
- >> CSC monitors, measures, and analyzes all products and processes to keep improving the system and make it sustainable through internal and external audits, corrective action, preventive action, product quality and process improvement projects, management reviews, and other activities.

Under the said principles, CSC has passed the combined audit of new-version ISO 9001 and IATF 16949, plus QC 080000 renewal survey, to get the new-version ISO 9001 for steel and special alloy products and the first IATF 16949 certificate issued by BSI in Taiwan. It demonstrates the CSC's quality management system has met the new high-level management requirements.

In addition, CSC follows the quality policy of "China Steel Corporation, based on customer orientation, will sustainably innovate, research & develop to provide excellent and eco-friendly products, to fulfill our responsibility to society" and the business strategy of "Focus on technology research and development, accelerate the strategic steel grades development, enhance the advantages of product differentiation" and "develop green production, improve energy conservation and environmental protection, fulfill corporate social responsibility", to concentrate the resources of production, marketing, R&D and technology on the product strategy of "higher grade, wide variety, and superior quality" through an institutional product development system and a quality improvement project system. Besides continually promoting the development of CSC's products to higher grades, making the product mix more complete, and holding the belief that "customer perception of quality includes variation, precision and accuracy are equally important" be deeply rooted into the employees, CSC



also takes multiple stages and multi-level technical services to enhance customer's satisfaction and the company's overall competitiveness. In 2018, CSC achieved excellent results in the field of quality management through the employee's active participation.

#### **Quality Improvement and Cost Control**

Adhering to the quality conviction of "No best quality, only better quality that exceeds customers' expectations", CSC takes continuous improvement as the driving force for enhancing the product technology and product quality. Through the PDCA cycle as a spindle, with the experimental planning method, Taguchi method, and 6-sigma method used alternately to work out the cause analysis, the data tier and the improvement countermeasures matching the current situation, CSC has accomplished 226 improvement projects in 2018. Among them were 36 pieces from the five major aspects of "raw materials, products, processes, equipment and downstream applications" that combined the six major strategies of cost reduction, such as "redesigning, reducing alloys, saving rejection, increasing yield, lean and simplify processes", which earned a total benefit of 227 million TWD. The flow chart of CSC's quality management system is as below:



#### **Products Certification**

Although CSC's products are major in the domestic market, for the needs of overseas production plant and related supply chain, CSC is devoting to expand the export market, and so overcoming the wall of the compulsory products certification of foreign countries is the primary task. As of now, CSC has passed the product certification of many countries like Japan, Malaysia, Indonesia, India, Thailand and Vietnam, etc., which covers 714 grades of plates, bar/rods, hot rolled products, cold rolled products and coating products, providing customers the niche market with legitimate products and smooth customs clearance. In 2018, CSC passed the Malaysia MS Mark for hot-rolled additional grades of MS EN 10025-2:2011 S355 JA+AR and JIS G3101:2010 SS540 and the European CE marking for additional grades of EN 10025-2 and EN 10025-3 for the application of wind power to expand the sales channels.

For more details thtps://www.csc.com.tw/csc\_e/hr/csr/in/cm3.htm

#### **Customer Technical Service**

The concept of the customer technical service is on behalf of CSC to provide the knowledge of product application and solve customer's problem as well as on behalf of customers to request CSC to develop and supply product to meet customers' requirement. With customer technical services, CSC can explore product development opportunities, promote quality improvement continuously, and provide customers with product knowledge and processing application to achieve the goal of "win-win".

In order to deepen and implement customer service, the metallurgical technical service would participate in customer's product design and development as early as possible to grasp the quality requirements of the material, thereby expanding the



supply of niche products and enhancing the customer relationship. Besides focusing on the implementation of "duringsales" and "after-sales" technical services by the front technicians, CSC also moves forward the service to the "pre-sales" stage. This is the so-called "multi-phase" technical service.

In addition, due to the deep and wide coverage of technical services, the front technical service operations cannot fully assist customers in solving their material application problems, so the depth of technical service (level) must be extended to the factory support, and even the research expert level, which is the so-called "multi-level" technical service that combines "multi-level" to develop a two-faceted technical service model.

#### Example High-Grade Steel Promotion

To implement the differentiated competition strategy, CSC expands the high-grade steel with high functionality, high technology content or high value–added. It is an important target of the company's five-year business development strategic planning and listed as the company's annual business target. The annual high-grade steel order volume was 5.41 million metric tons (achieving rate of 104%), the percentage was 46.6%, and the annual business objectives were achieved. The specific achievement included: The steel for hot stamping with strength up to 1,500Mpa after hot stamping, which can meet the demand for energy saving and light weight of automobiles. SBHS500 high-performance bridge steel was successfully applied to domestic large-span bridges (such as Tamkang Bridge, National Highway No. 4 Tanzi Viaduct, etc.) to improve bridge materials. High grade with thin gauge electrical steel has become the first choice for the new energy vehicle motor materials of major automakers (including Tesla, Audi, VW, etc.). The continuous development of high-grade steel not only embodies the technological foundation of the company's sustainable development but also leads the product to move toward differentiation. The trend of high-grade order volume and ratio in the past five years was shown in the table below.



### 3.3.2 Hazardous Substance Management of Products

CSC has well established hazardous substance management system by promoting the hazardous substance process management (HSPM) system requirements, IECQ QC 080000 and integrating with the automotive quality management system, IATF 16949. With the goal of "Meeting international regulations (such as EU RoHS, REACH SVHC, packaging regulations, China RoHS 2, GS PAHs) and customers' requirements", CSC grasps the restricted substances that have a major impact on the environment from the design and material selection stage



# **3 VALUE CREATION**



In order to meet the above-mentioned international regulations and customers' requirements, CSC's hazardous substance processes management policy is incorporated into the perspective of the product life cycle and implemented from three aspects: design and development, external provider control, and production control.

#### **Design and Development**

- >> Taking the perspective of the life cycle from the stage of the product design and development, CSC prohibits the use of raw materials and outsourced processes that contain HS, to ensure the product can meet the international regulations and customers' requirements.
- To carry out the HSF requirements to meet the IECQ QC 080000, CSC regularly opens training courses which enable relevant staff to understand the changes of the latest international green product regulations. Moreover, CSC is planning to set up a new HSF objective "HSPM training achievement rate" from the year 2019, to ensure the staff is competent in the management of hazardous substance processes.

#### **External Provider Control**

In the stage of external provider control, CSC requests external providers to comply with CSC's or customers' requirements on the restriction of HS and to submit the "Warranty of Conformity for Restriction of Hazardous Substances of China Steel Corporation". So that CSC's products can achieve the effect of reducing HS in advance, and keep HS away at the beginning of the life cycle.

#### **Production Control**

>> "The compliance rate of HS in steel products and special alloys (including outsourced products)" is included in the internal management objectives. The compliance rate was 100% in the year 2018 (100% for each year since 2013),

which fully demonstrated that no HS were added to CSC's products in the manufacturing process, and all the products met the international regulations and customers' requirements.

- >> To ensure CSC's product comply with the international regulations and customers' requirements, CSC has product samples tested by an external third-party TAF-certified laboratory every year to prove the products meet relevant requirements.
- >> In order to validate the effectiveness of every stage of the HSPM System, CSC regularly conducts internal and external audits and management reviews of the IECQ QC 080000 HSPM System to achieve continual improvement.



#### Taking the life cycle perspective, to ensure the products are compliance with international regulations and customer requirements

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. External provider contro

Select raw materials and outsourcing manufactures that meet regulatory and customer' requirements.

Request external providers to comply with the restriction of hazardous substances (RoHS, REACH SVHC, PAHs..)

#### 3. Production control

- 1. Use qualified raw materials and outsourcing manufactures
- 2. Product sampling for testing at third-party laboratory

### 3.3.3 Research Innovation

#### **R&D** Concepts and Strategies

Only through consistent innovation can a company achieve sustainable development. CSC follows the concept of "five I", Information, Imagination, Ideation, Innovation, and Implementation, to stimulate endless capability of innovation. Innovative thinking is inspired by collecting and studying external information, followed by formation of a logical, organized, and complete conception, which is put into practice by project researching. Research results of applicable new knowledge as well as technology in process and products are ultimately implemented on site and market, respectively. Substantial benefits are thus created. In addition to fulfilling the company's strategies, CSC keens on improving the products and its application fields in line with the industry value chain development.

The R&D of CSC includes two fields, iron and steel as well as non-ferrous. The major research objective of the former field comprise

- >> Product development: developing high quality, high grade and new products with top specification and added value
- Product application: developing advanced second and third processing technology to enhance the competitiveness of steel-using industry
- Process development: setting up small quantity, low cost and low pollution but diverse production capability of pure refining and tight rolling technology
- Enabling technology: integrating AI technology with ICT industry, implementing AI technology in steelmaking process, and establishing AI production and marketing system to advance CSC towards a sophisticated steel company.
- Energy conservation and environment protection: enhancing the efficiency of energy use and pollution prevention technology, furthering energy conservation and emission reduction to create sustainable environment



As for the latter field, by extending the application of existing core technology and integrating external resources, essential materials, such as special steel, high quality aluminum, refractories, special chemicals, and environmental friendly catalysts which are steel relevant, and non-ferrous alloy, fine carbon, magnetic, thermoelectric, and photoelectric materials which are for industry demand, were developed.

#### **New Product Development**

New product development is a tool to create enterprise differentiation and strengthen competitiveness. It is implemented by the "New Product Development and Quality Promotion Committee" and under which some "New Product Development Groups" depending on the product category. With the product design out of R&D that has fully considered customers' needs, the New Product Development Groups have finished a total of 37 projects in the year after the mass production. Among them, two items will be emphasized. One is CRHS-56 of steel plate and ER100S-1M of wire rod, used for national defense purposes, which can effectively improve the independent energy and strength of national defense; the other is, of CSC's 7 major products with 66 target top specifications, 50 items are superior to the top specifications, accounting for 75.7%.

For more details thttps://www.csc.com.tw/csc\_e/hr/csr/in/in6.htm#imp-res



#### **Development of Electrical Steels for Electric Vehicle Powertrain**

According to the five-year strategy of "To research and develop advanced products, materials for defensive, applied technologies, innovate intelligent production, and increase chain value of steel industry", CSC set a major tactics of developing the electrical steels for powertrain of electric vehicle and committed to develop thin gauge electrical steels with lower iron loss, higher magnetic flux density and higher strength to satisfy the demand of electric vehicle industry.

By integrating internal and external resources, CSC's Iron and Steel R&D Department planned to plunge into the development of three top-grade electrical steels(25CS1250HF, 30CS2000P, and 25CS1200FY), manifested in its annual R&D strategy of "Cold-rolled and Coated product and Process".

These electrical steels were used in the powertrain of electric vehicle, not only enhanced the motor efficiency but also contributed to the environment by energy saving and carbon reduction. Thus CSC became the sole supplier of electrical steel of TESLA, the biggest electric vehicle factory in the USA. Besides, leading vehicle factories worldwide approached CSC with the supply of electrical steel for electrical vehicle. CSC now became one of the top three suppliers of electrical steel sheet in the world.

#### **Process Refinements**

#### >> Steelmaking process:

- (1) Development of inclusion-control technology for manufacturing of top-grade electrical steel that enhanced material performance.
- (2) Improvement of oxygen-control practice that simplified the process of resulfurized free-machining steel and cut the cost by 22.4 million TWD annually.

- (3) Development of heavy-reduction technique that optimized central quality of cast slabs and successfully achieved the manufacturing of military ship-building plate.
- The yield of the steel plate of SM570M grade was improved through the 6σ project, which has effectively reduced the end-crop scrap by moving forward the cutting position after evaluating the variation of the mechanical property between the head end and the tail end, and the performance thereof was average yield was increased from 87.87% to 89.32% with the benefit of 10.4 million TWD/year.

>> Bar and rod:

- (1) The technique of precipitation control was developed through the combination of refining the rolling process from material research and analyzing the upstream/downstream production data, thereby effectively inhibiting the graincoarsening of low carbon steel after drawing and heat treatment.
- (2) The free of a ferrite-decarburization layer in 9254 spring steel was successfully manufactured using suitable Stelmor cooling pattern and has been certified by automobile makers.
- A special descaling technology for hot rolled products was developed, which may increase descaling duration and decrease rolled-in-scale defect through the moderate reduction of the manufacturing speed depending on different slab reheating temperature, thickness, and grades.
- >> Cold rolled sheet: Surface defects like the dent, scale, and edge strain, occurred to OEM outer panel product and batch annealing product, were improved, which have raised the yield ratio and reduced customer's risk of working failure.
- Salvanized steel sheet: A composite coating technology was developed to facilitate the manufacturing of high-filmthickness and high-performance surface-treated products and so expand its product mix accordingly. In the electrogalvanized products (EG), a method of producing high-surface-quality thin coating (10g/m<sup>2</sup>) layer product was developed to lower production cost and promote its competitiveness.
- >> Electrical steel: The production process for annealed-type, high permeability product was improved, which enhanced the flexibility and efficiency of the production plan, extended the available size, and satisfied the strict thickness tolerance.
- >> Specialty alloy: By moderating rotational speed of shot blast, on-line plate delivery speed, raising the acidic temperature, and controlling low ionic concentration, CSC has improved the pickling efficiency of line solid-solution stainless and lowered the average pickling times from 1.8 to 1.0 for each plate.

For more details thttps://www.csc.com.tw/csc\_e/hr/csr/in/in6.htm#imp-res

#### Patent Management

CSC sets the annual goal for patent application 204 patent proposals and 2 patent licenses. Achieving the goals via training programs and efforts from Patent Promotion Committee, CSC demonstrates the practical and innovative essence.

CSC had submitted 214 new applications and granted 215 patents in 2018, both won the 7th place in "Taiwan Intellectual Property Office Top 100 patent", having placed Top 10 three years in a row. These figures indicate that, CSC, as the leader of domestic traditional industries in Taiwan, are gradually taking positive effects of protecting IP rights.

In addition, CSC participated in "2018 National Invention and Creation Award" held by Ministry of Economic Affairs and won a gold and two silver medals, reaching the highest record of the awards. CSC had accumulated 12 awards of three gold, eight silver medals and one company's corporate contribution awards over the years, it is obvious that CSC's patents had been well recognized outwardly.

For more details thttps://www.csc.com.tw/csc\_e/hr/csr/in/cm4.htm





# 3.4 Green Development

### 3.4.1 Green Products

Full content #https://www.csc.com.tw/csc\_e/hr/csr/in/cm7.htm

As an upstream supplier in the supply chain of steels, CSC plays an important role in R&D and the promotion of green steel products. Over the years, CSC has been dedicating to the development of high-quality steels. In 2018, the high-quality steels in CSC's orders were 3.94 million tons, 72% of them are green orders that helped save energy and reduce carbon emission to an estimated amount of 7.328 million tons<sup>1</sup>.

Note: The coefficient used for calculating external carbon reduction benefits was the same as the carbon reduction reference data circulated in Japan's domestic steel industry, provided by the Japan Iron and Steel Federation and the Economic Research Institute.

### 3.4.2 Product Environmental Footprint

#### 1. Carbon Footprint (CFP) and Life Cycle Assessment

CSC's green products give benefits to downstream industry and steel product users with carbon reduction and environmental protection. To build local reduction factor of green product, CSC completed CFP calculation and had it verified by third party. CSC also cooperated with Industrial Technology Research Institute (ITRI) to establish life cycle CO<sub>2</sub> reduction assessment methodology of H beam steel, process saving steel, anti-corrosion steel, advanced electrical steel, and high strength steel. The methodology documents were fully discussed and communicated with academics, technicians, and industrial experts. It could apply to evaluate carbon reduction benefits based on Life Cycle Assessment (LCA) aspects.

#### 2. Water Footprint

With assistance of National Cheng-Kung University (NCKU), CSC obtained the certification of the water footprint for hot rolled coils in 2011, which is the first steel product water footprint in Taiwan. Though no client requested for water footprint information, CSC cooperated with NCKU to restart water footprint project for cold rolled products and was certified by SGS in 2016, showing willingness for cherishing water resource and readiness for the potential non-tariff obstacle.

## 3.4.3 Green Business Development

Full content thtps://www.csc.com.tw/csc\_e/hr/csr/in/in7.htm

With the global trend of low-carbon economy, green industry and green growth becoming the focus of international competition, CSC Group has long contributed to the improvement of environmental protection and R&D for green energy, including development and wide application of energy-saving steel products, recycle and reuse of resources, and energy integration. In recent years, CSC focuses on the carbon emission reduction and development of alternative energy.

#### 1. Light Rail Transit

"Rail transit" is the best transportation solution for energy saving and carbon reduction. It not only increases the domestic output of the railway industry, but also promotes the quality of life. The joint development of mass transit system stations enhances urban development and tourism benefits.

With the spirit of "teamwork, entrepreneurial approach, down-to-earthiness, and pursuit of innovation", CSC participates in track projects in line with local policies, integrates CSC Group resources and collaborates with local government to provide the public a safe, comfortable and eco-friendly light rail transit to enhance sustainable prosperity for people, enterprises and the environment.

#### 2. Offshore Wind Power

In order to promote offshore wind power, the government plans to set a capacity of 5.5 GW offshore wind farms by the end of 2025. It is expected to bring nearly 1 trillion TWD in investment, create 20,000 jobs, and achieve the national vision of "nuclear-free homeland".

Offshore wind power is the largest steel consumption in renewable energy industry. To promote offshore wind power not only increases steel sales of CSC, but also supports the government's development of green energy. CSC decided to involve in offshore wind power business, mainly in the steel-related and capacityaccessible areas, including substructure manufactured in Xingda Port, the development of Zone #29 project, and the promotion of building up the supply chain of wind turbine component.



# OFFSHORE WIND POWER





Wind-Team Supplier Conference of Offshore Wind Turbine Components Localization Industry Alliance

# Progress in 2018

On March 27, CSC Signed a MOU with MHI Vestas as a Preferred Offshore Wind Turbine System Supplier.

On April 15, The Groundbreaking Ceremony of Sing Da Marine Structure Corporation and the Alliance Ceremony for the local Supply Chain were held to kickoff and implement localization of substructure in Taiwan.

On April 30, Ministry of Economic Affairs announced the results of selection of offshore wind farm. CSC obtained the development rights of Zone #29 project with a total capacity of 300MW, and scheduled to complete grid connection in 2024.

On Nov 12, Sing Da Marine structure signed a contract with Ørsted for the supply of 56 Jacket foundations for Greater Changhua southeast and southwest projects.



# Performance for promoting localization of wind power industry in 2018

#### Highlight : Strengthen the determination of foreign investors to develop local supply chain together.

The wind turbine of MVOW was a preferred selection for the zone #29 project. CSC signed a MOU with MHI Vestas as a Preferred Offshore Wind Turbine System Supplier on March 27, 2018. The Chang-fang (Zone 27th) and Xi-dao project, which are led by CSC's strategic partner CIP, also make the same choices, forming basic economic scale and market incentives, and promoting the development of three wind farms sequentially with a total capacity of nearly 1.5GW, and strengthening the determination of MVOW to build up the ability of localization.

#### ② Highlight : Boost local economy and create job opportunities

CSC established a substructure manufactured company "Sing Da Marine Structure" on March 28, 2018 by investing 3.421 billion TWD to build a production line of substructure for offshore wind farm in "Marine Technology Industry Innovation Zone" located on Xingda Port, Kaohsiung, The groundbreaking ceremony was held on April 15th.

#### ③ Highlight : Demonstrate the leadership to encourage the participation of industrial members

About 60 companies participated in the "Wind-Team Supplier Conference of Offshore Wind Turbine Components Localization Industry Alliance" co-sponsored by CSC and MIRDC (Metal Industries Research & Development Centre) on October 3, 2018. It invited wind farm developers and wind turbine system companies to share the progress of promoting the localization of the wind power industry and enhance their confidence in promoting wind power development in Taiwan.

# Industry Chain Improvement

- 4.1 Supply Chain Management
- 4.2 Industry Upgrade

2

- 4.3 Domestic and International Association
- 4.4 Circular Economy

# 4.1 Supply Chain Management

CSC's supply chain management could be categorized into the following sections: Equipment and material procurement, Transportation, Security and Contractor, which are managed by different responsible departments. The mechanism of suppliers selection is implemented by rules of main material procurement, main equipment procurement as well as subcontractor management. And each rule contains its corresponding subcontractor evaluation regulations therein.

In addition, in order to strengthen supply chain management, CSC requests all subcontractors involving in each bid to incorporate an anti-corruption clause in the Contract as the following: "The subcontractor undertakes that its bid price shall not include bribes, gifts, commissions, rewards or other unjust interests, and the subcontractor also undertake that it shall not offer the same to any managers, full-time and/or part-time employees, their spouses, lineal relatives by blood, consultants, or subcontractors for design and/or planning of CSC." In case of any violation, subcontractors shall be liable for all damages suffered by CSC. CSC is entitled to revoke or terminate all contracts signed with the subcontractors, if such violation is severe.

### 4.1.1 Equipment and Material Procurement

CSC has committed to not using any minerals from Democratic Republic of the Congo, its neighboring countries or any mines controlled by armies or rebel groups, in its products or packing. Through enhancing supply chain management, CSC effectively identifies and traces material sources to eliminate the use of conflict minerals. Any mine that is suspected to involve in conflict minerals would be disregarded in investment evaluation. CSC also pays attention to human rights conditions in the countries providing equipment and materials and adjusts procurement decisions accordingly. The tender instructions and contract terms stipulate no bribery, no infringement, and environmental and safety in-plant regulations. In 2018, 3 suppliers were assessed for environmental impact and were identified as not having significant negative impacts. Global distribution of CSC's suppliers in 2018 is as follows:



#### Procurement by Country, 2018

### 4.1.2 Transportation

CSC's import raw materials and export steel products are authorized to China Steel Express Corp. (CSE) mainly via its own fleet or by chartering the vessels from the market. CSE is an AEO certificated corporation that meet CSC supply chain safety regulation. For domestic transportation, CSC demands transportation suppliers to obtain the certification of OHSAS 18001 in order to reduce the risk of occupational hazards.

Most of CSE's own vessels are received environmental related certifications. Furthermore, CSE highly values the eco design on the newly built ships, and adopt eco speed during sailing to reduce carbon emissions. CSE also recycles the waste





# **4 INDUSTRY CHAIN IMPROVEMENT**

oil and the waste water from their own fleet, and delivers to CSC's Coal Handling Plant to reduce diesel oil consumption and avoid causing air pollution.

For transportation of flux from Hualien, CSE's MV Hwa Lien Express has an auto-unload design that operates faster than the shore crane and therefore lessens air pollution. In addition, CSC uses railway transportation from the mine site to the berth to reduce air pollution.

In addition, CSC stipulated that the vehicle age for product carrying do not exceed 13 years from 1999, and now further stipulated the newly joined vehicles must meet EPA stage 4 vehicular air pollutant emission standards to eliminate existing out-of-date vehicles. CSC estimates that all the product carrying vehicles will meet the 4th or 5th stage air pollutant emission standards by the end of 2019.

In 2018, 1,529 product carrying vehicles passed the standards of environmental impact assessment, and 95.29% of them meet the 4th or 5th stage of air pollutant emission standards. 96 existing suppliers were assessed, 2 of them were identified having occupational safety risks, which have been improved after taking disciplinary action.

To strengthen the risk management of transport accident, all vehicles are required to equip with vision assistance system by the end of June 2018. Along with the additional third party Liability Insurance that minimum attachment point of Bodily Injury/Death is 5 million TWD per person and 15 million TWD per occurrence from 2019.

### 4.1.3 Security

The access control and security of CSC's factory is assigned to China Steel Security (CSS), with 150 security personnel onsite. According to the provisions of Article 10-2 of the Private Security Service Act, "When a security company hires security guards, it shall offer them pre-service professional training of one week or above. For serving security guards, it shall provide them with in-service training at least 4 hrs every month". All CSS employees received comprehensive training of human right and policy.

### 4.1.4 Contractor

Owing to the industrial characteristics of steel manufacturing, plenty of manpower is required for equipment revamping in a short period of time, CSC uses contracted workers to cope with fluctuating demand. Due to the time constraints for production equipment maintenance tasks, contractors located in nearby areas are preferred, thus creating a vast amount of stable job opportunities for surrounding communities. This is yet another example of CSC fulfilling corporate social responsibilities while maintaining sustainable business operations.

According to "Management Guidelines for CSC Operations, Maintenance, and Environmental Protection Contractors", maintenance, operations, and environmental protection contractors are to provide manpower, equipment and technical support to CSC in maintenance, operations and environmental protection related tasks. These contractors are categorized based on the nature of the tasks, amongst which the one related to maintenance is the majority.



Maintenance Contractors	Responsible for repair and maintenance of spare parts in operations department, or repair and manufacture of test samples in technical department.
Operations Contractors	Responsible for operations-related tasks that require basic technical skills to operate or have only indirect access to production equipment, or involving non-technical labor works.
Environmental Protection Contractors and Others	Responsible for the disposal of industrial waste produced during production process.

CSC has never outsourced its tasks to freelancers and has always required its contractors to hire Taiwanese for works in CSC. Contractor employees working in CSC must have insurance mandated by the government, and comply with CSC's safety and health work rules. A penalty will be imposed for any violation, and the fine will be designated exclusively to a fund for supervision, correction, and improvement of the safety and health of contractor employees. New contractors must fill out the evaluation forms, disclosing information including primary business items, equipment list and verified certifications (OHSAS 18001/ ISO 14000). They also need to provide documentary evidence of being legally registered, insured, tax-paying companies with healthy financial status, and genuinely report on the critical occupational safety and/or environmental protection issues for the past 3 years.

As an ISO 9001 certified company, CSC not only conducts contractor evaluations when selecting new contractors and re-evaluates them every 3 years to ensure that all contractors abide by national regulations. All contracts between Plant Engineering and Maintenance Dept. and service providers are signed according to law. CSC also dedicates to the supervision of contractors to enhance the working conditions of their employees and to ensure the compliance with the Labor Standards Act by implementing monthly evaluation according to CSC's local maintenance job management regulations. No incident was reported on violation against human rights, use of child labor, freedom of association, right to organize, right to collective bargaining, or labor conditions in 2018.

For more details thttps://www.csc.com.tw/csc\_e/hr/csr/par/par5.htm#par-Coop

#### **Contractor Evaluation and Assessment**

According to "Management Guidelines for CSC Operations, Maintenance, and Environmental Protection Contractors", units responsible for evaluations must provide annual evaluation reports 2 to 4 months prior to contract end date, based on monthly evaluations and daily performance, as part of the supporting documents for contract renewal. Contractor Management Regulations also state that contract executing units must conduct monthly evaluation based on contractor performance and provide annual evaluation, in which a score below 70 would result in disqualification for contract renewal. There was no such incident in 2018.





#### **Establish Stable Partnership**

Under the notion of partnerships, CSC actively helps contractors enhance human resource structure and working conditions, to improve working conditions of contractor employees and lower turnover rate. Meanwhile, this also helps lower the risks of occupational accidents, fostering true partnerships between CSC and contractors.

#### **CSC Improves Working Conditions of Contractor**



#### Safety and Health

CSC Contractor Safety and Health Committee was founded in 1983. Plant Engineering and Maintenance Department established "Safety and Health Guidelines for Plant Engineering and Maintenance Department Contractors" in May, 1984, to appoint a team consisting of experts from Industrial Safety and Hygiene Department and Plant Engineering and Maintenance Department to assist the operation of all functions of the committee. Members of the committee are representatives from about 100 contractor companies in the areas of mechanical engineering, civil and steel construction, electrical engineering, and refractories, working towards the common goals of ensuring the safety and health of contractor employees, strengthening labor force structure, improving technical quality and establishing safety culture.

Representatives from Plant Engineering and Maintenance Department, Electrical and Control Department, and Industrial Safety and Hygiene Department attend committee meetings on a monthly basis, focusing on the reinforcement of issues related to job safety and health, road traffic safety and trainings, while doing case studies on job safety audits in the meantime. The Committee could also communicate critical issues with CSC executives in monthly meetings. Besides, the committee's functions also include organizing job safety seminars, social activities, workplace health promotion activities, coordinating occupational accident prevention activities initiated by Labor Standards Inspection Office, and regularly arranging mandatory trainings for new contractor employees, monthly job safety audits, and annual health examination. Fines collected for violations against safety and health work rules are designated exclusively for the use of supervision, correction, and improvement of the safety and health of contractor employees, and can be utilized accordingly by the committee.

Contractor Safety and Health Propaganda	Gather contractors every month to announce new safety and health related information and regulations by CSC.			
New Contractor ID Issuing Assessment	New contractors must attend mandatory safety trainings and be interviewed by managers of ID issuing organization. (Listed in Industrial Safety and Health Department's system)			
Safety Care	Conduct on a monthly basis (Listed in Industrial Safety and Health Department's system)			
Report of Near Misses	Reporting near misses is encouraged with rewards.			
Implement and Promote Inherent Safety	Continuously introduce system scaffolds and elevating work platforms to increase scaffold safety and decrease scaffold related accidents.			
Safety Inspections	All levels of management personnel regularly conduct safety inspections in contractors' workplace and keeps records. (Listed in Industrial Safety and Health Department's system)			

#### **Inspections and Audits**

Industrial Safety and Hygiene Department, Plant Engineering and Maintenance Department, Electrical and Control Department, and all maintenance units in production lines frequently conduct inspections and audits on contractors. Inspectors in Plant Engineering and Maintenance Department's job safety team are responsible for Safety and Health reports, based on inspections and audits conducted on works reported as high-risks. In addition, Plant Engineering and Maintenance Department has established "Contractor Environmental Protection, Safety and Health Incentive Program" to encourage positive attitude and approved behaviors. Industrial Safety and Hygiene Department, Plant Engineering and Maintenance Department, and Electrical and Control Department conducted a total of 7,416 inspections in 2018.

#### **Contractor Training**

CSC maintenance units are responsible for arranging training courses and certifications in accordance with the needs of safety and health as well as professional techniques required for contractors to perform their work at CSC. Over the years, the trainings have been proven to be effective. In 2018, contractor employees received a total of 41,999 hours of training in CSC.

Туре	Training Course/Purpose	Contents	Persons	Hours / Course	Frequency	Total Hours
Safety training	New hire training: Designed for new hires to pay attention to all safety hazards in work environment.	General safety and health training, Zero-Accident Program exercise, and safety and health regulation propaganda	6,499	6	3 times/ week	38,994
Technical training	Fire watch personnel: Designed to prevent fire accidents.	Hazard identification, firefighting equipment introduction, and flammable item identification	431	3	2 times/ year	1,293
	Corrugated roofing: Designed to prevent safety hazards such as falling through.	Hazard identification, fall protection solutions, personal protective gear introduction	1,019	1	2 times/ month	1,019
Skill certification	Scaffolding certification: To ensure scaffolding procedure could be proceeded properly according to requirement.	Technical drawing reading, construction layout, structure transportation and assembly skills assessment	71	3	1 time/ year	213
	Metalworking: To ensure metalworking tasks are carried out up to the standard and safety requirement demanded.	Basic technical knowledge, good work quality and safety habits, proper execution based on drawings or samples	160	3	1 time/ year	480

# 4.2 Industry Upgrade

For the continuous growth of CSC and the upgrade promotion of local steel industry, CSC completed the plan of five innovative research programs, which comprised five major research plans. To enhance the competitiveness of steel-using industries, CSC works closely with strategic partners of R&D alliances and industrial upgrade projects launched through these alliances to increase the value of downstream steel products through R&D, innovation collaboration, strategic investments, channel establishment, and brand development. CSC launched 13 projects through 16 R&D alliances with 66 companies during 2006~2014.

From 2015, CSC worked together with Corporate Synergy Development Center to promote Alliances for Steel-using Industries to optimize industry chain, supply chain and value chain. In addition, CSC initiated a 5-year Industry and Academia Alliance Plan in 2013 to introduce R&D energy of academy to the needs of industries, which were completed on schedule in 2018. And the second stage of a 3-year research program on the electric vehicle power train system was implemented right afterwards.



# **4 INDUSTRY CHAIN IMPROVEMENT**

In view of the rapid change of industrial environment, CSC started the second stage of industry upgrading in 2017. With the previous promotion experience as the basis, CSC sets four major strategies as follows: Deep plowing of basic technology; Opening up of product path; Establishing industry cloud; Facilitating Industry 4.0. Confirming that CSC will become better only if its customers well grow up, CSC launched the task of industry service teams in 2018. According to the current status of each industry, CSC links the previous established multiple platforms to set out the development goals and work projects with the anticipation that the effort will infuse new energy, induce the potential champion for individual industry, let local industry see opportunities of transformation by implementing industry cloud and Industry 4.0, find the future direction of development, enable the ecosystems of local steel-using industry to possess an indispensable role in global supply chain and make CSC be the "Number One and Only One" strategic partner in market.

#### Second stage of industry upgrading-Four major strategies

- o Deep plowing of basic technologies
- o Opening up of product path
- o Establishing industry cloud
- Facilitating Industry 4.0

# Five major research plans

- Core technologies of electric vehicle industry
- Intelligent production technologies
- Environmental protection and emission reduction technologies
- Development of key industrial materialsDevelopment of key materials for the
- 5+2 industries

#### **Promoted Programs**

- Engineering Research Center (ERC)
- Joint Research Laboratory (JRL)
- Industry and Academia Alliance
- Industry service teams

# Upgrading Steel-using Industries

#### Engineering Research Center (ERC)

- CSC stractigically develops long-term partnership with academic institutes.
- CSC established five ERCs, includes Electric Motor Technology ERC, Steel Structure ERC, etc., with academic partners to implement systemic, profound, and comprehensive fundamental research.

#### Joint Research Laboratory (JRL)

#### Industry and Academia Alliance

vehicle power train system.

- CSC established JRLs with customers to provide
   Research Alliance with NCKU (MOST program) to enhance the value and competitiveness in steel, electronics, battery power and viechle industries.
- Five JRLs are in operation (Compress and Motor JRL, Auto Steel JRL, etc.).
   The 3-year program (2018~2021) will focus on the leading and novel design and performance enhancement of the electric

# Industry service teams

 CSC promoted its technical results in industry upgrade cumulated over the past ten years to downstream customers. Simultaneously CSC organized industry service teams, which also included the CSC's experienced and professional retired experts, to provide consultation of overall knowledge regarding systems of production, quality control and management etc.

For more information about "Industry Upgrade and Innovation" thtps://www.csc.com.tw/csc\_e/hr/csr/par/par7.htm For more information about "Upgrading Steel-using Industries" thtps://www.csc.com.tw/csc\_e/hr/csr/par/par.htm

# 4.3 Domestic and International Association

# 4.3.1 Domestic Association

As the products and by-products of CSC are supplied to domestic industries, CSC actively participates in the activities hold by domestic institutes and associations to strengthen mutual cooperation. The major institutes and associations CSC attended in 2018 were as follows:

Field	Organization	Objective			
	Chinese Institute of Engineers CSC executive vice president Shyi-Chin Wang as the director	To help with national construction development and promote engineering expertise, aiming at the target of a socially responsible, sustainable and prosperous future.			
Steel Industry	Taiwan Steel and Iron Industries Association CSC Chairman Chao-Tung Wong as the chairman	For collaboration and development of the steel industry, it assistants to construct domestic economic, strive for foreign investments, and coordinates the relationship among the industry in order to further enhance common interests.			
	Taiwan Institute of Steel Construction CSC vice president of engineering department Hsin-Chin Kuo as the vice chairman	For steel construction technology development, it promotes the integrated development of steel construction industry and infrastructure safety improvement.			
Corporate Sustainability	Business Council for Sustainable Development of Taiwan	Cooperate with members to progress the targets of			
	Taiwan Association of Soil and Groundwater Environmental Protection	corporate sustainability and environmental protection			

## 4.3.2 International Collaboration

Organization	Program	Benefit		
	As a core member			
World Steel Association, worldsteel	<ul> <li>CSC participates in the committees of technology, safety, environment, raw materials, economy, and product sustainability as well as expert groups.</li> <li>CSC joins data collections including CO<sub>2</sub>, LCA, and energy consumption, provides comments, and supports propaganda.</li> </ul>	CSC shares experiences via exchanges, cooperation, and services, thereby connects and updates the latest development of global steel industry.		
	As a key supporting member	Through maintaining good interactive		
	$\gg$ CSC assists the development of the technology	and cooperative relationships with other		
South East Asia Iron and Steel Institute, SEAISI	training program, environmental safety, economics, and implementation of ES/STECO affairs.	members, CSC obtains information on the development of regional		
	$\gg$ CSC also supports the arrangement of steel	industries, technologies, and policies, which provides a good basis for		
	conference, traveling seminar, ASEAN technology forum, and sharing in the production of Tech/ES/STECO national reports and Taiwan country reports annually.	business development and strategic cooperation.		



# **4 INDUSTRY CHAIN IMPROVEMENT**

Organization	Program	Benefit
Organisation for Economic Co- operation and Development, OECD	CSC participates in the meetings of the steel committee under the instruction of the Ministry of Economic Affairs, Taiwan (R.O.C.)	As an excellent international platform, it is not only a channel to obtain new and important information on the steel industry and environmental protection but also an opportunity for Taiwan to increase its visibility and participation in international activities.

### 4.3.3 Connection to Global Trend

The value elevation for steel plants can be assessed by three indicators: Development of new applications, Improvement of application technology, and Connection to advanced research institutes. CSC practices these three by participating in international auto steel affairs. CSC participates in WorldAutoSteel (WAS), which has several big plans that focus on:

- 1. Maintaining the attention to steel materials in application,
- 2. Showcasing application value of new-generation steel materials,
- 3. Building positive links of steel materials to clean environmental protection,
- 4. Assisting boost of product competitiveness for steel plants, and
- 5. Participating in international automotive market development.

For more details thttps://www.csc.com.tw/csc\_e/hr/csr/par/par8.htm

# 4.4 Circular Economy

### 4.4.1 District Energy Integration

CSC is located in Kaohsiung LinHai Industrial Park with a number of petrochemical and steel plants surrounding it. CSC then has long utilized steam produced from combined heat and power (CHP) and waste heat recovery as well as industrial gases produced from oxygen plant to share excess energy with neighboring plants. With the complementary uses of steam, oxygen, nitrogen, argon, compressed air, coke oven gas, etc., energy and resources in the district is efficiently integrated. District Energy Integration not only increases energy efficiency but also reduces resource consumption and pollutant emissions in the region. As the environmental quality is improved, it brings substantial benefits to the economy, the environment, and the society.

In 2018, the 1.672 million tons (Mt) steam sales saved 129,000 kL low-sulphur fuel oil. In terms of emission reduction, it is equivalent to annual reduction of 383,000 t CO<sub>2</sub>, 1,222 t SOx, 847 t NOx, and 120 t particulates, creating a win-win situation for CSC, neighboring plants and environment.





Output		Output			
C.S. Aluminium Corp. (CSAC) Steam, N <sub>2</sub> , Ar		Tang Eng Iron Work Co., Ltd. (TANG ENG)	Steam, O <sub>2</sub> , N <sub>2</sub> , Ar		
China Steel Express Corp. (CSE)	Shore electricity	Linde LienHwa Corp. (LLH)	N		
Chung Hung Steel Corp. (CHS)	Steam	Air Products and Chemicals, Inc. (APDirect)	112		
		LCY Chemical Corp. (LCY)	Steam, N <sub>2</sub>		
China Steel Chemical Corp. (CSCC)	Steam, DM water	Sheng Yu Steel Co., Ltd. (SYSCO)	Steam		
Taiwan Chlorine Industries Ltd. (TCI)	Steam	Input			
China Petrochemical Development Corp. (CPDC)	Steam, N <sub>2</sub>	China Petrochemical Development Corp. (CPDC)	Waste fuel gas, H <sub>2</sub> ,		
CPC Corp. (CPC)	Steam, N <sub>2</sub>		Condensate water		
Shang Chen Steel Co., Ltd. Steam, N <sub>2</sub>		CPC Corp. (CPC)	H <sub>2</sub> , Fuel oil, NG		

# 4 INDUSTRY CHAIN IMPROVEMENT



#### External CO<sub>2</sub> Reduction from Steam Sales (10,000 tCO<sub>2</sub>e)

Note:

I. 1 kL of low-sulfur oil =13 tons of steam; Saving of low-sulfur oil in kL= total volume of steam ÷ 13

II. The CO<sub>2</sub> emission factor of low-sulfur oil = 2.985 tCO<sub>2</sub> / kL

III. CO2 emission factor is quoted in 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

## 4.4.2 Industrial Ecology Network

By-products from CSC productions include coal tar, crude light oil, BF slag, BOF slag, iron oxide powder, desulfurization slag, and residual iron of desulfurization slag. Granulated BF slag is sold to domestic businesses, and others are processed through related industries to be provided to chemical, construction, civil engineering, electrical, commodity, and other industries.

#### By-products Production, 2018 (10,000 t)



Upon the call of EPA and Industrial Development Bureau, CSC expanded the industry ecological network inside and outside of Linhai Industrial Park to ensure effective recycling and reusing of industrial waste. In 2018, 20 enterprises were involved in the Industrial Ecology Network, which could recycle and reuse byproducts such as BF slag, BOF slag, waste oil, zinc dross, waste acid and refractory, to each other. CSC will continue promoting the industrial ecology network to reutilize waste from Linhai Industrial Park so as to improve operating conditions and competitiveness and for sustainable development.



	Input			
Air cooling BF slag, BOF slag, Crude ZnO, Granulated	China Steel Express Corp. (CSE)	Vessel waste oil		
slag, Sludge, Coal ash, Spent refractory	C.S. Aluminum Corp. (CSAC)	Scrap iron, Aluminum slag, Aluminum dust, Waste water oil		
Scrap aluminum, Copper, Zinc		Managhina d Da O ala a		
De-S slag	China Steel Resources Corp. (CSRC)	Magnetized De-S slag		
China Steel Chemical Corp. (CSCC) Coal tar		Tar, Scrap iron		
HIMAG Magnetic Corp. (HIMAG) Iron oxide powder, Catalyst		Waste acid. Scrap iron		
Limestone cake, Sludge, Granulated slag	Chung Hung Steel Corp. (CHS)	Waste acid, Scrap iron, Sludge		
Company, Carbo Tzujan Industrial Scrap grinding wheel		Scrap iron		
Sun Beam Tech Industrial Co., Ltd. (SBTI) Zinc dross		Calcium carbonate crystal		
Tai Metal Industrial Co., Ltd. (KT), i Electrode Co., Ltd. (Tientai)		Grinding wheel		
HT Cement Co., Ltd. (HT) Granulated slag		Malding flux		
Young Ching Industry Co., Ltd. (YC) Granulated slag				
	Air cooling BF slag, BOF         slag, Crude ZnO, Granulated         slag, Sludge, Coal ash, Spent         refractory         Scrap aluminum, Copper, Zinc         De-S slag         Coal tar         Iron oxide powder, Catalyst         Limestone cake, Sludge,         Granulated slag         Scrap grinding wheel         Jicn dross         Welding slag         Granulated slag         Granulated slag	InputAir cooling BF slag, BOF slag, Crude ZnO, Granulated slag, Sludge, Coal ash, Spent refractoryChina Steel Express Corp. (CSE)Scrap aluminum, Copper, ZincChina Steel Resources Corp. (CSRC)De-S slagChina Steel Chemical Corp. (CSRC)Coal tarChina Steel Chemical Corp. (CSCC)Iron oxide powder, CatalystChina Steel Machinery Corp. (CSMC)Limestone cake, Sludge, Granulated slagChung Hung Steel Corp. (CHS)Scrap grinding wheelChina Steel Structure Co., Ltd. (CSSC)Velding slagKINIK Company, Carbo Tzujan Industrial Co., Ltd.Granulated slagKuang Tai Metal Industrial Co., Ltd. (KT), Tientai Electrode Co., Ltd. (Tientai)		



CSC demonstrates effective reduction, on-plant recycling, and off-plant utilizing of by-products (solid residue). In 2011, "zero solidification landfill" was achieved after years of effort. It was also achieved in 2018. CSC will continue to maintain "zero solidification landfill" goal in the future. CSC also keeps close collaboration with academia and other industries. In 2018, 5.879 million tons (Mt) of process by-products (wet base) were produced. The ratios of on-plant and off-plant recycling are 30.1% (1.506 Mt) and 69.9% (3.489 Mt), respectively.

Туре	Production Characteristics	Annual Output (10,000 t)	%	On-plant Recycling (%)	Off-plant Recycling (%)	Utilization
BF slag	Produced in BF smelting of raw materials into liquid iron	308	52.4	1.0	99.0	Used to produce slag powder after granulating or engineering materials after cooling.
BOF slag	Produced in BOF refining of liquid iron into liquid steel	116.4	19.8	57.9	42.1	Used (after steel recovery) as raw materials for the sinter plant or as asphalt concrete and concrete agent materials.
De-S slag	Produced after desulfurization of liquid iron	28.2	4.8	34.3	65.7	Used (after iron recovery) as material for land grading, temporary roads, soil improvement, low strength concrete, and concrete materials.
Dust	Collected by dust precipitator (including fly ash)	28.1	4.8	97.5	2.5	Fly ash: used as cement materials after mixture with sludge; zinc oxide powder: sold to refineries in Japan; others: used as iron making materials.
Sludge	Produced after treatment, concentration, and dehydration of wastewater containing mineral dust	38.8	6.6	76.6	23.4	High-Zn sludge: sold to refineries in Japan; others: recycled for iron making on-plant or sold to cement plants as materials if not recyclable.
Mill scale	Rust on steel surface during production	35.4	6.0	92.7	7.3	Recycled for iron making.
Spent refractory	Scrap spent refractory from high temperature facilities	7.1	1.2	35.5	64.5	Recycled (after steel recovery) as steelmaking flux and protective base layer for slag pots or reversely recycled by suppliers for refractory.
Construction residues	Waste earth from construction projects	2.5	0.4	0.0	100.0	Used for soil material plants in 2013 as the South Star Project was shut down in 2012.
Limestone cake	Cakes of limestone after rinsing and dehydration	0.3	0.0	0.0	100	Sold to cement plants as materials.
Other	Slag steel, condensed steel, de-S cinder, fly ash, rubber pads, waste grease, cold rolling fluids, fluid barrels, and zinc dross	23.1	3.9	87.1	12.9	Mostly recycled on-plant and others reversely recycled by suppliers, sold, recycled by relevant agencies, or processed by vendors.
Т	otal	587.9	100.0	30.1	69.9	



# 5 Environmental Protection

5.1 Environmental Concepts and Management5.2 Green Process

# 5 ENVIRONMENTAL PROTECTION

# 5.1 Environmental Concepts and Management



To be eco-friendly by achieving KPI (key performance indicator) targets at/close to top international standards.

applications.

To achieve low-carbon, low-pollution, and high-value targets by accelerating Best Available Techniques and renewable energy Vision

To be a trustworthy steel company of global distinction that pursues growth, environmental protection, energy saving, and value innovation. To demonstrate synergy through effective use of internal and external energy and resources.



To support the governmental low-carbon economy policy by developing energy-efficient and emission-reducing products and engaging in new green businesses.



### Environmental, Health and Safety (EHS) Management System

CSC obtained ISO 14001 certification for Environmental Management System (EMS) in 1997 and was approved for registration. CSC then combined EMS with OHSAS 18001 into the CSC EHS Management System, launched in 2005. Strategic decisions are made by Committee for EHS Management, chaired by the Executive VP. EHS policies are approved by the Chairman before implementation and subject to annual external audit. According to the ISO 14001:2015 new standard, CSC accepted external audit and obtained the verification in June 2018.

#### **Environmental Awareness**

The environmental protection division invited government and professor for keynote speech at CSC irregularly. In order to strengthen the environmental awareness of colleagues, CSC held 12 keynote speeches in 2018 which included air pollution control, water pollution control, waste management, and soil and groundwater management, etc.



#### **EHS Management Committee**

The EHS Management Committee holds two meetings every year, convening units of production division, and relative units to discuss EHS relative management issues, and review the tracking projects, and resolutions for each meeting to meet the spirit of continuous improvement.

To reduce operational risks derived from the energy environment and pursue sustainable development, CSC group also invited related departments and group subsidiary to hold a group level meeting in 2018 for discussing the environmental regulations, energy conservation, and risk management.

#### **Environmental Loading Reduction Commitment**

The environmental load is of substantial concern regarding steel company investments, and reduction commitments and cap control have become requisites. CSC established an environmental load assessment system for investment projects. With the collaboration of all units, environmental load is assessed by proper scaling of existing production capacity, and  $CO_2$  emission is evaluated by defining energy boundary and calculating energy use variation. CSC completed 15 projects of environmental load assessment, including #31 hot blast stove renewal.

#### **Environmental Accounting**

By the end of 2018, CSC has invested 67.8 billion TWD in environmental facilities. Amongst them, air pollution control accounted for 61% and water pollution control accounted for 19%.

Items (100 mi. TWD)		2014	2015	2016	2017	2018
Capital Expenditure	Energy and Environmental Investments	25.8	21.0	34.1	27.6	23.5
Recurrent Expenses	Government Charges and Fees	1.7	1.7	1.8	1.7	2.3
	R&D	0.8	0.5	0.5	0.5	0.5
	Depreciation	10.2	12.6	12.3	12.4	13.6
	Operation and Maintenance	36.3	37.6	35.3	33.5	44.4

#### **Energy and Environmental Investments**

#### **Environmental Appeal**

In case of abnormality, citizens can call CSC by phone through 886-7-802-1111#3799 in office hour or #3702 in off time. Designated personnel are responsible for understanding the abnormality and according to the severity to report to the responsible supervisor and following up instructions to solve problems. At the same time, we ask the suspected pollution department to check or investigate the cause of the abnormality and report the results of survey to the relevant departments. If the abnormality is caused by CSC, we will take action to control and correct by the regulations of Environmental Management System.



#### Legal Compliance

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In 2018, CSC received 2 violation notices for pollution. The number of violation notices has reduced significantly in recent years, and it shows the effective implementation of self-control and improvement.

	2014	2015	2016	2017	2018
Pollution	Air pollution and waste	Water pollution	Air pollution	Air pollution	Water pollution and waste <sup>II, III</sup>
Issuer	KSEPB <sup>I</sup>	KSEPB	KSEPB	KSEPB	KSEPB
Counts / Fine (TWD)	2 / 0.106 mi.	1 / 0.01 mi.	3 / 0.4 mi.	3 / 0.3 mi.	2 / 0.336 mi.

Note: I. KSEPB: Environmental Protection Bureau Kaohsiung City Government

II. In 2018, CSC received 1 violation notices for waste network application data. After that, CSC files a daily check-up for the daily filing data, and checks the report at the end of each month. It will be archived for future reference and report the system information from time to time. If there is any abnormal situation, it will be immediately report.

III. After receiving the administrative procedure violation about water pollution control, CSC is more rigorous to meet Article 14 of the Water Pollution Control Act and Article 23 of the Water Pollution Control Measure Plan and the Permit Application Management Regulations while changing the water pollution control facilities.


## 5.2.1 Energy

### **Energy Management System**

The International Organization for Standardization officially released ISO 50001 Energy Management System in June, 2011. In order to improve the performance of energy conservation and carbon reduction, CSC introduced ISO 50001 in February, and got the certificate of ISO 50001 from BSI in December, 2011. CSC is the first steel company to implement ISO 50001 in Taiwan. In 2017, the chairman approved the newest energy policy below and committed to it, which will be updated if necessary.

### **Energy Policy**



### **Five-year Energy Saving Action Plan and Targets**

In order to implement the energy conservation and carbon reduction, CSC started the energy saving action plan since 2005, and has successively promoted three phases. Every phase has reached the goal of energy saving action plan. From 2016 to 2018, 343 energy saving projects have been completed, and achieved 122% of the "2020 Energy Saving Action Plan Goal", which is equivalent to a reduction in carbon emissions of 338,000 tons. At the same time, CSC implements the government's regulation requirement of "The average annual power-saving rate of energy user shall reach 1% or more in 2015-2019", and has achieved a power-saving rate of 1.51%.

In order to improve energy efficiency and continuous improvement, CSC sets the target of energy intensity according to annual production plans. And the target of energy intensity in 2019 is 5,480 Mcal/tCS.

Phase	2010 Energy Saving Action Plan	010 Energy Saving2015 Energy SavingAction PlanAction Plan	
Schedule	2005-2010	2011-2015	2016-2020
Energy-saving Goal (GJ)	8,666,676	9,043,488	3,768,120
Number of Projects	372	658	343
Performances (GJ)	8,930,444	12,623,202	4,634,788
Achieving rate	103%	139%	122%

Note: Because of the constricted spaces, the Goal of 2020 Energy Saving Action Plan is less than previous years. The number of projects, energy-saving performances and achieving rate are calculated until 2018.



### **Committee for Energy Conservation**

For effective reduction of energy expenditure, the Committee was formed and chaired by VP of Production Division. The 3 Teams of the Committee are responsible for energy saving and emission reduction in CSC plants. Through both the Management System and the Committee, CSC achieves the purpose of energy conservation and continual improvement.



### **On-plant Energy Saving**

### >>> Set up Utilities Dispatching Center (UDC)

CSC has wide variety of energy sources and most of them are self-produced by-product gas (such as blast furnace gas, coke oven gas, LD-Converter gas) which varies greatly and intermittently. In order to maintain energy balance and achieve effective use, CSC established the UDC since factory completed and put into production. The UDC centrally monitors all energy sources, such as gas, electricity, steam, O<sub>2</sub>, N<sub>2</sub>, Ar, H<sub>2</sub>, compressed air, etc., and also production plans. Then with the assistant of the integrated-Energy Management system (iEMS), UDC can execute dynamic dispatching in order to keep energy balancing in CSC and to minimize by-product gas emissions. UDC also manages the electricity load in CSC to avoid violating the contract with Taiwan Power Corp. (Taipower), and actively participates in the Taipower Demand Bidding Measures. Furthermore, it compares the power generation cost of different fuels with Taipower tariff to adjust the self-generation amount to minimize the usage of high-priced fuels, such as low-sulfur oil and natural gas.

### >>> Best Available Techniques (BAT)

In order to improve energy-saving performance, CSC has intensively contacted with steel-making companies in Japan, South Korea and China in recent years. We collect BAT for energy-saving from other companies and had completed the "Best Available Technical Manual for Energy Saving and Emission Reduction of Steel Plants".

The main technologies that have been applied in CSC are Coke Dry Quenching (CDQ), sinter waste heat recovery, Top Gas Pressure Recovery Turbine (TRT), blast furnace hot stove waste gas heat recovery, Blast Furnace Pulverized-coal Injection, Converter Off-Gas Boiler, gas recovery system for top hopper release, Hot Charging, Regenerative Combustion, etc.

### >> Guidelines of Energy Conservation

Energy-saving begins with design. We add the "Guidelines of Energy Conservation" section to CSC Design Standard and indicate energy efficiency requirements of air conditioning, lighting, shifting mechanisms, water supply systems, etc. In order to promote the Guidelines of Energy Conservation, we had held 8 energy-saving seminars in CSC since June, 2018.

### **Energy Consumption**

The coking coal in the steelmaking process transforms to by-product gases which can be used as fuel in steelmaking and in cogeneration power plants to generate steam and power. Coal, oil, and nature gas can also be used in power plants while the excess power demand is met by purchased electricity from Taipower.

### **Energy Consumption, 2018**

Category	Items	Energy Consumption (GJ)
	Coal	229,595,413
	Natural Gas	3,874,341
	Diesel Oil	119,667
Primary Energy	Gasoline	6,652
	Low Sulfur Fuel Oil	109,458
o–o→ Secondary Energy	Purchased Electricity <sup>II</sup>	22,214,152
	Steam	13,305,183
	Coke Oven Gas (COG)	35,259,410
•	Blast Furnace Gas (BFG)	46,167,945
	Linz-Donawitz Converter Gas (LDG)	7,338,940
Self-Produced Secondary	Cold Blast Air	8,650,029
Energy	Oxygen	3,182,632
	Nitrogen	2,075,914
	Argon	264,644

Note: I. Energy consumption= annual energy consumption of each category x CSC internal average heating value.

II. Purchased electricity is converted to input energy by efficiency.

Due to more back-up steel produced and higher fuel rate than in 2017, the energy intensity for 2018 is 5,774 Mcal/tCS. The energy intensity target for 2019 is lower than 5,480 Mcal/tCS. CSC sets the energy usage target by constructing a baseline every year based on past energy usage and considering annual production conditions and the energy saving target.

Unit: Mcal / tCS	2014	2015	2016	2017	2018	2019 Target
Energy Intensity	5,743	5,596	5,630	5,692	5,774	5,480

For more information about "Off-plant Energy Saving" thttps://www.csc.com.tw/csc\_e/hr/csr/env/env2.htm

### Performance of Energy Saving and Carbon Reduction

CSC accomplished 113 energy saving projects in 2018, which saved 275,516 Gcal (1,153,530 GJ or 30.6 ML oil equivalent) and reduced 57,000 tCO<sub>2</sub>e, and saved 0.271 bi. of energy cost. The major projects are "reducing fuel consumption in lime kiln", "heating furnace revamping in #1 hot-rolling mill", etc.



Category	Items	Energy Saved (GJ)
Electricity	74	406,763
Fuel Gas	11	627,874
Industrial Gas	5	68,065
Steam	3	23,400
Water Systems	8	9,295
Others	12	18,133
Total	113	1,153,530

### Statistics of Energy Saving Projects, 2018

For more details thttps://www.csc.com.tw/csc\_e/hr/csr/env/env2.htm

## 5.2.2 Greenhouse Gases

# Fighlight Outcome

- >> Management (B) level in climate change project from Carbon Disclosure Project (CDP).
- >>> To calculate CFP of 23 products and had it verified by third party.
- >> 2018 Model of GHG reduction performance praised by IDB, MOEA.
- >> To participate in cross section GHG reduction collaboration hosted by KSEPB.

### **Risks and Opportunities of Climate Change**

Full content thtps://www.csc.com.tw/csc\_e/hr/csr/env/env3.htm

In response to climate change and elevated awareness of energy and environmental conservation, the industry needs to fulfill its social responsibility to maintain competitiveness. CSC has identified potential legal, physical, and reputational risks from climate change and their corresponding opportunities. Strategies are developed respectively in three aspects: management and development of water resource, response and adaptation to disasters, and reinforcement of city and value-chain cooperation.

For CSC, potential and substantial impacts include: External constraints of ESH issues and related policies and regulations, if excessive, will affect the fairness of international competition; Low-carbon energy, low-carbon electricity, and CFP are gradually becoming important issues for the steel industry and will play an important role in competitiveness. For these impacts, CSC not only adjusts its organization and develops strategies inside CSC Group but also reinforces collaboration with international and domestic peers, green energy industries, suppliers, and the academia, to create advantageous operating conditions.

### **GHG Inventory**

CSC has been following the ISO standards (ISO 14064) to implement GHG inventory since 2006. To ensure that the data are Measurable, Reportable and Verifiable (MRV), we subject to internal audits and third-party verification every year. CSC then submits the verified data to EPA website according to EPA policy.

The National Greenhouse Gas Reduction and Management Act was promulgated by Taiwan government on 1 July 2015. To comply with the Act, CSC not only reduces the uncertainty risk of legality based on our previous efforts but also contributes our mature experience and technology to provide government suggestions and to closely cooperate with competent authorities.

In 2018, the audited GHG emissions are 22,100,460 tCO<sub>2</sub>e in total with scope 1 as 20,805,771 tCO<sub>2</sub>e and scope 2 as 1,294,689 tCO<sub>2</sub>e (with emission factors from EPA, Worldsteel Association, and result of carbon content test). The Scope 3 emissions are 14,021,934 tCO<sub>2</sub>e, including 15 emission activities where the data of "fuel and energy related activities", "waste generated in operations", and "business travels" are third-party verified. The Global Warming Potential (GWP) values of the greenhouse gases were from IPCC's Fourth Assessment Report. CSC will keep seeking chances to have more Scope 3 items verified in the future.<sup>1</sup>

Note: The boundary of CSC GHG emissions refers to the Operation Control Approach and calculates with the Emission Factors Methodology. After completing the brand new CSC China Steel Building in 2013, we adjusted our GHG inventory boundary in accordance with ISO 14064-1 and redefined our base year to 2014. The GHG emissions of 2014 is 20,629,823.53 tCO2e, based on the GWP value from the IPCC's Fourth Assessment Report.

For more details thttps://www.csc.com.tw/csc\_e/hr/csr/env/env3.htm

### >>> Carbon Footprint Calculation and Verification:

To enhance GHG management, CSC, as a upstream provider, started to calculate CFP of 23 products like steel bar, steel wire, hot/cold rolled steel coil, etc., and had it verified by third party in order to view steel product with life cycle concept. CSC will provide relating information to our customers when a request is issued. CFP of an end user product is also available by involving CSC's CFP information.

### GHG Reduction Target, Strategies, and Path

From 2016 CSC changed its carbon reduction target and strategies to the total carbon reduction amount of all its carbon reduction projects. The reason is the GHG Reduction and Management Act promulgated in 2015. To fulfill Taiwan's 2030 INDC and 2050 targets, the government is planning a national emissions target for each 5-year stage. Therefore, the roadmap of carbon intensity is no longer suitable. CSC sets up 330,000 tCO<sub>2</sub>e reduction target by 2020 for the Third 5-year stage (2016-2020). The major strategies are to promote 2020 energy saving action plans, to adopt low carbon energies, to R&D and to apply breakthrough technologies continuously.

### **GHG Information Disclosure**

CSC processes GHG inventory annually and discloses relating information to potential users. In addition to put GHG data to Taiwan EPA's register website, CSC keeps on being a member of climate change action, joining relating programs (e.g.CO<sub>2</sub> data collection program), and participating in seminars hosted by Worldsteel Association in order to understand the international progress of carbon reduction. Besides, CSC has taken part in climate change project from CDP. By fulfilling the questionnaire from CDP, we evaluated ourselves by comparing with other industries and other steel companies to make sure that our management strategy fit global and local trend. In 2018, CSC achieved management (B) level, better than regional average (C) and sectional average (C), which also showed great outcome of our GHG management.

### GHG Carbon Emission Trading System (ETS) and Management

CSC referred to Taiwan EPA's regulation and global experience and built interior documents in accordance with ISO 14001 system. We will go on collaborating with EPA, IDB and other agencies to discuss GHG policy and management. We will also work on GHG reduction mechanism to obtain more carbon credits. Those credits could be offset in carbon ETS period.



## 5.2.3 Air Pollutants

## <sup>(</sup>Performances Highlight

- >> The SOx emission intensity 0.642 kg/tCS in 2018 meets the target 0.731 kg/tCS.
- >> "Enclosed sinter storage" won the excellent construction site award of 2018 issued by KSEPB.

CSC not only obeys the regulatory emission standard for all processes, but also sets emission target (emission intensity) base on air pollution control plans for next year. SOx emission intensity target of 2018 were set to be less than 0.731 kg/tCS base on de-SOx system (wet-FGD) of #2 sinter plant has operated, and the actual SOx emission intensity of 2018 was 0.642 kg/tCS which meets the target. Actual NOx emission intensity was 0.721 kg/tCS and particulates emission intensity was 0.28 kg/tCS in 2018 which meet the target.

CSC has complied the policy of Kaohsiung City government for emission reduction in fall and winter, arranged the production reduction of processes to reduce emission, and to reduce particulates emission 446.01 ton, SOx emission 713.73 ton, and NOx emission 681.81 ton from December 2017 to February 2018. Actual NOx emission intensity was 0.721 kg/tCS and particulates emission intensity was 0.28 kg/tCS in 2018 which meet the target.

### **Environmental Targets of 2019**



### **Environmental Monitoring and Measurement**

CSC Environmental Monitoring Center oversees 6 air quality monitoring stations and has 2 digital boards that display realtime air quality data for the reference of citizens. In case of abnormality, citizens can call CSC at 886-7-802-1111#5592 in office hours or #3702 in off hours. For stationary emission sources, 29 continuous emission monitoring systems (CEMS) serve to the control of traditional pollutants emission intensity and quantity, and 25 are connected to KSEPB for government supervision.

### Air Pollutant Emissions and Countermeasures

In order to reduce emission further, CSC joined "Air pollution control action plan" of Executive Yuan, proposed 7 air pollution control projects and reported every 3 months.

	2014	2015	2016	2017	2018	EIA Commitment
SOx (ton/year)	7,692	6,717	6,969	6,887	6,058	34.9 ton/day
Countermeasures	<ol> <li>CSC had invested a number of air pollution improvement projects, such as FGD of #6~8 boiler and #3,4 sinter plant, and low-sulfur contained raw materials(anthracite and coal etc.) used, to reduce SOx emission dramatically.</li> <li>The #2 sinter plant Wet-FGD operated in 2018 and reduced SOx emission 1,312 ton/year.</li> </ol>					
NOx (ton/year)	7,905	6,876	8,292	7,191	6,797	34.6 ton/day
Countermeasures	<ol> <li>CSC had invested a number of air pollution improvement projects, such as De-NOx equipment of #6~8 boiler and #1,3,4 sinter plant, and low-NOx burners.</li> <li>The #2 sinter plant De-NOx system operated in 2018 and reduced NOx emission 925 ton/year.</li> </ol>					
PM (ton/year)	3,522	2,843	2,787	2,820	2,727	19.5 ton/day
Countermeasures	<ol> <li>CSC had invested a number of air pollution improvement projects, such as bag filters and electrostatic precipitators, and budgeting annually to maintain those equipment. In order to reduce fugitive particulates emission of raw material yards, a 20-meter high dust screen had been installed around the raw material yards.</li> <li>The bag filters of #1 converter plant were finished in 2018, and reduced particulates emission 100 ton/year.</li> </ol>					
Dioxin (g-TEQ/year)	7.4	6.176	3.233	4.4705	3.4008	-
Countermeasures	Dioxin emission had reduced by the installation of activated carbon injection, dual function De-NOx and De-DXNS selective catalyst in sinter plants and rotary hearth furnace (RHF) equipment, for residual materials treatment.					

For more information about "PM2.5 Countermeasures" Hhttps://www.csc.com.tw/csc\_e/hr/csr/env/env4.htm

### **Control of Ozone Depleting Substances**

To control ozone depleting substances, CSC integrates air conditions, improves equipment maintenance, develops highefficiency models, uses eco-friendly coolants, and reuses recycled coolants.

### >>> Ozone Depleting Potential

	2014	2015	2016	217	2018
Total (kg)	20.02	18.92	19.10	25.30	27.28
Intensity (mg / tCS)	2.39	2.05	1.96	2.75	2.89

Note: Since R-22 has been included in the GHG control in the IPCC 3rd Ed. Assessment Report (TAR), in CSC only refrigerant R-124 is required to be managed by the Montreal Protocol from 2015. The Ozone Depleting Potential (ODP) values of R-124 was from the Annex of Montreal Protocol.

# AIR POLLUTION REDUCTION



# Case study

Joining in the "Air Quality Deterioration Prevention Project" held by KSEPB, CSC initiatively reduces the coal-firing boilers' load to decrease emission according to Air Quality Index (AQI).

Since 2001, CSC has purchased low emission coal (low ash, low sulfur and low nitrogen) to reduce air pollutant of coal-firing boilers. In recent years, CSC further implements a series of air pollution control equipment. Up to now, all three coal-firing boilers have adopted the Best Available Control Technology (BACT) to reduce the air pollutant as bellows:



### Particle Low ash coal; ESP.

LOW ASIT COAI, ESP

### Sulfur Oxide

Low sulfur coal; Wet Flue Gas Desulfurization (Wet FGD).



### Nitrogen Oxide

Low nitrogen coal; Low NOx Burner (LNB); Separated Over-Fire Air (SOFA); Selective Non-Catalytic Reduction (SNCR); Selective Catalytic Reduction (SCR). All coal-firing boilers are equipped with Continuous Emission Monitoring Systems (CEMS) and are real-time connected to KSEPB. All the air pollutant data complies with or superior than the Air Pollutant Emission Standards for Power Facilities requested by EPA of Taiwan. Furthermore, CSC participates the Air Quality Deterioration Prevention Project. The total boiler load reduction converted to equivalent electricity reduction reach to 29,054,000KWh in 2018.

# 🞯 External concerned issue

The coke water quenching (C.W.Q.) changes to coke dry quenching (C.D.Q.) of coke ovens (phase I and II), and enclosed raw material storage.



# **Countermeasures**

- In line with the government's policy for improving air quality, CSC has planned the projects for C.W.Q. changes to C.D.Q of coke ovens (phase I and II), and enclosed raw material storage. The phase I budget 3.257 billion TWD was approved in 2017, and the projects start up in 2018.
- Enclosed sinter storage building was started in 2018, and will be finished in 2019. The progress is 44.6% at the end of 2018.

### 5.2.4 Water

### Water Conservation

The integrated steel production has always been a highly water-intensive industry. From raw materials to products, it is necessary to use a large amount of water, such as dust washing, cooling, de rust, lubrication, water sealing and water quenching. CSC is located in Kaohsiung without large reservoir. In order to relieve the above risks, CSC has determined to work towards diversified water resources and actively cooperates with the government to develop a policy of recycling of polluted water. After efforts by relevant government agencies, 23 million liters of reclaimed water have already been supplied daily from August 23, 2018. CSC imports 22 million liters of reclaimed water per day, while CSAC uses about 1 million liters of reclaimed water per day. It is estimated that from September 2019, when the capacity of the reclaimed water per day.

Following the official operation of the Fengshan Creek Reclaimed Water Plant in August 2018, the Linhai Sewage Treatment Reclaimed Water Plant will be planned. CSC will use 20 million liters of daily reclamation water. It is expected that the water supply will be completed by 2022. At that time, the use of recycled water in CSC will be increased to 61 million liters per day. It can be dispersed into half of tap water (51%) and the other half is combined by Fengshan Creek reclaimed water (34%) and Linhai reclaimed water (15%) from the current single source of tap water. In addition to improving the stability of water use in CSC, and gradually moving towards the goal of diversified water sources, it also reduces the risk of production or damage to equipment caused by interrupt/limit water supply.





# **ENVIRONMENTAL PROTECTION**

The daily water intake of the raw water in the CSC Hsiao Kang plant area is about 130 million liters. On August 23, 2018, Fengshan Creek reclaimed water was officially introduced, and a total of 3,466 million liters of the reclaimed water was introduced to Hsiao Kang plant (reclaimed water that should be considered as third-party production) until December 31, the main source of which is to collect the domestic sewage from Kaohsiung City through deamination, UF and RO treatment units to make reclaimed water. Besides, 40,241.5 million liters industrial tap water was supplied by the Taiwan Water Company Fengshan Reservoir in 2018, the above-mentioned reclaimed water and tap water are both fresh water.

Despite the continuous expansion of the relevant production lines from 2003, water management and recycling of water have been promoted, and with the integration of regional energy in Linhai Industrial Zone, the process water recovery rate has reached 98.5%. The average daily water consumption of CSC in 2018 is about 121 million liters, and the water consumption per unit of crude steel is 4.42 tons/ton steel.



In addition, CSC also has participated in the questionnaire of the Carbon Disclosure Organization (CDP)-Water Project, which discloses the water management approaches and performances of CSC and obtained the management level (B) in 2018. The results are better than the regional average (C) and sectional average (C).

### **Case study**

### Promoting the Urban Sewage Water Reclaimed Plan

CSC adheres to the strategy of diversified water sources, and conducts feasibility assessments for the Fengshan Creek reclaimed water in accordance with the "promotion of the law" and adopts the method of private BOO(Build  $\sim$  Operation  $\sim$  Own). In the 2012 National Water Forum, we proposed the operation mode and water quality of the reclaimed water, water price (about 30 TWD/m<sup>3</sup>) and the feasible route of the water supply pipeline, and suggested that the construction cost of the recycling plant could be government-funded, which can reduce the price difference with the tap water to increase the willingness of the manufacturers.

This case is planned to build a three-stage treatment facility based on the existing primary/secondary treatment facilities in the Fengshan Creek Wastewater Treatment Plant, including: original pool, quick filter pool, self-cleaning filter, UF and RO treatment system. It also includes sewage treatment facility optimization projects, such as aerated grit, scum treatment, sludge treatment and AO biological treatment system for nitrogen removal, to ensure that the third-stage reclaimed water plant can obtain stable influent water quality. In addition, in order to comply with the newly enacted regulations on the "Renewable Water Resources Development Regulations" in 2016, a fully independent domestic water system will be built in the CSC to supply all the domestic washing water for the whole plant with tap water and not to share the pipe network with the reclaimed water.

After the completion of the case, CSC will introduce 41 million liters of Fengshan Creek reclaimed water per day in 2019, accounting for about one-third of the total water consumption of CSC, and is currently working with the Kaohsiung Municipal Government Water Conservancy Bureau to promote the Linhai Reclaimed Water Project (estimated to import 20 million liters of reclaimed water per day). In the future, there will be three water sources of raw water, Fengshan Creek reclaimed water and Linhai reclaimed water, which will gradually reach the goal of CSC multi-source water strategy.

For more details thttps://www.csc.com.tw/csc\_e/hr/csr/env/env10.htm

### Water Pollution Control

Main tasks of water pollution control are managing existing equipment and building backup facilities water to improve quality, and improving rainwater drainage performance by monitoring and managing.

The CSC wastewater processing facility with 79.6 million liters/day capacity processes wastewater to effluent standards and discharges to the ocean through Yanshuigang River. In addition, a 40 million liters runoff wastewater collecting pool with 36 million liters/day capacity processing plant for the raw material yard processes runoff wastewater from heavy rain to the effluent standards and discharge into the ocean through the Yanshuigang River.

In 2018, the total discharge was 14,810 million liters, increasing by 12,400 million liters from 2017. The Chemical Oxygen Demand (COD) and Suspended Solids (SS) were 45.5 mg/L and 6.1 mg/L, comparing to 44.5 mg/L and 5.4 mg/L in 2017, and further below than statutory effluent standards (100 mg/L and 30 mg/L).

EPA announced "Industrial Effluent Standard" in 2014 with additional ammonia control standard of 20 mg/L for chemical industry including coking and coal chemical processes. By the regulations, CSC filed a reduction plan with upstream process reduction (NH<sub>3</sub>-N from 800-1,000 mg/L to <300 mg/L) and downstream wastewater treatment (NH<sub>3</sub>-N from 300 mg/L to <20 mg/L). The reconstruction of the COD removal basin and two nitrification basins were completed in 2015 and 2016, and the reconstruction of the denitrification basin was completed in Feb. 2017. The improvement project completed the functional test on in Sep. 2017. The ammonia concentration in the discharge water was 9.1 mg/L, In 2018, the concentration of ammonia nitrogen in the discharge water is 7.8mg/L, which is far superior to the regulatory standard (ammonia nitrogen <20mg/L).

### » CSC's performances are far superior to the regulatory standards





## 5.2.5 Waste Management

Steel is a national important economic development resource, also a green material, which can be reused to achieve the purpose of recycling. CSC is committed to the various types of waste recycled by the production process in accordance with the concept of steel life cycle. We develop various resource-based technologies, replace some of the raw materials of the steelmaking process, simultaneously integrate the resource links in the offshore industry and industrialization, and properly recycle industrial wastes to create a win-win situation. CSC can now recycle 95% of its wastes and only 5% is incinerated.

Waste chemicals which are produced in laboratories and in trivial amounts, are handled by certified vendors in Taiwan. Lead slag, produced from the rolling mill process, is appointed to legal waste recycling vendors for recycling and utilization. No hazardous waste is shipped overseas in 2018.

CSC manages storage and disposal of hazardous waste in accordance with Waste Disposal Act, and audits internally every year. Before disposal of hazardous waste, CSC will confirm entrusting company with effective qualification of hazardous waste disposal. After contracting with entrusted company, CSC will report to Industrial Waste Report and Management system. After completing the waste clearance, CSC asks entrusted company provide documents of proper clearance. In order to raise the recycling ratio, CSC reduces frequency of disposal, that will have benefit of carbon reduction and fulfill CSR.

While improving the recycling rate of resources and reducing the cost of subcontracting, CSC has also reduced the environmental load of the transporting equipment, achieving carbon reduction benefits and fulfilling corporate social responsibility.







Note: Hazardous industrial waste was mainly recycled in CSC for production process, no negative impact on life and environment.







# **Employees** Care

- 6.1 Recruitment and Retention
- 6.2 Joyful Workplace

6

- 6.3 Employee Rights
- 6.4 Occupational Safety and Health

# 6.1 Recruitment and Retention

### 6.1.1 Recruitment

CSC strictly follows the Labor Standards Act of Taiwan and never hires child labor. To ensure the basic human rights of employment equality, employees are hired only by expertise and by experience, eliminating discriminations upon ethnic origin, thought, religion, political affiliation, place of origin, place of birth, gender, sexual orientation, marital status, appearance, disability, or past labor union membership. In 2018, no incident involving human rights abuse or discrimination was reported.

The management approaches for talent recruitment and retention is mainly to meet the approved manpower requirements as scheduled quorum, and to review the business policy on a quarterly basis. At present, in addition to public recruitment, there are also several channels such as Expert recruitment (doctoral or legal), foreign trade associations (business), industrial program of master degree, and scholarships (engineering) recruitment. For basic level employee recruitment, public recruitment are the main method, aboriginal special enrollment and industry-academy program are the other modes.

For the one external recruitment in 2018, the number of job vacancies, test subjects, and job contents were open to public. Applicants were asked to take the written test on common and professional subjects. Based on test results, at least twice the number of vacancies was selected for interviews. The final decision for employment was made based on both written test and interview scores, and 852 new employees (217 professional and 635 basic level) were hired. The total number of employees in CSC is 10,424 (3,485 professional and 6,939 basic level) in 2018. An average of 565 people were employed per year since 2011, and the number of newcomers is expected to maintain until 2021.



### **Newcomer Distribution, 2018**

### **Apprenticeship Cooperation**

To reduce the gap between school education and industrial practices, address the demands for specific skills, and increase the percentage of aboriginal employees, CSC cooperates with vocational high schools to provide Staged and Job-oriented Apprenticeship Classes and with universities to provide Masters Programs. Talents are selected and cultivated, with training of skills that are directly applicable in the industry, the CSC corporate culture, and work ethics. The students are expected to be able to join the company at the plant of their internship with capability gained through apprenticeship directly after graduation. From various cooperative education programs with 1 university and 4 vocational high schools, CSC has recruited 226 students as employees.





## 6.1.2 Workforce

In the end of 2018, the CSC workforce totaled at 18,767 people, of whom 10,424 were regular employees, 8,343 were contractors (7,619 male and 724 female, mainly are maintenance and operations contractors), and 42 were dispatched workers (2 male and 40 female, mainly for paperwork and general affairs). The contractors account for a large proportion of the CSC workforce reflects the CSC industrial structure, which has many short-term outsourcing projects. The average age of employees was 45.77 and the average service years was 18.96. The male-female ratio is due to the characteristics of the integrated steel mill.

\* For Contractor Management please refer to Chapter 4.1.4 Contractor



### **Employee Distribution, 2018**



### **Employee Position Distribution, 2018**

## 6.1.3 Turnover

The personnel change, resignation, and retirement of employees are handled according to relevant CSC regulations. Regular employees can apply for retirement at the age 65 or for voluntary retirement at an earlier age with reference to the Labor Standards Act. Personnel change is discussed by the line manager with the employee weeks in advance and will be announced only after and with employee consent. In the case of difficulties in labor service performance arising from a personnel change, employees may request for termination of employment contract or file a grievance within 24 calendar days of personnel change. If grievance is rejected, employees can request for termination of employment contract within 7 calendar days of grievance rejection.

Directions for Handling Employee Voluntary Resignation and Retirement and Directions for Handling Compensations for Retirement, Relief, Occupational Accidents, and Layoffs institutionalize the application for voluntary resignation and retirement. In 2018, a total of 591 employees left, with a resignation rate (number of personnel left/active employees at the end of year) of 5.67%. 542 were aged 60 and up, and retirement was the main reason for resignation.

### **General Employees Attrition/Attrition Rate**

<b>\$</b> 9	2016		2016 2017		20	18
Gender	Employees	Ratio(%)	Employees	Ratio(%)	Employees	Ratio(%)
Male	559	5.78%	684	6.69%	579	5.55%
Female	10	0.10%	12	0.12%	12	0.12%

0	2016		2017		2018	
Region	Employees	Ratio(%)	Employees	Ratio(%)	Employees	Ratio(%)
Northern	10	0.10%	6	0.06%	7	0.07%
Central	549	5.68%	11	0.11%	9	0.09%
Southern	8	0.08%	676	6.61%	572	5.49%
Eastern	1	0.01%	3	0.03%	3	0.03%
Others	1	0.01%	0	0%	0	0%



AGE	2016		2017		2018	
AGE	Employees	Ratio(%)	Employees	Ratio(%)	Employees	Ratio(%)
20-29	21	0.22%	13	0.13%	15	0.14%
30-39	31	0.32%	21	0.21%	12	0.12%
40-49	1	0.01%	2	0.02%	3	0.03%
50-59	23	0.23%	14	0.14%	19	0.18%
>60	493	5.10%	646	6.31%	542	5.2%

### **Maternity Leave and Parental Leave**

The statistics for application of unpaid parental leave (including maternity leave) in 2018 are shown as follows.

### Statistics for Parental Leave in CSC, 2018

	2017		2018	
	Male	Female	Male	Female
Number of employees entitled to parental leave	1,332	48	954	41
Number of employees that took parental leave	2	4	4	10
Number of employees that returned to work after taking parental leave(a)	7	2	5	10
Number of employees that should return to work after taking parental leave(b)	7	2	5	10
Return to work rate(a/b%)	100%	100%	100%	100%
Number of employees returning from parental leave(c)	5	13	7	2
Number of employees retained 12 months after returning to work after a period of parental leave(d)	4	13	7	2
Retention rate(d/c%)	80%	100%	100%	100%

Note: I. CSC adjusted the definition and calculation method of parental leave, so the data in 2017 CSR report differs from this table.

II. Number of employees entitled to parental leave: The number of employees that have applied the maternity leave and paternity leave from 2016 to 2018.

III. Number of employees that took parental leave: The number of employees that have applied and still in parental leave period in 2018.

# 6.2 Joyful Workplace

## 6.2.1 Remunerations

Employee remunerations include basic salary (base salary, meal allowance, and allowance for special work environments or special maintenance), year-end bonus, and production/sales profit bonus. Employees are remunerated based on their duty, current market wage standards, the company financial status, and organizational structure. Remunerations for male and female employees are equal, and the basic salary of male and female employees of the same position and grade is the same. However, the pay grade of the same position may vary due to difference in seniority because of the link between salary and length of service. For employees at the same regardless of gender. The average wage of regular employees in non-managerial position (senior management level and below) is 1,652 thousand TWD, which went up by 4.68% from 2017.

Remuneration by Position	Female	Male				
Basic Management	1	1.23				
Professional level	1	1.22				
Basic level	1	1.24				

### Salary Adjustment Based on Performance

Those qualified will receive respectively 1-8% of raise according to their midyear performance grade. Those qualified will receive annual salary adjustment according to their year end performance grade. The average percentage of annual salary adjustment for the past 10 years is around 2%.

### Appraisal

Employees are evaluated by performance given a grade between A to E. The performance grade and remuneration structure of employees affect the amount of rewards, bonus, and salary adjustment. Those receiving an E in the evaluation will be dismissed. Those receiving a D will receive no salary raise. In addition, the supervisor must interview these employees and submit a performance improvement plan. In 2018, 751 received A and none received E.

### **Bonus and Other Incentives**

- >> Production/Sale Profit Bonus: With revenue at the end of the month, 90% of it will be distributed to employees in the next month while 10% of it will be hold until next Feb. as the key bonus. The amount each employee will get as a monthly bonus depends on their salary, weights of the department they serve, and their days of duty within a month.
- Incentive Bonus: With revenue at the end of the year, those qualified will get an incentive bonus based on their year end performance grade and their basic salary, with ratios differencing from 0.5-1.25.
- >> Key Bonus: Those qualified will be given a key bonus based on their contribution during the past year, with 1 month of salary as minimum.

### New Employees' Remunerations

Pay standard of new employee is determined with reference to workforce supply and demand and remuneration standards on the market. The pay is to be superior to the basic wage specified in the Labor Standards Act, with reference to the duty, education background, length of service in related fields, market workforce demand, and the pay of current CSC employees of the same position and with similar lengths of service. The starting point for basic level employees and professional level employees is 28,500 and 38,400 TWD per month, respectively. After the 3-month trial, the wage is adjusted with reference to the employee's past work experience and current work performance.



# 6.2.2 Welfare



CSC Employee Welfare Committee is comprised of 27 members from the employers and employees, which sets welfare facilities. CSC Employee Welfare Section handles welfare services and conducts satisfaction investigation; the average score for satisfaction was 83.9 in 2018.

CSC subsidizes employee family activities every year through departments in the company. In 2018, there were 43 clubs in CSC Employee Welfare Committee; employees are encouraged to join employees' clubs for work-life balance and social involvement. CSC also holds collective wedding ceremonies and factory celebrations for employees regularly to increase cohesiveness between colleagues.

## 🎓 Employees Residence

As a result of CSC Group taking care of its employees, especially newcomers who are not homeowners, and the group policy for land resource activation, CSC Group subsidiary company CPDC started a development project of 4 residential buildings by China Steel Building.

The footage of each unit is 138 to 185 square meters. In order to considerate for all members in CSC group, the selling quota provided to employees depends on the proportion of employees in each CSC group company.



# 6.2.3 Services for Retired Employees

In response to the coming retirement wave, CSC Retirees Services Section was established in 2011 to provide retirees services regarding health, finances, partner, leisure, and friendship. CSC Retirees Services Section mainly supports soon-to-be-retiring employees to recognize their rights and plan a balancing life after retirement. For retirees to contribute to society, the Retirees Services Section encourages them to attend senior citizens learning centers or voluntary activities. In addition, CSC Retirees LOHAS Society was established in 2014 by CSC Group retirees for healthy lifestyles and social welfare activities.

For more details thttps://www.csc.com.tw/csc\_e/hr/csr/em/em11.htm

Item	Content	Achievements in 2018
Retiree Talent Pool	Utilization of specific expertise of retirees for CSC and subsidiaries	<ul> <li>127 retirees newly enlisted in the retiree talent pool after evaluation</li> <li>Retiree talent pool accumulative total 650 retirees</li> </ul>
Retirees LOHAS Seminar		2 sessions, 516 participants
Farewell Party	Assistance for life management after retirement	<ul> <li>4 sessions, 554 participants</li> <li>Subsidized total 1.9885 million TWD Farewell Party fund.</li> </ul>
Finances	CSC Stock Ownership Trust Committee for retired employees	>>> Accumulative total 115 members
Volunteers	Assist CSC and CSC Group Education Foundation for company's events and environmental education activities	<ul> <li>2 training sessions, 120 participants</li> <li>93 volunteers participated, attending</li> <li>62 environmental education touring bus activities</li> <li>Accumulative total 130 volunteers</li> </ul>
Partner, Leisure, and Friendship	Invitations to CSC activities , such as company anniversary fair, group recreation and hiking activities, monthly retiree birthday parties	<ul> <li>Anniversary Celebration, 1,950 participants</li> <li>Group recreation events, 4 times 358 participants</li> <li>Hiking activity, 1 time, 355 participants</li> <li>12 Birthday parties, 1,129 participants</li> </ul>
Health	In October, we cooperate with regional hospital to accept retirees and relatives to the company's clinic for health check-up services	1 time, 37 participants
CSC Retiree Website	Provide CSC latest information to keep the company in touch, such as: retirement rights, company's news, travel and recreation activities, health and knowledge learning	Inform the retirees the login path of the website (or through the QR code), welcome to check the company's latest information

### **Special Topic**

# MAKES CHINA STELL CORP.LIKE A HOME WITHENTHUSIASTIC SERVICE BY HEART

CSC employees have been doing their best within the works for a long time, they are the important partners in the way for CSC's growth and prosperity. The company welcomes colleagues to participate in related social activities after retirement, and organize the retirees to care for the CSC family jointly.

Among them, the "Environmental Education Touring Bus" held by CSC Group Education Foundation is the most popular activity to children of different ages. It invites retired colleagues to be volunteers to learn new things in the courses, spreading the seeds of environmental education to the children in rural areas. Not only find the retirees an active lifestyle after retiring, but also enrich their life by providing enthusiastic services to care about the local education and society.

In the face of the coming retirement tide, all departments in CSC are committed to the succession of the work, and with four major strategies to respond to the practical and steady progress.

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The four major strategies to deal with retirement tide are as follows: Inventory the Understand the current situation of manpower, recruit and train management positions early Record daily operation procedures Construct a and abnormal condition processing steps, compiled the data into a nanagemer platform knowledge base One-year coaching by a senior colleague to a newcomer Retirement of skilled and enthusiastic Organize the retirees are included in the talent pool retiree talent pool to provide advice to the group for engineering or technical solutions.

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# 6.3 Employee Rights

# 6.3.1 Human Rights Management

CSC sets humanity management as its foundation of management and enthusiastically protects and improves human rights. To ensure the citizenship and labor rights of its employees, CSC signs collective agreement and conducts safety and health programs. CSC considers human to be an important resource and provides a friendly working environment with human rights protection. CSC adheres to domestic and international codes on labor and human rights to treat and respect all employees equally. Practices include: Establish labor conditions with reference to relevant laws and regulations; Ensure diversity and equal opportunities for all jobseekers with reference to the Employment Services Act; Establish the Employee Rewards and Punishment Review Committee to review major rewards and punishments of employees; Establish the Workplace Sexual Harassment Prevention, Grievance, and Disciplinary Action Regulations to provide employees to appeal infringement of legal rights to work and inequality in treatment. All new employees are subject to trainings on human rights, and all employees have received such trainings. 1,540 persons (14.88% of all employees) received a total of 1,975 hrs trainings on human rights in 2018. In 2018, there was no discrimination or complains and no violation of human rights laws and regulations.

# 6.3.2 CSC Labor Union

A healthy labor union can speak for employees and make suggestions for the company, so as to strive for a decent work environment, benefits, and career development for employees. The labor union helps to promote balanced development of business operations and extend social involvement of the company. CSC Labor Union was established on 30 Dec. 1980 with members from each department, except for top management. The Union aims to promote business development from the labor's point of view, to urge unification among members, to protect the rights and benefits of members, to improve the living of members, and to enhance competency.

### **Union Organization Framework**

The Delegate Congress is the highest authority of the Union, with 100 delegates elected by members from departments in each plant site. The Board of Directors with 27 directors elected by delegates is the highest authority during the adjournment. The Steering Board with 9 members elected by delegates is set to supervise the Board of Directors. The president for the Steering Board is elected from and by members of the Steering Board. The chairman is directly elected by all members to represent the Union and to administer routine union affairs. The Secretariat and 8 functional groups implement union affairs. Membership is compulsory for all qualified employees; excluding managers of certain sections.

	2014	2015	2016	2017	2018
Members	10,017	10,163	10,193	10,132	10,329
Membership Rate	99.11%	99.14%	99.15%	99.12%	99.26%

### **Collective Agreement**

CSC values employer-employee relationship. To maintain unobstructed communication channels, to ensure fair and decent labor conditions, to provide a dependable reference, and to develop a stable and harmonious relationship, CSC signed the 1st Collective Agreement with CSC Labor Union on 4 Feb. 1997. This set a milestone for employer-employee harmony and settlement of affairs. With articles and concept superior than relevant legal requirements, CSC's Collective Agreement has since become a benchmark for other labor unions. In 2014, the 4th Collective Agreement was signed on 5 Dec. to further protect the rights and benefits of both parties, enhance work efficiency, and improve employer-employee harmony. Protection for the health and safety of employees was also specified. To accommodate the legislative changes, amendments to articles 23rd and 25th of the Collective Agreement were made on 30 Dec 2016 and became effective on the next day. The first round negotiation of CSC and the Union on the 5th Collective Agreement has completed on 7th Dec 2018 after 16 conferences.



### **Union Organization Framework**



### Involvement in Corporate Governance

CSC holds periodic employer-employee meetings and helps the Union to get a directorship on the CSC Board of Directors. Since 31 May 2001, industrial democracy is realized as an employee representative has been on the Board to participate in company decision-making and to provide labor perspective. The Union also participates in the Human Resources Development Committee and in the Employee Rewards and Punishment Review Committee.

### Pursuit of Labor Rights and Benefits

The Union pursues labor rights and benefits with rational and peaceful means, including employer-employee meetings, seminars with directors and management, and collective bargaining. In 2018, no major employer-employee dispute was reported.

### **External Exchange and Cooperation**

The Union has exchanged with, visited domestic and international trade unions on a regular basis, and engaged in frequent exchange with leading domestic labor unions. The Union has participated in the Labor Day Parade organized by the Taiwan Confederation of Trade Unions in northern Taiwan many times to express the concern and to speak for workers.

# 6.4 Occupational Safety and Health 6.4.1 Occupational Safety

The sound of labor is related to national development. The management quality of occupational health affects the safety and health of labor, so countries around the world are increasingly stricter with occupational safety and health requirements. The UN adopted the 2030 Agenda for Sustainable Development and its 17 SDGs in September 2015. "Occupational Safety and Health" is one of the goals to achieve worldwide. It shows that good occupational safety and health management is one of factors for corporate sustainability.

The occupational safety and health management in CSC is mainly with occupational safety and health management system (OHSAS 18001& Taiwan Occupational Safety and Health Management System (TOSHMS)). The "Occupational Safety and Health Committee (OSH Committee)" also convenes meetings regularly to improve the performance indicators. There are two performance indicators for assessing the situation of occupational safety and health. One is active indicator like near miss presentation or proposal of safety and health. The other is passive indicator like accident experience, administrative sanction or audit result. Some measures practicing in CSC are better than national regulations such as "The frequency and items of health examination for employees" and "Request all employees to take the somatosensory training of Occupational Safety" in order to increase employees' safety awareness and promote health caring.

### **CSC Safety Culture**

The best safety management is everyone has safety concepts and knowledge in their mind, so that they will be confirmed for safety matters before work. Employees are inspired to improve environment and equipment by Employee Suggestion Program and Quality Control Circle. Employees and contractors discuss safe job procedures together to formulate and follow it. In this way, each worker is involved in work safety issues, and pays attention to occupational safety.

Safety culture is a multi-oriented concept. CSC's safety culture is composed of the following three aspects.

Policy	Safety policy statement, organization management, and resources provision.
Management	Building the corporate system framework by with responsibility, control of safe practices, licenses and training, rewards and punishment, audits, improvement results, and promotion of safety concerns plans.
Individuals	Changing employee safety concept and improving personal safety culture with trainings, employee involvement, safety concerns, health caring, and interactive communication.

### Safety and Health Management System

For continual improvement on our management in occupation safety and health, the occupational safety and health management system (OSHMS) was introduced to CSC in 2000, obtaining certifications on OHSAS 18001 (2002) and TOSHMS (2008) from third party as well. The internal audit of the TOSHMS/OHSAS 18001 system was completed in March 2018 with zero nonconformity and 52 recommendations which had been improved with corrective and preventive actions by related departments. As a result, the continual certification was obtained from the external auditor (BSI) in July 2018.

The scope of safety and health management system is all employees and workers in CSC. Contractors have to follow the CSC safety regulations as well. Each department shall take hazard identification and risk assessment first and do some corrective actions according to the result. Furthermore, the actions would be checked the effectiveness through performance indicators.







### **Health and Safety Management Procedure**

### **Occupational Safety and Health Committee**

The OSH Committee is set up for effective discussion to practical solutions. CSC President serves as the Chairman, the Executive VP serves as the vice chairman in the committee. There are 15 representatives from CSC Labor Union, account for 34% of all committee members. The Committee holds bi-monthly meetings and disclosures OSH management performances at the shareholder annual report for public review.



### **Intrinsic Safety**

Workplace safety is essential fundamental to ensure workers safety. To implement and improve equipment intrinsic safety, CSC established facility safety guidelines with reference to national and international standards, including ISO standards for machinery safety, IEC specifications, European standards (EN), and the national standards "Chinese National Standards (CNS)." These facility safety guidelines aim to identify hazards and assess risks. While planning the design of equipment is underway, CSC and equipment contractors should follow basic safety design principles and take relevant safety conditions and safety of machinery as consideration.

### **Management of Change**

Accidents often occur when there are significant changes in personnel or working conditions. Therefore, it is crucial to establish a Change Management System. The management of change in CSC focuses on ensuring all changes go through a hazard identification and risk assessment process. With respect to the result of the assessment, we would implement appropriate measures to maintain the safety of all manufacturing processes, activities, and services.

### Legal Compliance

The OHSAS 18001 management system requests company commitment to legal compliances and identification of relevant laws and regulations. CSC distributes relevant EHS legal requirements to related departments for identifying applicable and precautionary measures. In 2018, there are 40 on-plant inspections conducted by Kaohsiung Labor Standards Inspection Office (KLSIO) and 8 notices were issued.

	2014	2015	2016	2017	2018
Issuer	KLSIO	KLSIO	None	KLSIO	KLSIO
Counts / Fine (TWD)	2 / 120,000	2 / 120,000	0	2 / 120,000	8 / 910,000

There were total 8 penalties from KLSIO, most of them are due to insufficient management to contractors. Analyzing the reasons that it did not achieve the safety and health goals in 2018. Measures below have been implemented.

### >>> Enhance management of contractors

For reduce accidents, departments have to examine and audit their contractors who had more than 2 accidents last year. Supervisors in CSC are requested to communicate with field supervisors from contractors quarterly.

### >> Increase the frequency of inspection

The result of inspections by Safety & Hygiene Department with 1,663 conformity, 349 recommendations and 308 nonconformity which had been improved with corrective and preventive actions by related departments. We will increase the frequency of inspection for helping management and improvement of occupational safety and health.

Safety & Hygiene Department has monthly inspected workplace which are identified high-risk operation or annual repair. The goal of inspecting frequencies will be raised to 25 times a week in 2019.

### >>> Enhance safety and health management

We will take many activities like "Activities of Traffic and Safety & Health", "Activities of Five Directions Check for Safety "and "Activities of Patrol by Senior Executive" continuously and make immediate reviews of occurring accidents to strengthen our safety management.

### Training, Education, and Publicity

As most accidents occur out of human negligence, how to train employees to avoid negligence at work has become the focus of CSC EHS education and trainings. The computerized safety and health training management system allows instant updates of data and online enquiries, thus making safety and health training's control and auditing more effective. In addition, bottom-up Safety SOP Revision activities are held for employees and contractors, also combined with zerodisaster danger recognition trainings. Through communication to reach consensus, elevating members' capability of hazard identification and for the ultimate goal of occupational accident prevention.

CSC sets up a training classroom for somatosensory train of occupational safety in 2009. By designing a similar environment and equipment situation, employees can experience reality in person so that they could understand the hazard existed in workplace. Besides, employees in CSC are requested to take the somatosensory train of occupational safety. The training rate is 95% for all employees and it is 100% for newcomers.



### Industrial Safety Trainings, 2018

Trainee	Course	Classes	Persons
	Radiation protection and detection Training	4	403
	Somatosensory Safety Training	75(5 types)	830
Employees and	Transportation Safety Training	6	601
Contractors	Act of Safety Information for Machinery, Equipment and Tools Seminar(including CSC group)	3	242
	Anti-backfire Device Seminar	2	182
	TOSHMS/OHSAS 18001 Lead Auditor Training	1	44
	ISO 14001/TOSHMS/OHSAS 18001 Internal Auditor Training	2	66
Employees	Classification of Hazardous Areas(Explosive Gas) Seminar	4	161
	Occupational Safety and Health Act	67(10 types)	2,415
	Safety Inspection of Hazardous Machines and Equipment Seminar	4	362
0	Contractors' personnel training for pass application.	42	2,037
Contractors	Transportation Safety Training for heavy vehicle driver	2	128

### **Work Environment Inspection**

By the "Regulations for Implementing Work Environment Monitoring", CSC entrusts the monitoring agency which is recognized by Occupational Safety and Health Administration to implement work environment monitoring. We evaluating whether or not it acts in compliance by monitoring report. To protect workers' health, CSC improves work environment immediately when there was abnormal value in the report. In 2018, work environment inspection was completed on 3,275 testing points (including areas and personnel), all following the inspection plan. Subjects for inspection include noise, wet bulb globe temperature (WBGT) index, carbon dioxide, chemical substances, and dust.

### **Emergency Drills**

To improve emergency response and to prevent personnel injury, property loss, and environmental impact, each plant organizes emergency drills designed for their specific needs. In 2018, 6 emergency drills were held CSC corporate-wide, including utilities failure emergency drill, emergency drill for liquid ammonia leak of sinter plants, emergency drill for COG holder leak, emergency drill for #1 LDG holder leak, emergency drill for ammonia holder leak and emergency drill for #2 LDG holder leak.

Description of Emergency Drill	Date
Emergency drill for COG holder leak	2018.04.13
Utilities failure emergency drill	2018.07.19
Emergency drill for #1 LDG holder leak(Corporation level)	2018.10.12
Emergency drill for Blast Furnace Gas(BFG) leak of No. 2 Blast Furnace	2018.10.18
Emergency drill for #2 LDG holder leak	2018.11.23
Emergency drill for liquid ammonia leak of sinter plants	2018.11.30

### **Abnormality Control and Prevention**

### >> Safety Observation and Audit

For early detection and correction of unsafe work behavior and improvement of work environment and equipment, site managers are asked to patrol work sites regularly. Employees, contractors, and the work environment are reviewed with reference to the 5-step procedure: Decide, Stop, Observe, Act, and Report which are subject to timely encouragement and correction. For safety violations, employees and contractors are requested to immediate correction without affecting operation safety. In 2018, safety observation and audit of site by managers (including site inspection) totaled 38,634 times.

### >> Near Misses

After a near miss occurs, the responsible department, personnel, or contractor should register the near miss at Near Miss Report Registration on the CSC EIP online system. After the approval of section or plant manager, the case is referred to the Occupational Safety and Hygiene Dept. for confirmation, documentation, publication, or announcement on the EIP. In 2018, 1,700 near misses were reported. Potential hazards were reviewed and improved for prevention.

### >> Prevention of Occupational Diseases

There are some health hazards such as high temperature, noise and dust are inevitable in the production process of traditional industries. Safety & Hygiene Department and the diplomate with occupational medicine will have a workshop visit when it has abnormal situation. Through training, personal protective equipment and inspection, etc. The risk of exposure to health hazards is greatly reduced. There were no cases of occupational diseases among employees in the past five years.

Note: Occupational disease is determined by the Occupational Safety and Health Administration (OSHA), Ministry of Labor. For more details thttps://www.csc.com.tw/csc\_e/hr/csr/em/em5.htm

### Absence and Disabling Injury

In 2018, 30 minor workplace injuries, 23 disabling injuries, 18 minor commute injuries, and 18 traffic-disabling injuries were reported. Four of the 23 disability injuries were fatal. The accidents were reviewed and improved. The days of labor loss of the contractors is difficult to track, so the disability severity and the amount of traffic accident were not including contractors. For related departments, there are continual improvement measures being implemented, including reinforced physical training, management by walking around, occupational safety diagnosis, near miss reporting management, 5S self-management, self-protection, mutual protection, and mutual supervision. Bottom-up occupational safety activities are arranged with base-level employees or in collaboration with CSC Labor Union team leaders in order to reduce the workplace accidents.

	Absence hours	Sick leave hours	Absence days <sup>i</sup>	Absent rate (AR) <sup>"</sup>	AR	Count of disability	Disabling Frequency rate (FR)	FR
Male	42,272	99,661	141,933	0.66%	0.70%	7	0.33	0.00
Female	796	5,559	6,355	0.94%	0.70%	0	0	0.32

### **Employee Disabling Injury Statistics & Absent Rate, 2018**

Note: I. Working hours are 21,382,224 hrs (2,672,778 days) for male and 673,702 hrs (84,213 days) for female. II. Absent rate = Absence hours÷Working hours x 100%



	2013	2014	2015	2016	2017	2018
Employee F.R.	0.28	0.51	0.28	0.28	0.27	0.32
Employee S.R."	14	578	16	153	10.47	548
Contractor F.R.	0.59	0.54	0.78	0.67	0.40	0.78

Note: I. Disabling Frequency Rate (F.R.) is the times of disabling per million work hours, disabling times x 1,000,000 ÷ total work hours during the year.

II. Disabling Severity Rate (S.R.) is the times of disabling per million work hours, disabling days x 1,000,000 ÷ total work hours during the year.

### **Disabling Injury by Category, 2018**

	Falling	Pinch	Scald	Collision	In-plant Traffic Accidents	Falling Object	Objects drop
Employee	2	2	0	1	2	0	0
Contractor	6	0	1	3	1	4	1

### >>> Employee Commute Traffic Accidents

To prevent traffic accidents during employee commute, CSC advocates traffic safety by promoting preventive driving, recommending public transport, and offering shuttle buses. Employees who are potential with high risk in commute such as motorcycle riders or been fined due to violate traffic regulations subject to be reminded traffic safety awareness by their supervisor. To eliminate traffic blind spots in the plant, related departments are requested to submit at least 5 traffic improvement plans each year.

# 6.4.2 Health Care

CSC has developed a Safety and Health Management System, which can make clinic appointments and receive health exam reports. In addition, by recognition of high-risk tasks and special environments, we arrange special health exams annually to survey any occupational health problems.

### **Health Examination Procedures**



### **Health Examination**

CSC Clinic is composed of experienced medical professionals with new equipment. It provides employees with early diagnosis and proper treatment. All employees receive routine health exam annually. If there are any abnormalities in the laborers, medical personnel shall provide the laborers with health guidance. For employees work in special environments such as high temperature, noise, lead, dust, and organic and special chemicals, additional health exam items will be arranged. In 2018, 4,326 employees received these additional exams, 1 of whom was included in level 4 health management and were evaluated by occupational medical professionals.

### Care for Employees' Health

CSC Clinic reminds employees to change the lifestyle or receive treatment according to the results of health exam, including assistance in registration and transference to medical center. Experts are also invited to survey the working environment hazards data to identify any occupation-related health problems. In 2019, hyperlipidemia is our topic. We would try to lower the rate of hyperlipidemia group by diet control and sports instruction.

### >> Psychological Counseling

CSC arranges Psychological counselor to provide on-site counseling service since 2014. The number of consultations is 268 in 2018. The consultation topics are mostly family, workplace and physical diseases. Human Resources Dept. provides counseling courses to enhance middle-level managers care of employee mental health. Besides, every department holds communication meetings with employees and representatives of the Union.

### >> Health Management

Employee and contractor personnel are under CSC Clinic's service. In 2018, a series of health promoting activities were held with 5,683 participants. Among the weight losing classes, 618 persons joined and 268.2 kg were reduced in total.



### **Participants of Health Promotion Activities**

Projects	2014	2015	2016	2017	2018
Physical Fitness	606	1,382	914	418	386
Health Lecture Series	902	607	560	756	1,388
Flu Vaccination	402	420	776	783	806
Weight Loss Plan	553	203	493	384	618
Women's Cancer Screening	409	482	490	516	556
Oral cancer screening	42	136	48	1,205	439
Body Fat Measurement	515	487	395	588	634
Others (Nutrition counseling, Sports instruction, High class health checkup, cardiovascular screening, blood donation, etc.)	572	719	691	779	856
Total	5,527	5,322	4,258	4,210	5,683

# **Social Participation**

- 7.1 Concepts and Management
- 7.2 Local First
- 7.3 Diversified Social Involvement
- 7.4 CSC Group Education Foundation

# 7.1 Concepts and Management 7.1.1 Principles



# 7.1.2 Expenditures of Social Responsibility

new talent in steel-related fields





# 7.2 Local First

## 7.2.1 Community Care

To fulfill its corporate social responsibility, CSC has continued to take action to provide care and assistance to the nearby communities for their development and sponsor charitable activities in Hsiao Kang for decades. It upholds the concept that what is taken from the society must be returned to it, and sincerely takes concrete action to care about and contribute to the society, communities, and disadvantaged groups from the aspects of environment protection, community care, and charity.

### The following are the activities held by CSC:

CSC sponsors equipment and facility upgrades to enhance the students' learning efficiency and greening of the elementary schools in Hsiao Kang to slow down global warming.

>> CSC also sponsors various social activities for the communities and associations in Hsiao Kang.

- >> CSC offers funds for social relief of emergencies and gifts of money during the Taiwan traditional festivals to assist low-income families in Hsiao Kang.
- According to "the Guidelines for new recruitment", the candidates who are Hsiao Kang residents are given a certain percentage of bonus points in their written tests when applying for positions in CSC.

>>> CSC provides scholarships for meritorious students and tuition assistance to students from disadvantaged families in Hsiao Kang.

>>> CSC organizes activities for underprivileged groups to foster public care.

- >> Movies are shown on Saturdays and recreational facilities are open to local residents; they are also invited to participate in CSC's anniversary celebrations.
- >> To promote the level of local education, approximately 1,400 graduating elementary school students from 13 different schools in Hsiao Kang are invited to take part in the yearly "Steel Journey Activity" held by CSC to enhance their understanding of science and the environment.
- CSC assisted the upgrades of teaching facilities in 12 junior high schools and elementary schools, including Siaogang Junior High School and Guelin Elementary School.
- To celebrate Mother's Day and promote filial piety as well as local education and culture, CSC invited about 200 students from 17 junior high schools and elementary schools to participate in the 2018 Ceremony for Recognition of Filial Piety and Granting of Meritorious Scholarships.

# 7.2.2 Eco-city

Full content thtps://www.csc.com.tw/csc\_e/hr/csr/soc/soc3.htm

### Afforestation and Greenery

CSC participates in River Watch of the KSEPB to patrol Yanshuigang River 3 times a day. In 2018, CSC was awarded with 2018 Annual Water Environment Patrol Award from KSEPB and 2018 Annual Water Environment Patrol Award from EPA.

In addition, CSC sponsors the greening and beautification of roads in Kaohsiung City. For China Steel head office, the green building concepts were incorporated from the design stage. These include eco-friendly design of multidimensional greening with 29 native plant species and quality of greening. The Building is certified as a diamond-class green building by Ministry of the Interior.

3 For the plant site, CSC enriches the ecosystem with trees, shrubs, and vegetation for multilayer greening, and building

roofs and walls are included for total greenery and beautification. Green area on the CSC plant site totals at 44.2 hectares, with a greening rate at 8.39%. These plants can reduce up to 6,044 tCO<sub>2</sub>e every year. CSC is not located in or near ecological reserves, yet CSC has built an environment for biodiversity. CSC Bird Watching Club has observed 3 mammal species, 5 amphibian reptile species, 1 reptiles species, 34 insect species, 1 annelid species, 3 fish species, and 80 bird species living on the plant site. The efforts on biodiversity help to improve the ecosystem in local community (Hsiao-Kang District).

### **Greening Activities**

Item	2015	2016	2017	2018
Greening area (m <sup>2</sup> )	444,236	443,928	440,670	442,103
Greening rate	8.43%	8.42%	8.36%	8.39%
Trees	16,692	16,715	16,633	17,217
Shrubs	1,655,660	1,669,714	1,696,208	2,019,542
Trees and shrubs per hectare	3,173	3,200	3,250	3,864
Lawn (m²)	180,066	180,086	181,830	182,510
Vegetation (m <sup>2</sup> )	243,684	242,859	237,787	236,283
Resident and migratory birds (species)	80	80	80	80
CO <sub>2</sub> e reduction <sup>1</sup> (t/year)	5,116	5,170	5,228	6,044

Note: Calculated based on research report by National Pingtung Univ. of Science and Technology, 2008.

# 7.3 Diversified Social Involvement

# 7.3.1 Diversification

Category	Responsible Department	Work
Central and local public affairs	the Public Affairs Department	<ul> <li>Good neighborliness, social care, and participation in emergency relief</li> <li>Positive interactions between legislators, administrative agencies, the media, and opinion leaders</li> </ul>
Social education	CSC Group Education Foundation	<ul> <li>Promotion of educational activities related to steelmaking and its application technology</li> <li>Sponsoring activities regarding science and technology, social education, arts and culture, etc.</li> </ul>
Social care and art activities	CSC, the CSC Group Education Foundation, the CSC Labor Union, and employee clubs	<ul> <li>Post-disaster emergency relief and reconstruction</li> <li>Caring for the disadvantaged</li> <li>Caring for the ecological environment</li> <li>Enhancement of humanistic quality and cultivation of art in Kaohsiung</li> </ul>
Human rights and workforce development	Human Resources Department	<ul> <li>Negotiation for decent work environment policies</li> <li>Share of knowledge</li> </ul>
Safety and health	Industrial Safety and Health Department	<ul> <li>Prevention of occupational accidents and epidemic diseases</li> <li>Domestic and international exchanges</li> </ul>



# **7 SOCIAL PARTICIPATION**

Cotogory	Responsible	Work
Category	Department	WOIK
Labor policy		>> National labor rights, benefits, and welfare policies
	CSC Labor Union	>>> Exchanges, collaboration, and interactions with other union groups
Environmental protection	Utilities Department and Environmental Protection Department	<ul> <li>Energy Saving Service</li> <li>Promote knowledge exchange on environmental protection through visits</li> </ul>
Advice for public policies	Departments	<ul> <li>CSC collates the experiences of advanced countries and hosts open forums with the industry, the government, and academia. Through representative institutes and associations, CSC contributes advice on regulations and policies.</li> <li>For more detail</li></ul>

# 7.3.2 Volunteer Groups

CSC employees actively volunteer for external organizations. The CSC Caring Club is registered at Kaohsiung City Social Welfare Bureau as a legal group under the name of Kaohsiung City Charity Association and has participated in various community activities, services, and reliefs.

# 7.4 CSC Group Education Foundation

Based on the standpoint of "holistic education", the CSC Group Education Foundation plans relevant programs and activities which cover participants from elementary schools, junior and senior high schools, undergraduate and graduate schools, and the general public. In addition to promoting education and talent nurturing in the steel-related fields, the Foundation also promotes the general public's environmental awareness by caring about the ecology and enhances humanistic quality.





# Use of funds by the CSC Group Education Foundation in 2018



Promotion of sustainable development of the environment 6.33

Expanded activities related to steel

1.25

Grants to the nurturing of research talent

1.81

Administrative expenses

0.68
## Steel-related programs and activities

## Scholarships for steelmaking process programs and talents

Students from National Taiwan University, National Tsinghua University, National Cheng Kung University, National Sun Yat-sen University, and National Chung Hsing University participated in the selection. Furthermore, CSC has continued to offer special topics on steel and iron processing, brought college students to visit CSC's production lines.



CSC Camp Over 200 students registered / 80 were selected

The theme of the camp was "Run, CSC!" in 2018. It focused on the importance and applications of steel in our daily lives. By visiting the upstream and downstream sectors of the steel industry, the participants became more aware of the relationship between steel and people. It was hoped that the participants would be attracted to engage in metal-related industries in the future.



## Sponsored the seminars on steel and environmental protection technology

Approximately 1,100 representatives from the industry, government, and academia.



The topics included the development and application technology of hot stamping steel, metallographic analysis technology of steel, engineering technology of the steel industry, electrical steel technology, welding technology and so on. CSC has been dedicated to promoting the R&D technology of the domestic steel industry.

## Steel Journey Activity

13 schools / 6 sessions / 1,400 students



The students visited the wholly-integrated steel mill and participated in the elaborate Q&A games, which focused on environmental education and promotion of the reutilization of blast furnace slag, making steel knowledge more diversified and lively.



## **7** SOCIAL PARTICIPATION

## High schools and Universities

## 2018 Engineers Week

4 sessions / over 600 participants

In collaboration with IBM, CSC held the 2018 Engineers Week (EWeek) with the theme "Hands-on Science and Creations of Robotic Arms". The activity not only broadened the students' horizons but also stimulated their potential with the "Try Science" approach. The students were divided into groups for game competitions to enhance their interests in information machinery.



## Social lectures

### 6 lectures / over 3,500 audiences

CSC worked with United Daily News to give high school students social lectures on humanities. Speakers, including Shi-ming Liu, Ding-yi Hu, Yoyo Yang, Da-cheng Kao, An-ting Liu, Cheng-chung Wang, etc., were invited to give speeches in schools.





## Elementary schools and Junior high schools

## **Environment Education Touring Bus**

Environment Education Touring Bus has been out 59 times with 93 environmental education volunteers to conduct interactive lectures on biomass energy, wind power, and water cycle applications for more than 6,300 students/times in rural schools in southern Taiwan. With real experiences, the participants learned about the basic knowledge of environmental education and also developed an interest in popular science, the bus toured Kaohsiung, Pingtung , and Tainan in 2018.





## SROI Initial Cacluation - Environment Education Touring Bus

In 2018, CSC uses external tools to measure social projects perfomance in 2018:

SORI is used to caculuate the real benifit and influence of "Environment Education Touring Bus" project to society. Interview and negotiation with stakeholders are used to price and evaluate the benifit of the project. Marstering the Social Value Projected by the Project through the Predictive Assessment Methodology.

Time frame : 2018/09-2019/06 (2 semesters) Stakerholders : Students, Volunteers

### Expected Outcomes

Develop and enhance students' concepts and conscious of environmental protection, and implement energy saving and carbon reduction in daily life.

Make environmental science more interesting and understandable through personal guidance and explanation.

Interactive and Practical Teaching experience can improve the effectiveness of learning.

### Unexpected Outcomes

Volunteers gained a sence of achivement and happiness after through participation.

### Future Improvement Directions

More daily-life-related issues can be added to the teaching materials so that more practical practies can be incorporated into life.

Enhance teaching methods and materials, to build the students' ability of creative thinking and there exposure to science.

Further trace the impacts on students after participating in the campaign. CSC can also create more opportunties for fro teachers to engage in the campaign.

### **Future Improvement Directions**

In the future,SORI calcuation will continue to be refined with a view to establishing follow-up project effectiveness tracking and improvement.

## **Eco-education camp**



(with accumulated 1,720 participants / times in total) In 2018, the camp was held in the National Museum of Marine Biology and Aquarium (NMMBA). Disadvantaged students were invited to participate. They walked out of the classroom and thought about the relationship between the environment and human beings again by actually observing the natural ecology and enhancing their learning motivations and knowledge about ecological environment education.





# Environmental education workshop for local teachers

1 sessions / 40 participants

The CSC Group Education Foundation assisted National Kaohsiung Normal University to hold the seminar on "Circular economy - reutilization of blast furnace slag" for teachers from elementary schools and junior high schools. The concept of circular economy was introduced. The participants also toured the CSC plant and the showroom for the applications of blast furnace slag and had a DIY activity with it. Expecting to engrain the sustainable concept of circular economy in their teaching scheme.

## Little environment education instructors training

In collaboration with National Kaohsiung Normal University, little environment education instructors were trained at Shengli Elementary School. Aiming to pass down environment education with the language of students, and a featured curriculum on environment education could be developed for schools.



## 2018 King of Wisdom Summer Camp

The purpose of the recreational camp was to establish the foundation for steel education and circular economy. The activity of making DIY ecological pools was conducted, and so were the prize-winning Q&A sessions.

## Sponsorship

- Donating to Nanan Elementary School's activities for the development of traditional art such as shadow puppetry and performance of Sizhu (silk and bamboo) instruments in order to facilitate to pass down the art and culture.
- Holding a "Creative Sports Rally" with the Kaohsiung Creativity Center to develop students' creative thinking, teamwork, and the ability to solve problems.



## **7** SOCIAL PARTICIPATION

## General public

## Lifestyle lectures

6 lectures / 1,600 participants

In 2018, CSC invited scholars and experts from different walks of life to give humanistic speeches to the general public to enjoy.

## Inspiring lectures

4 lectures / over 600 participants

Organized by Teacher-Chang Foundation, on spiritual growth and parenting topics in 2018.





For more details thttps://www.csc.com.tw/csc\_e/hr/csr/soc/soc.htm



Wheelchairs Concert









# 8 Appendix

Appendix 1 GRI Standards Content Index Appendix 2 Assurance Statement

# Appendix 1 GRI Standards Content Index

## **General Disclosures**

<b>GRI Standards</b>		Disclosure	Page	Chapter	Note				
	Organizational Profile								
	102-1	Name of the organization	1	0.1					
	102-2	Activities, brands, products, and services	40	3.2/3.3	No banned products or services				
	102-3	Location of headquarters	2	0.2					
	102-4	Location of operations	2	0.2					
	102-5	Ownership and legal form	2	0.2					
	102-6	Markets served	40	3.2/3.3					
	102-7	Scale of the organization	5	0.3.1					
	102-8	Information on employees and other workers	84	6.1					
	102-9	Supply chain	54	4.1					
	102-10	Significant changes to the organization and its supply chain	-	No significant change					
	102-11	Precautionary Principle or approach	31	2.4					
	102-12	External initiatives	13	1.3					
	102-13	Membership of associations	60	4.3					
	Strategy								
	102-14	Statement from senior decision-maker	11	1.1					
	102-15	Key impacts, risks, and opportunities	27 \ 32	2.1/2.5					
	Ethics and Integrity								
GRI 102:	102-16	Values, principles, standards, and norms of behavior	13 ` 31	1.2/2.4					
General	Governa								
Disclosures	102-18	Governance structure	29	2.2/2.3					
2016	Stakeholder Engagement								
	102-40	List of stakeholder groups	17	14					
	102-41	Collective bargaining agreements	92	6.3.2					
	102-42	Identifying and selecting stakeholders	17	1.4					
	102-43	Approach to stakeholder engagement	17	1.4/1.5					
	102-44	Key topics and concerns raised	17	1.4/1.5					
	Reporting Practice								
	102-45	Entities included in the consolidated financial statements		2018 Annual Report					
	102-46	Defining report content and topic Boundaries	21	1.5					
	102-47	List of material topics	21	1.5					
	102-48	Restatements of information	-	-	No restatement				
	102-49	Changes in reporting	23	1.5					
	102-50	Reporting period	1	0.1	2018 calendar year				
	102-51	Date of most recent report	-		June 2017				
	102-52	Reporting cycle	1	0.1	Annually				
	102-53	Contact point for questions regarding the report	1	0.1					
	102-54	Claims of reporting in accordance with the GRI Standards	1	0.1					
	102-55	GRI Standards content index	111	Appendix 1					
	102-56	External assurance	117	Appendix 2					

## Topic-specific Disclosures

Material Topics							
GRI Standards		Disclosure	Page	Chapter	Note		
Air Pollutants Management							
	103-1	Explanation of the material topic and its Boundary	21	1.5/5.2.3			
GRI 103: Management	103-2	The management approach and its components	67	5.1/5.2.3			
	103-3	Evaluation of the management approach	75	5.2.3			
	305-6	Emissions of ozone-depleting substances (ODS)	76	5.2.3			
2016	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	75	5.2.3			
Sustainable Developm	nent Stra	itegy					
GBI 103: Management	103-1	Explanation of the material topic and its Boundary	21	1.5/1.3			
Approach 2016	103-2	The management approach and its components	13	1.3			
	103-3	Evaluation of the management approach	5	0.3			
<b>Operating Financial P</b>	erformar	nce					
GBI 103: Management	103-1	Explanation of the material topic and its Boundary	21	1.5/3.1			
Approach 2016	103-2	The management approach and its components	37	3.1			
	103-3	Evaluation of the management approach	37	3.1			
GRI 201: Economic	201-1	Direct economic value generated and distributed	37	3.1.2			
Performance2016	201-4	Financial assistance received from government	39	3.1.3			
GRI 419: Socioeconomic Compliance 2016	419-1	Non-compliance with laws and regulations in the social and economic area	-	-	No violation		
Hazardous Substance	e Manage	ement of Products					
CDI 102. Managamant	103-1	Explanation of the material topic and its Boundary	21	1.5/3.3.2			
Approach 2016	103-2	The management approach and its components	44	3.3.2			
	103-3	Evaluation of the management approach	44	3.3.2			
GRI 416: Customer	416-1	Assessment of the health and safety impacts of product and service categories	44	3.3.2	100%		
Health and Safety 2016		Incidents of non-compliance concerning the health and safety impacts of products and services	-	-	No violation		
Waste Management							
GBI 103: Management	103-1	Explanation of the material topic and its Boundary	21	1.5/5.2.5			
Approach 2016	103-2	The management approach and its components	81	5.2.5			
	103-3	Evaluation of the management approach	81 \ 63	5.2.5/4.4.2			
GRI 306: Effluents and	306-2	Waste by type and disposal method	81 \ 63	5.2.5/4.4.2			
Waste 2016		Transport of hazardous waste	81	5.2.5			
Environmental Policy	/ Manag	ement System					
GBI 103: Management	103-1	Explanation of the material topic and its Boundary	21	1.5/5.1			
Approach 2016	103-2	The management approach and its components	67	5.1			
	103-3	Evaluation of the management approach	67	5.1			
GRI 307: Environmental Compliance 2016	307-1	Non-compliance with environmental laws and regulations	67	5.1			



Material Topics							
GRI Standards		Disclosure	Page	Chapter	Note		
Occupational Safety and Health							
GRI 103	103-1	Explanation of the material topic and its Boundary	21	1.5/6.4			
Management	103-2	The management approach and its components	94	6.4			
Approach2016	103-3	Evaluation of the management approach	94	6.4			
	403-1	Occupational health and safety management system	94	6.4.1			
	403-2	Hazard identification, risk assessment, and incident investigation	97	6.4.1			
	403-3	Occupational health services	98	6.4			
	403-4	Worker participation, consultation, and communication on occupational health and safety	95 \ 57	6.4.1/4.1.4			
CPI 402: Occupational	403-5	Worker training on occupational health and safety	96、58	6.4.1/4.1.4			
Health and Safety 2018	403-6	Promotion of worker health	99	6.4.2			
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	98、57	6.4.1/4.1.4			
	403-8	Workers covered by an occupational health and safety management system	94、55	6.4.1/4.1.4			
	403-9	Work-related injuries	98	6.4.1			
	403-10	Work-related ill health	98	6.4.1			
GRI 419: Socioeconomic Compliance 2016	419-1	Non-compliance with laws and regulations in the social and economic area	96	6.4.1			
Water Management							
	103-1	Explanation of the material topic and its Boundary	21	1.5/5.2.4			
GRI 103: Management	103-2	The management approach and its components	78	5.1/5.2.4			
Approach 2016	103-3	Evaluation of the management approach	78	5.2.4			
	303-1	Interactions with water as a shared resource	78	5.2.4			
	303-2	Management of water discharge-related impacts	80	5.2.4			
GRI 303: Water and	303-3	Water withdrawal	78	5.2.4			
Effluents 2018	303-4	Water discharge	78	5.2.4			
	303-5	Water consumption	78	5.2.4			
GRI 306: Effluents and Waste 2016	306-1	Water discharge by quality and destination	80	5.2.4			
GHG Emissions Mana	gement						
	103-1	Explanation of the material topic and its Boundary	21	1.5/5.2.2			
GRI 103: Management	103-2	The management approach and its components	73	5.1/5.2.2			
Approach 2016	103-3	Evaluation of the management approach	73	5.2.2			
	305-1	Direct (Scope 1) GHG emissions	74	5.2.2			
GRI 305: Emissions	305-2	Energy indirect (Scope 2) GHG emissions	74	5.2.2			
2016	305-3	Other indirect (Scope 3) GHG emissions	74	5.2.2			
	305-4	GHG emissions intensity	6	0.3.1			
Labor / Management F	Relations						
GPI 103: Management	103-1	Explanation of the material topic and its Boundary	21	1.5/6.3			
	103-2	The management approach and its components	92	6.3			
Approach 2016	103-3	Evaluation of the management approach	92	6.3			

Material Topics							
GRI Standards	Disclosure		Page	Chapter	Note		
GRI 402: Labor/ Management Relations 2016	402-1	Minimum notice periods regarding operational changes	86	6.1.3			
GRI 406: Non- discrimination 2016	406-1	Incidents of discrimination and corrective actions taken	84、92	6.1.1/6.3.1			
GRI 407: Freedom of Association and Collective Bargaining 2016	407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	-	-	0		
GRI 408: Child Labor 2016	408-1	Operations and suppliers at significant risk for incidents of child labor	-	-	0		
GRI 409: Forced or Compulsory Labor 2016	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	92 \ 55	6.3.1/4.1.4	0		
GRI 412: Human Rights	412-1	Operations that have been subject to human rights reviews or impact assessments	92	6.3	100%		
Assessment 2016	412-2	Employee training on human rights policies or procedures	92	6.3			
GRI 419: Socioeconomic Compliance 2016	419-1	Non-compliance with laws and regulations in the social and economic area	-	-	No violation		
R&D/Product Quality							
	103-1	Explanation of the material topic and its Boundary	21	1.5/3.3.1/3.3.3			
GRI 103: Management Approach 2016	103-2	The management approach and its components	42 \ 46	3.3.1/3.3.3			
	103-3	Evaluation of the management approach	42 \ 46	3.3.1/3.3.3			
Energy Management							
<b>ODI</b> 400 <b>N</b>	103-1	Explanation of the material topic and its Boundary	21	1.5/5.2.1			
GRI 103: Management Approach 2016	103-2	The management approach and its components	70	5.1/5.2.1			
	103-3	Evaluation of the management approach	70	5.2.1			
	302-1	Energy consumption within the organization	72	5.2.1			
GRI 302: Energy 2016	302-3	Energy intensity	72	5.2.1			
	302-4	Reduction of energy consumption	72	5.2.1			
Employee Wages and Benefits							
	103-1	Explanation of the material topic and its Boundary	21	1.5/6.2			
GRI 103: Management Approach 2016	103-2	The management approach and its components	88	6.2			
	103-3	Evaluation of the management approach	88	6.2			
GRI 201: Economic	201-1	Direct economic value generated and distributed	88	6.2			
Performance2016	201-3	Defined benefit plan obligations and other retirement plans	89	6.2			
GRI 401: Employment 2016	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	89	6.2			
GRI 405: Diversity and Equal Opportunity 2016	405-2	Ratio of basic salary and remuneration of women to men	88	6.2			



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Talent Recruitment and Retention					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	21	1.5/6.1	
	103-2	The management approach and its components	84	6.1	
	103-3	Evaluation of the management approach	84	6.1	
GRI 401: Employment	401-1	New employee hires and employee turnover	84	6.1	
2016	401-3	Parental leave	86	6.1.3	
GRI 405: Diversity and Equal Opportunity 2016	405-1	Diversity of governance bodies and employees	30、85	2.3/6.1.2	

Non-material Topics					
GRI Standards		Disclosure	Page	Chapter	Note
GRI 202: Market	202-1	Ratios of standard entry level wage by gender compared to local minimum wage	88	6.2.1	
Presence 2016	202-2	Proportion of senior management hired from the local community	85	6.1.2	100%
	304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	103	7.2.2	0
GRI 304: Biodiversity	304-2	Significant impacts of activities, products, and services on biodiversity	103	7.2.2	
2016	304-3	Habitats protected or restored	103	7.2.2	0
	304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	103	7.2.2	0
GRI 308: Supplier	308-1	New suppliers that were screened using environmental criteria	54	4.1	
Assessment 2016	308-2	Negative environmental impacts in the supply chain and actions taken	54	4.1	
GRI 410: Security Practices 2016	410-1	Security personnel trained in human rights policies or procedures	55	4.1.3	100%
GRI 411: Rights of Indigenous Peoples 2016	411-1	Incidents of violations involving rights of indigenous peoples	-	-	0
GRI 413: Local Communities 2016	413-1	Operations with local community engagement, impact assessments, and development programs	103	7.2/5.1	
GRI 414: Supplier Social	414-1	New suppliers that were screened using social criteria	54	4.1	
Assessment 2016	414-2	Negative social impacts in the supply chain and actions taken	54	4.1	
GRI 415: Public Policy 2016	415-1	Political contributions	-	-	0

## Appendix 2 Assurance Statement

### INDEPENDENT ASSURANCE OPINION STATEMENT

### China Steel Corporation 2018 Corporate Social Responsibility Report

The British Standards Institution is independent to China Steel Corporation (hereafter referred to as CSC in this statement) and has no financial interest in the operation of CSC other than for the assessment and verification of the sustainability statements contained in this report.

This independent assurance opinion statement has been prepared for the stakeholders of CSC only for the purposes of assuring its statements relating to its corporate social responsibility (CSR), more particularly described in the Scope below. It was not prepared for any other purpose. The British Standards Institution will not, in providing this independent assurance opinion statement, accept or assume responsibility (legal or otherwise) or accept liability for or in connection with any other purpose for which it may be used, or to any person by whom the independent assurance opinion statement may be read.

This independent assurance opinion statement is prepared on the basis of review by the British Standards Institution of information presented to it by CSC. The review does not extend beyond such information and is solely based on it. In performing such review, the British Standards Institution has assumed that all such information is complete and accurate.

Any queries that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to CSC only.

### Scope

The scope of engagement agreed upon with CSC includes the followings:

- 1. The assurance scope is consistent with the description of China Steel Corporation 2018 Corporate Social Responsibility Report.
- 2. The evaluation of the nature and extent of the CSC's adherence to AA1000 AccountAbility Principles (2018) in this report as conducted in accordance with type 1 of AA1000 Assurance Standard (2008) with 2018 Addendum assurance engagement and therefore, the information/data disclosed in the report is not verified through the verification process.
- This statement was prepared in English and translated into Chinese for reference only.

### Opinion Statement

We conclude that the CSC 2018 Corporate Social Responsibility Report provides a fair view of the CSC CSR programmes and performances during 2018. The CSR report subject to assurance is free from material misstatement based upon testing within the limitations of the scope of the assurance, the information and data provided by the CSC and the sample taken. We believe that the 2018 economic, social and environmental performance information are fairly represented. The CSR performance information disclosed in the report demonstrate CSC's efforts recognized by its stakeholders.

Our work was carried out by a team of CSR report assurors in accordance with the AA1000AS (2008) with 2018 Addendum. We planned and performed this part of our work to obtain the necessary information and explanations we considered to provide sufficient evidence that CSC's description of their approach to AA1000AS (2008) with 2018 Addendum and their self-declaration in accordance with GRI Standards: Core option were fairly stated.

### Methodology

Our work was designed to gather evidence on which to base our conclusion. We undertook the following activities:

- a review of issues raised by external parties that could be relevant to CSC's policies to provide a check on the appropriateness of statements made in the report.
- discussion with managers on approach to stakeholder engagement. However, we had no direct contact with external stakeholders.
- 6 interviews with staffs involved in sustainability management, report preparation and provision of report information were carried out.
- review of key organizational developments.
- review of the findings of internal audits.
- review of supporting evidence for claims made in the reports.
- an assessment of the organization's reporting and management processes concerning this reporting against the principles of Inclusivity, Materiality, Responsiveness and Impact as described in the AA1000AP (2018).

### Conclusions

A detailed review against the Inclusivity, Materiality, Responsiveness and Impact of AA1000AP (2018) and GRI Standards is set out below:

### Inclusivity

This report has reflected a fact that CSC has continually sought the engagement of its stakeholders and established material sustainability topics, as the participation of stakeholders has been conducted in developing and achieving an accountable and strategic response to sustainability. There are fair reporting and disclosures for economic, social and environmental information in this report, so that appropriate planning and target-setting can be supported. In our professional opinion the report covers the CSC's inclusivity issues.

### Materiality

CSC publishes material topics that will substantively influence and impact the assessments, decisions, actions and performance of CSC and its stakeholders. The sustainability information disclosed enables its stakeholders to make informed judgements about the CSC's management and performance. In our professional opinion the report covers the CSC's material issues.

### Responsiveness

CSC has implemented the practice to respond to the expectations and perceptions of its stakeholders. An Ethical Policy for CSC is developed and continually provides the opportunity to further enhance CSC's responsiveness to stakeholder concerns. Topics that stakeholder concern about have been responded timely. In our professional opinion the report covers the CSC's responsiveness issues.

### Impact

CSC has Identified and fairly represented impacts that were measured and disclosed in probably balanced and effective way. CSC has established processes to monitor, measure, evaluate and manage impacts that lead to more effective decision-making and results-based management within the organization. In our professional opinion the report covers the CSC's impact issues.

### GRI Sustainability Reporting Standards (GRI Standards)

CSC provided us with their self-declaration of in accordance with GRI Standards: Core option (For each material topic covered by a topic-specific GRI Standard, comply with at least one topic-specific disclosure). Based on our review, we confirm that social responsibility and sustainable development disclosures with reference to GRI Standards' disclosures are reported, partially reported or omitted. In our professional opinion the self-declaration covers the CSC's social responsibility and sustainability topics.

### Assurance level

The moderate level assurance provided is in accordance with AA1000AS (2008) with 2018 Addendum in our review, as defined by the scope and methodology described in this statement.

### Responsibility

The CSR report is the responsibility of the CSC's chairman as declared in his responsibility letter. Our responsibility is to provide an independent assurance opinion statement to stakeholders giving our professional opinion based on the scope and methodology described.

### Competency and Independence

The assurance team was composed of Lead auditors experienced in relevant sectors, and trained in a range of sustainability, environmental and social standards including AA1000AS, ISO 14001, ISO 45001, ISO 14064 and ISO 9001. BSI is a leading global standards and assessment body founded in 1901. The assurance is carried out in line with the BSI Fair Trading Code of Practice.

For and on behalf of BSI:

Peter Pu Managing Director BSI Taiwan 2019-05-03



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