

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability
Management

Ch2. Sustainability
Corporate Governance

Ch3. Circular
Economy

Ch4. Value Chain
Management

Ch5. Green
Manufacturing Process

Ch6. Happy
Workplace

Ch7. Social Inclusion

Appendixes

Taiwan Steel Union

Corporate Social Responsibility Report 2020



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Table of Contents

About the Report

Message from Management

2020 CSR Highlights

Taiwan Steel Union's CSR Policy

Taiwan Steel Union and SDGS

Short, Mid and Long Term ESG Targets

P.10 Chapter 1 Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

P.24 Chapter 2 Sustainability Corporate Management

Management guidelines on sustainability corporate governance
Sustainability corporate governance highlights

- 2.1 Corporate governance overview
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Table of Contents

P.39 Chapter 3 Circular Economy

Management guidelines on circular economy

Circular economy highlights

3.1 Circular economy drivers

3.2 Special Report on Xinfeng Seaside

3.3 Special Report on Circular Economy of Slag

3.4 Taiwan Steel Union and Taiwan Steel Resources clean up the EAF dust and slag on high bank of the Dadu River on a pro bono basis

3.5 Increasing strength of the circular economy

P.48 Chapter 4 Value Chain Management

Guidelines of value chain management

Value chain management highlights

4.1 Safety Laws and Regulations of Transportation

4.2 Supply chain management

4.3 Customer relationship management

P.55 Chapter 5 Green Production Process

Management guidelines on green production process

Green production process highlights

5.1 Environmental-friendly green production process

5.2 Environmental policy and management system

5.3 Operational ecosystem efficiency

5.4 Water risk management

5.5 Wastewater, polluted water and waste

5.6 Environmental laws and regulations

Chapter 6 Happy Workplace

P.71

Management approach to a happy workplace

Happy workplace highlights

6.1 Human resource management

6.2 Talent attraction and retention

6.3 Talent development

6.4 Occupational safety and health

6.5 Human rights

P.87 Chapter 7 Inclusive Society

Management approach on inclusive society

Inclusive society highlights

7.1 Social impact assessment

7.2 Community concerns

7.3 Circular economy education

P.93 Appendixes

ISO 26000 Guidance on Social Responsibility

GRI Standards Content Index:
General Disclosures

GRI Standards Content Index:
Specific Disclosures

AA 1000 V3 External Assurance
Statement

2020 CSR Report: Table of Content

- About the CSR Report
 - Message from Management
 - 2020 CSR Highlights
 - Taiwan Steel Union's CSR Policy
 - Taiwan Steel Union and SDGS
 - Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

About the Report

This report is prepared according to the core option of Global Reporting Initiative (GRI). The additional guidelines and standards this report adheres to are the United Nations' Sustainable Development Goals (SDGs), Task Force on Climate-Related Financial Disclosures (TCFD) and ISO 26000 Guidance on Social Responsibility. To ensure the disclosure of reliable information, this report has passed the BSI Taiwan assurance and the AA1000 Assurance Standard (AA1000AS v3) Type 1 with a Moderate level of assurance.

Enhancing the sustainability performance and transparent disclosure of the industry's circular economy

To fulfill corporate social responsibility and meet the society's expectation, Taiwan Steel Union Co., Ltd. ("Taiwan Steel Union") enters on the enhancement of the industry's circular economy and sustainability performance in this report. The report is structured with a focus on stakeholder engagements and identification and concern of issues of materiality, in order to disclose sustainability performance in relation to Taiwan Steel Union.

Scope of Reporting

The reporting period covers from January 1, 2020 to December 31, 2020. Corporate sustainability management and performance of Taiwan Steel Union and its subsidiary Taiwan Steel Resources is the primary scope of information in this report. Financial data is based on audited and published financial statements. Some statistics are from annual reports and public information on government websites and relevant sites. The presentation is made with a generally used language and descriptions of values. Any exception will be specified throughout the report. This is the third issue of this report. The report is issued once a year. The prior issue was in June 2020. The next issue is scheduled for June 2022.

Note: The data provided in the 2019 is for Taiwan Steel Union only. The 2020 report data includes Taiwan Steel Resources and provides retrospective data for 2019 by incorporating Taiwan Steel Resources. Hence, all the data in this report is consolidated, indicated with ▲

Report responsible unit and contact method

Responsible unit: Taiwan Steel Union CSR Committee
Please contact us for any opinion or feedback.
Address: No. 36, Xiangong N. 1st Rd., Changhua Coastal Industrial Park, Shengang Township, Changhua County
Company website: <https://www.tsutw.com.tw>
Contact person: Spokesperson Jackie Lin, Manager, Administration Department
Email: jackie.lin@tsutw.com.tw
Telephone: 04-758-6136 #200

Report Guide

To facilitate rapid and accurate reading, this report provides the following:

- Links on Table of Contents and Index for each chapter
- Links on each page of the electronic version so readers to quickly connect
- Report download (QR code)



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Message from Management

Taiwan Steel Union is ready for the era of ESG (environment, social and governance).

In terms of corporate governance, Taiwan Steel Union follows the structure suggested by the Task Force on Climate-Related Financial Disclosures (TCFD) in the construction of climate change management and the disclosure of relevant information. We have established a robust risk assessment and management system and we share earnings with investors with a dividend payout ratio of 82%. In 2020, we received the golden medal from the Taiwan Corporate Sustainability Awards (TCSA) and the circular economy leadership awards for two consecutive years. During this year, our corporate governance rating improved from 51%-65% to the top 21%-35%.

Taiwan Steel Union recycles and reproduces products to resolve problems such as illegal disposal of hazardous waste. This also achieves multiple ESG benefits such as the reduction of natural resources excavation and greenhouse gas emissions. Compared to the native manufacturing process, our crude zinc oxide products in 2020 reduces 38,312 tons of CO₂e measured by the carbon footprint of the product lifecycle. ² This carbon reduction is equivalent to the removed carbon volume by 98 Daan Forest Parks.

In terms of social, Taiwan Steel Union continues to, on a pro bono basis, treat the EAF dust in the illegal dumping site on the western seashore of the landfill in Xinfeng Township, Hsinchu County, so that the township could have a clean beach. This project was completed in 2020 and the EAF dust was reused. A total of 13,924 tons was cleaned up and treated. In 2020, we worked with Taiwan Steel Resources, on a pro bono basis, to tidy up a total of 4,275 tons of EAF dust and slag illegally dumped over the past 30 years on high bank of the Dadu River.

Taiwan Steel Union has established a comprehensive system in human resource management, talent attraction and retention. A systematic charter is in place for employees' remuneration. In case of profits for the year, no less 1% is allocated as employees' remuneration, in order to retain high-caliber talents. Meanwhile, we are committed to the construction of a safe work environment and a happy workplace. There was no major occupational disaster in 2020.

As far as local communities are concerned, Taiwan Steel Union continues to sponsor commuting vehicles for young students in the Keliao Village communities each year, so that students and residents have safe and comfortable transportation. We also sponsor windbreak forests and street-lamps of the local industrial park. In 2020, the total social expenses stood at NT\$47.98 million, which is 11.8% of net incomes. This is our highest



amount and post-tax percentage in history. Taiwan Steel Union endeavors to return to the society and fulfill our corporate social responsibility.

TSU is a 100% practitioner of circular economy. We promote the circular economy and environmental education to students from junior highs to universities and in the environmental protection industry and representatives from foreign companies visit our company. In 2020, Taiwan Steel Union received a total of 253 visitors and our subsidiary Taiwan Steel Resources received 45 visitors. In aggregate, 298 visitors came to our sites. This was the highest number in history.

In terms of environment, Taiwan Steel Union has established a water risk management policy for water resource management. The water recycle rate was 37% in 2020. We strive to become the role model in water conservation and recycling. The water consumption intensity was 0.536 ton for treatment of each ton of waste, the lowest in history. The waste reutilization rate was maintained at 100% in 2020. The greenhouse gas emission intensity for treatment of each ton of waste was 0.061 ton of CO₂e in Scope 2, the best record over the years. ²

Taiwan Steel Union has set out a thorough environmental monitoring plan, covering a total of 10 categories and 21 items such as flue gases, groundwater, rainwater, sewage pipelines and drainages, soils, slag, air quality, dioxin level in the air, dust falls and zinc oxide products. Relevant monitoring reports are released each quarter, with information disclosed in a transparent manner.

Taiwan Steel Union transports all the hazardous waste and has in place a thorough transportation management system, covering vehicle management, personnel training and relevant laws and regulations. In addition to complete compliance with applicable laws and regulations on collection and transportation, there has been no death, injury or major traffic accident over the 120.53 million ton-kilometers transported during the past nearly four years. We have attained the United Nations' sustainability development goal ahead of schedule.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Environmental highlights

Comprehensive real-time environmental monitoring.
Transparent disclosure of information.

2020 environmental expenses NT\$ **98 million**.

2020 **absolute reduction in GHG emissions 18%**, from based year 2012.

Scope 2 GHG emissions 2 **emission intensity 0.061** (tons CO₂e/ton treated), best record in history.

2020 **water recovery ratio 37%**, a role model in water conservation.

2020 **electricity consumption intensity 115** (kWh/ton treated).

2020 **water consumption intensity 0.536** (ton/ ton treated), best record in history.

2020 **waste recycle rate 100%**.

Air pollutant emissions **100%** meets environmental laws and regulations.

2017~2020 total transportation **120.53** million ton/kilometers. No. of deaths/injuries **0**.

Coke energy efficiency project: significant reduction in coke consumption for treatment of each ton of EAF dust and contaminated soils. Cumulative reduction by **35%**.

2020: Crude zinc oxide product **reduced carbon footprint by 38,312ton CO₂e**.



Social Highlights

We play our part in corporate social responsibility, by treating the most toxic EAF dust illegally dumped on the seaside.

We worked with Taiwan Steel Resources to clean up the EAF dust and slag illegally dumped on high bank of the Dadu River on a pro bono basis.

We sponsor **vehicles for commuting of young students and development of the communities** in Keliao Village each year and provide safe and comfortable transportation for the communities.

We sponsor the windbreak forests in the local industrial park, to maintain a good environment and a rich ecosystem.

2020 a total of 116 suppliers and contractors, **including 113 rated as A Level A**.

2020 **all three surveys of customers' satisfaction on target**.

No major occupational hazards in 2020.

2020 total social expenses of **NT\$47.98** million, which is **11.8%** of net income.

2020 a total of **298** visitors for circular economy and environmental education, the highest number in history.



Economic Highlights

Introduction of the TCFD framework, **construction of climate change strategy**, and disclosure of climate risk financial information.

Deployment of climate change and water risk management policy and a comprehensive risk & opportunity management mechanism.

2020: reduction of the carbon footprint of crude zinc oxide product by carbon emissions of **38,312** tons CO₂e.

Dividend payout ratio **82%**.

Remuneration Committee and Audit Committee comprised of **100%** independent directors.

Slag **100% circular economy of reuse resources**.

2020 CSR Highlights

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- **Taiwan Steel Union's CSR Policy**
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Taiwan Steel Union's CSR Policy

Taiwan Steel Union's vision: to become the role model company in the circular economy of Taiwan

Core value: contribution to the sustainability of blue skies, green lands, lush mountains and clean waters



Sustainability development strategy and principle:



Economic Realization of a circular economy



Environmental Development of a sustainable environment



Social Protection of social interest

Implementation Guidelines



Economic

Completion of core competences in the circular economy, optimization of products and treat services, development of Taiwan Steel Union as a 100% circular economy company, creation of the best economic performance for shareholders and investors, and enhancement of sustainability performance for stakeholders



Environmental

Development of environmental sustainability management, 100% compliance with laws and regulations, drive for environmental-friendly and green manufacturing process and operating ecosystem efficiency, collaboration with suppliers and contractors in the creation of environmental sustainability performance, cooperation with stakeholders to respond to climate change challenges



Social

Maintenance of a happy workplace and protection of occupational safety and health for Taiwan Steel Union and its suppliers, human resources management to attract and retain talent, human right policy establishment and push, concern of disadvantaged groups in the community, care for social interest and creation of social benefits

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGs
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management








Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Taiwan Steel Union and links with SDGs

SDGs	SDGs Goals	Taiwan Steel Union's Sustainability Goals for 2030	Taiwan Steel Union's Contributions in 2020	The Report
	13.2 Inclusion of climate change measures into national/corporate policy, strategy and plan	TCFD introduction and implementation	Completion of climate change risk identification	2.4 Climate change strategy and implementation
	3.6 Halving of the number of injuries and deaths due to traffic accidents around the world	Zero injury or death due to transportation safety	Taiwan Steel Union has completed a total of 120.53 million ton-kilometers via vehicle transportation over the past nearly four years and reported zero injury or death due to traffic accidents.	4.1 Transportation safety laws and regulations
	12.5 Prevention, reduction, recycle and reuse to significantly lower waste outputs	100% recycle rate of hazardous industrial waste, completion and operation of renewable energy systems	Treatment of EAF dust on Xinfeng Seaside on a pro bono basis; a circular economy project for EAF dust and slag on the high bank of the Dadu River	Chapter 3 Circular Economy
	7.a. Enhancement of energy infrastructure and investment in clean energy technology	Annual improvement of energy efficiency by 1%, up to 10%	Plan for deployment of a solar generation system occupying 5,000 square meters	5.3 Operational ecosystem efficiency
	6.4 Significant improvement of water consumption efficiency for different industries, to ensure the sustainability of fresh water supply and recycling	Water recycle and reuse rate 45 water consumption (ton/ton waste treated) 0.49 per unit	Water recycle and reuse rate 37% water consumption 0.536 per unit	5.4 Water risk management
	8.8 Protection of labor interest, promotion of workplace safety	No major occupational accident throughout the year	No major occupational accident in 2020	6.4 Occupational safety and health
	4.7 Assurance that all students acquire necessary knowledge and skills to contribute to sustainability	Implementation of the circular economy and environmental education	In 2020, a total of 298 visitors came to our facilities to get a feel the circular economy practices.	7.3 Circular economy education

Short, Mid and Long Term ESG Targets



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Material Topics	Key Performance Indicators	2020 Actual performance	2021 Short-term target	2025 Mid-term target	2030 Long-term target
Climate strategy	TCFD introduction	Completion of climate change risk identification	Implementation in accordance with TCFD		
Environmental policy management system	ISO 14001 implementation	Implementation of 5 management projects	Implementation of ISO 14001 environmental management system		
Materials	100% recycle and reuse	Completion of the slag circular project	100% materials recycled and reused		
Energy	Deployment of renewable energy	Plan to construct a solar energy system with an area of 5,000 square meters	Planning completed in 2021, tender awarding in 2022, deployment completed in 2023		
Water risks	Water recycle and reuse rate (%)	37%	41%	44%	45%
	Water consumption per unit (ton/ton waste treated)	0.536	0.51	0.50	0.49
GHG emissions	National emissions target in phases (base year 2012)	Up 2%	Annual reduction by 1%	Reduction by 10%	Reduction by 20%
	Scope 1 emission intensity (ton/ton waste treated)	0.556	0.56	0.56	0.53
	Scope 2 emission intensity (ton/ton waste treated)	0.061	0.064	0.064	0.062
	2015 to 2024 Average electricity saving rate	1.51%	1%	1%	--
Wastewater, contaminated water and waste	Reuse rate of hazardous industrial waste	100%	100%		
	Reuse rate of general industrial waste	99.99%	99.98%		
Environmental laws and regulations	100% compliance with laws and regulations	100% compliance with laws and regulations	100% compliance with laws and regulations		
Transportation safety and regulations	Zero injury or death due to transportation safety	0 injury or death	0 injury or death		
Occupational Health and Safety	Zero occupational hazards throughout the year	0 occupational hazards	0 major occupational hazards		
Training and education	Training and education curricula	Achievement rate 95.7%	Annual achievement rate >90%		
Local communities and impacts	Social expenses as % of net income	11.8%	3%		
Company's code of conduct	Sustainability behavior guidelines coverage ratio 100%	100%	100%		
Risk and opportunity management	Risk and opportunity governance and systems	Establishment of a functional committee in risk management to complete climate change and water risk assessment	Risk and opportunity identification and assessment		
Economic performance	Dividend payout ratio	82%	>70%		
Circular Economy	Treatment of EAF dust in Xinfeng Township on a pro bono basis Cleaning up of EAF dust and slag illegally dumped on the bank of the Dadu River	10,329 tons in total	Completed	--	
	Taiwan Steel Union's slag use rate	100% (137,894 tons)	100% reused		
	Recycling of waste containing zinc (tons)	Passed on November 25, 2020 and approved on January 22, 2021 by Environmental Impact Assessment Committee	5,000	10,000	20,000
	Recycling of alternative auxiliary materials and resources waste (tons)		15,000	30,000	45,000
	Recycling of alternative fuels and resources waste/products (tons)		1,000	3,000	5,000

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Chapter 1 Sustainability Management

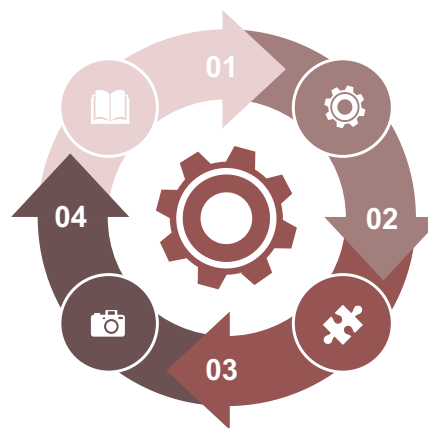
Management of material sustainability topics is a continued cycle of improvements. This is achieved in four steps: identification of sustainability topics; stakeholder identification, assessment and engagements, sustainability impact assessment of concerned topics; material topics confirmation and disclosure management. Topics and disclosures are reviewed each year.

Identification of sustainability topics

United Nations' Sustainable Development Goals (SDGs), ISO 26000 Guidance on Social Responsibility, Global Reporting Initiative (GRI) Standards, Dow Jones Sustainability Indices (DJSI), Taiwan Steel Union's sustainability issues

Material topics confirmation and disclosure

Material topics are confirmed on the basis of concern from stakeholders and impacts of individual sustainability topics.



Stakeholder identification, assessments and engagements

Stakeholder assessments are conducted according to the five dimensions prescribed in the AA 1000 SES (Stakeholder Engagement Standards). Questionnaire surveys are administered on issues of concern. Engagements are performed via a variety of communication platforms.

Sustainability impact assessment

According to AccountAbility's five-part test standards with materiality redefined, a sustainability impact analysis is conducted on relevant topics.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

1.1 Identification of sustainability topics



A search of sustainability related topics domestic and abroad by including United Nations' Sustainable Development Goals (SDGs), Dow Jones Sustainability Indices (DJSI), ISO 26000 Guidance on Social Responsibility, Global Reporting Initiative (GRI) Standards, GRI industry sustainability topics, stakeholder communication and feedback, issues and laws stipulated by financial regulators, CSR awards in Taiwan and overseas



After the in-depth review of the sustainability issues domestic and overseas, CSR Committee confirmed a total of 30 ESG and sustainability issues that may be relevant to Taiwan Steel Union in economic, social, environmental and special topics.



Economic (G)

Corporate governance
Company's code of conduct
Risk and opportunity management
Tax strategy
Economic performance
Market Presence
Indirect economic impact
Procurement practices and supply chain management
Circular Economy
Succession



Social (S)

Human rights
Employment
Labor/Management Relations
Occupational Health and Safety
Training and education
Talent attraction and retention
Local communities and impacts
Customer health and safety
Marketing and labeling
Social and economic laws and regulations



Environmental (E)

Climate strategy
Environmental policy and management system
Materials
Energy
Water risks
GHG emissions
Environmental laws and regulations
Wastewater, contaminated water and waste
Supplier environmental assessment
Transportation safety and regulations



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

1.2 Stakeholder assessments and engagements

Stakeholder identification and assessment

According to the five dimensions scoped by the AA 1000 Stakeholder Engagement Standard 2015, CSR Committee identified, discussed and assessed stakeholders, to confirm the importance of stakeholders based on dependency, responsibility, tension, influence and diverse perspectives. A total of 11 groups of stakeholders have been identified, including employees, shareholders and customers.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGs
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Sustainability impact assessments and questionnaire surveys

According to the five-part materiality test prescribed in AccountAbility Redefining Materiality, CSR Committee conducted a sustainability impact analysis on a total of 30 relevant topics. A questionnaire was designed for the survey. A total of 113 effective questionnaires were recovered. Stakeholder weights were factored in to calculate the actions and attentions from stakeholders.

Feedback from stakeholders Most of the feedback from stakeholders were positive.



Customers



Government agencies



Contractors



Media

It is necessary to properly assess costs and benefits of waste processing. Treatment fees should be adjusted appropriately to enhance market competitiveness. Looking forward to the company's continued attention to ESG (environment, social and governance), SDGs (United Nations' Sustainable Development Goals), carbon taxes, and climate actions and the impact of the company's sustainability.

More services and contributions to the domain of waste processing

We will continue the frequency of analyst day events so that investors can better understand and support the company.

More environmental education activities are suggested.

Your employees, from top down, are well managed. They are polite to other companies. A high-caliber team.

It is suggested that Taiwan Steel Union should spend more time sharing technologies with contractors. The company's environmental protection, business philosophy and corporate social responsibility are highly recognized and encouraged.

More efforts in the creation of a green company image are advised. More analyst day events each year are suggested to enhance market exposure.

Management is professional and dedicated in the continued creation of profits. Hopefully the company can do better and distribute more and stable dividends to shareholders. The company's performance is good. More media exposure is advised for greater publicity.

Hopefully the company can find new ways out for hazardous industrial waste. This should be price competitive and transportation safe, compliant with laws and regulations. It should also be about returning to the society. Cost assessments should be thorough and unit prices can be adjusted appropriately. It will ensure market competitiveness and continued stable growth.



Employees



Investors Shareholders



Suppliers



Academia



Industry

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management



Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Stakeholder engagements and responses

Types/ implications	Communication frequency and platforms	Concerned issues/reactions	
 Employees Taiwan Steel Union's most important asset and cornerstone for sustainability	<ul style="list-style-type: none"> • Annual interviews with supervisors • Employer-employee meeting once every three months or as required • Employees' Welfare Committee meetings from time to time • Annual and ad-hoc training & education plans • Letterbox to receive employees' feedback from time to time • Weekly managers' meetings 	Occupational Health and Safety	<ul style="list-style-type: none"> • ISO 45001 deployment and certification • Healthcare for employees • Free health checks and consultations each year
		Employment	<ul style="list-style-type: none"> • All employees on non-periodic contracts. • Charters and systems in place for employees
		Labor/ Management Relations	<ul style="list-style-type: none"> • Employer-employee meetings once every three months or on an ad-hoc basis, with representatives from the employer and the employees to negotiate labor relations • Multiple benefits each year from Employees' Welfare Committee
		Training and education	<ul style="list-style-type: none"> • Free training in curricula required for work • Tests administered for internal training to ensure that personnel understand the contents
		Talent attraction and retention	<ul style="list-style-type: none"> • Sharing of monthly production performances with employees • Year-end bonuses issued depending on annual profits • No discrimination, equal opportunities • Announcement of each promotion and disciplinary action
Types/ implications	Communication frequency and platforms	Concerned issues/reactions	
 Investors Shareholders Supporters of Taiwan Steel Union's sustainability	<ul style="list-style-type: none"> • Annual shareholders' meetings • Analyst days each year • Company website from time to time • Quarterly financial reports • Spokesperson and Deputy Spokesperson, as required • Inquiries from shareholders via phone calls or emails, as required 	Economic performance	<ul style="list-style-type: none"> • Push for recycle of other difficult-to-treat waste, to boost the company's revenues and profits • Disclosure of the company's financial performance via Stock Exchange and annual reports, to provide examination of operations and analysis of data.
		Corporate governance	<ul style="list-style-type: none"> • Formulation of comprehensive regulations in corporate governance and disclosure of relevant management guidelines in Stock Exchange and the official website • Establishment of the role of Corporate Governance Officer, to be responsible for corporate governance matters
		Company's code of conduct	<ul style="list-style-type: none"> • Corporate sustainability and governance standards • Formulation of "Code of Conduct", "Principles of Ethical Business" and "Standards of Employees' Behaviors", to our colleagues to follow
		Materials	<ul style="list-style-type: none"> • Annual assessment of delivery reliability and quality of suppliers • ISO 9001 deployment and certification
		Succession	<ul style="list-style-type: none"> • Enhancement of personnel development and implementation of the succession plan

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process


Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes



Stakeholder engagements and responses

Types/ implications	Communication frequency and platforms	Concerned issues/reactions
 Customers Taiwan Steel Union's most important source of economic performance	<ul style="list-style-type: none"> • Annual surveys on customers' satisfaction • Customer visits from time to time • Telephone calls from time to time • Emails from time to time 	Circular Economy <ul style="list-style-type: none"> • Acquisition according to laws the approval in environmental assessments, recycle permits, recycle inspection & registration permits, waste cleaning plans, permits for deployment and operation of solid waste and pollutants equipment and water facilities permits • Participation and organization of public hearings, seminars and workshops from time to time • Deployment of wastewater recycling systems for more effective use
		Materials <ul style="list-style-type: none"> • Signing of transportation contracts. Onsite adherence to the Regulations Governing Contractors' Environmental Safety and Health Management • Training and acquisition of qualifications by collection drivers regarding road transportation of hazardous items • Formation of emergency plans in-vehicle during transportation • Vehicle insurance and regular maintenance and repair • Compliance with relevant government laws and regulations for offsite transportation
		Occupational Health and Safety <ul style="list-style-type: none"> • ISO 45001 deployment and certification • Waste produced are all collected by qualified treatment companies.
		Local communities and impacts <ul style="list-style-type: none"> • Community impact assessment and management • Adherence to environmental assessment and commitment with quarterly disclosure of monitoring data via the company's official website • Assistance to local communities in organization of events and activities
		Customer health and safety <ul style="list-style-type: none"> • Deployment of the company website for disclosure of relevant information • Adherence to environmental assessment and commitment with quarterly disclosure of monitoring data via the company's official website

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy



Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Types/ implications	Communication frequency and platforms	Concerned issues/reactions
 Suppliers Taiwan Steel Union's key partners in the pursuit of corporate sustainability via cooperation and collaboration	<ul style="list-style-type: none"> • Ad-hoc communication • Non-periodic contracts 	Procurement practices and supply chain management
		Materials
		Energy
		Climate strategy
		Economic performance
Types/ implications	Communication frequency and platforms	Concerned issues/reactions
 Contractors Taiwan Steel Union's partner in assurance of smooth operation and product quality	<ul style="list-style-type: none"> • Regular training, education and communication with drivers • Non-periodic contracts • Contractor meetings 	Occupational Health and Safety
		Wastewater contaminated water and waste
		Environmental laws and regulations
		Procurement practices and Supply chain management
		Company's code of conduct

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management


Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Stakeholder engagements and responses

Types/ implications	Communication frequency and platforms	Concerned issues/reactions
 Government agencies According to government laws and regulations	<ul style="list-style-type: none"> Quarterly review of laws and regulations by visiting the regulatory inquiry systems on the websites of government agencies 	Circular Economy <ul style="list-style-type: none"> Reuse of difficult-to-treat waste to boost the company's profits Acquisition according to laws the approval in environmental assessments, recycle permits, reuse inspection & registration permits, waste cleaning plans, permits for deployment and operation of solid waste and pollutants equipment and water facilities permits
	<ul style="list-style-type: none"> Monthly reporting to Environmental Protection Administration about waste ; management information system 	Climate strategy <ul style="list-style-type: none"> Strategic formulation, identification, assessment and implementation of action plans in response to climate change Feasibility study on rooftop solar installations for renewable energy generation Change of sewage pipes and drainages, automated control system for reuse, better water consumption efficiency for granulation and recycling and reduction of running water consumption in manufacturing processes
	<ul style="list-style-type: none"> Real-time participation in the interactive sections and consultation letterbox on government agencies' websites 	Emissions <ul style="list-style-type: none"> Quarterly disclosure of the company's air and water emissions Adherence to environmental assessment and commitment with quarterly disclosure of monitoring data via the company's official website
	<ul style="list-style-type: none"> Participation in public hearings, seminars and workshops regarding policies and regulations from time to time 	Environmental laws and regulations <ul style="list-style-type: none"> Acquisition according to laws the approval in environmental assessments, general recycle permits, reuse inspection & registration permits, waste cleaning plans, permits for deployment and operation of solid waste and pollutants equipment and water facilities permits ISO 14001 deployment and certification Assessment on laws and regulations once every three months according to ISO 14001 environmental management system Participation in public hearings, seminars and workshops from time to time Cooperation with competent authorities in onsite inspections or improvement of audited deficiencies
	<ul style="list-style-type: none"> Official documents, meetings, telephones, faxes, emails, e-newsletters and public information from time to time Informal visits and face-to-face communication from time to time Environmental protection audits and labor inspections from time to time 	Wastewater, contaminated water and waste <ul style="list-style-type: none"> Deployment of wastewater recycling systems to improve the utilization of wastewater Waste produced are all collected by qualified treatment companies.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy



Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Types/ implications	Communication frequency and platforms	Concerned issues/reactions	
 Local communities Outreach to communities and neighborhoods as part of corporate social responsibility	<ul style="list-style-type: none"> • Establishment of good communication channels with local residents from time to time • Assistance to local community events from time to time • Assistance to local disadvantaged groups from time to time • Quarterly disclosure of the company's air and water monitoring statistics • Employment of local residents from time to time 	Market Presence	<ul style="list-style-type: none"> • Push for recycle of other difficult-to-treat waste, to boost the company's revenues and profits
		Local communities and impacts	<ul style="list-style-type: none"> • Participation of neighboring residents' activities from time to time • Assistance to local community events from time to time • Quarterly release of the environmental monitoring statistics at the company's official website
		Employment	<ul style="list-style-type: none"> • All employees on non-periodic contracts. • Charters and systems in place for employees
		Occupational Health and Safety	<ul style="list-style-type: none"> • ISO 45001 deployment and certification • Healthcare for employees • According to government laws, regulations and Regulations Governing Contractors' Safety and Health
		Transportation safety and regulations	<ul style="list-style-type: none"> • Signing of transportation contracts. Adherence to the Regulations Governing Contractors' Environmental Safety and Health Management • Training and acquisition of qualifications by collection drivers regarding road transportation of hazardous items • Formation of emergency plans in-vehicle during transportation
Types/ implications	Communication frequency and platforms	Concerned issues/reactions	
 Trade unions and associations Staying informed of the regulations and knowledge on the circular economy industry	<ul style="list-style-type: none"> • Official documents as required • Participation in seminars organized by trade associations from time to time • Regular meetings with directors and supervisors 	Environmental policy and management system	<ul style="list-style-type: none"> • Adherence to environmental assessment and commitment with quarterly disclosure of monitoring data via the company's official website • ISO 14001 deployment and certification
		Circular Economy	<ul style="list-style-type: none"> • Recycle of difficult-to-treat waste to boost the company's profits • Acquisition according to laws the approval in environmental assessments, reuse permits, reuse inspection & registration permits, waste cleaning plans, permits for deployment and operation of solid waste and pollutants equipment and water facilities permits
		Climate strategy	<ul style="list-style-type: none"> • Strategic formulation, identification, assessment and implementation of action plans in response to climate change • Feasibility study on rooftop solar installations for renewable energy generation
		Materials	<ul style="list-style-type: none"> • Regular supply assessments and tiered management based on assessment results Annual assessment of delivery reliability and quality of suppliers • ISO 9001 deployment and certification
		Energy	<ul style="list-style-type: none"> • Continued R&D in machinery and equipment, to reduce CO₂ emissions • Ongoing evaluation of investments in green energy equipment, to contribute to environmental sustainability

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management



Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Stakeholder engagements and responses

Types/ implications	Communication frequency and platforms	Concerned issues/reactions	
 Academia Sharing of technologies and literature on recycling and reuse	<ul style="list-style-type: none"> • Participation of academic seminars from time to time • Industry-academia cooperation 	Climate strategy	<ul style="list-style-type: none"> • Strategic formulation, identification, assessment and implementation of action plans in response to climate change • Feasibility study on rooftop solar installations for renewable energy generation
		Materials	<ul style="list-style-type: none"> • Annual assessment of delivery reliability and quality of suppliers • ISO 9001 deployment and certification
		Energy	<ul style="list-style-type: none"> • Feasibility study on rooftop solar installations for renewable energy generation
		Circular Economy	<ul style="list-style-type: none"> • Reuse of difficult-to-treat waste to boost the company's profits • Acquisition according to laws the approval in environmental assessments, reuse permits, reuse inspection & registration permits, waste cleaning plans, permits for deployment and operation of solid waste and pollutants equipment and water facilities permits
		Environmental laws and regulations	<ul style="list-style-type: none"> • Adherence to environmental assessment and commitment with quarterly disclosure of monitoring data via the company's official website • Assessment on laws and regulations once every three months according to ISO 14001 environmental safety and health management system
Types/ implications	Communication frequency and platforms	Concerned issues/reactions	
 Media Taiwan Steel Union's important partner in communicating and engagement with stakeholders	<ul style="list-style-type: none"> • Spokesperson and Deputy Spokesperson, as required • Press releases as required • Company website • The company's official emails 	Circular Economy	<ul style="list-style-type: none"> • Formulation of comprehensive regulations in corporate governance and disclosure of relevant management guidelines in Stock Exchange and the official website • Establishment of the role of Corporate Governance Officer, to be responsible for corporate governance matters
		Materials	<ul style="list-style-type: none"> • Corporate sustainability and governance standards • Formulation of "Code of Conduct", "Principles of Ethical Business" and "Standards of Employees' Behaviors", to our colleagues to follow
		Occupational Health and Safety	<ul style="list-style-type: none"> • Formulation of risk management regulations, annual assessments of risks and opportunities and periodical reporting of assessment results to the Board of Directors
		Local community impacts	<ul style="list-style-type: none"> • Recycle of difficult-to-treat waste to boost the company's profits • Disclosure of the company's financial performance via Stock Exchange and annual reports, to provide examination of operations and analysis of data.
		Customers' health and safety	<ul style="list-style-type: none"> • Annual assessment of delivery reliability and quality of suppliers • ISO 9001 deployment and certification

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy


Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Types/ implications	Communication frequency and platforms	Concerned issues/reactions
 Industry (Including slag) Partnerships in shared engineering, technology and laws and regulations for the industry	<ul style="list-style-type: none"> • Environmental protection works Specialized Construction Enterprises Association 	Occupational Health and Safety <ul style="list-style-type: none"> • ISO 45001 deployment and certification • ISO 14001 deployment and certification • Healthcare for employees • Pursuant to relevant government laws and regulations and the Regulations Governing Environmental Safety and Health of Contractors
	<ul style="list-style-type: none"> • Ad-hoc meetings • Participation in public hearings, seminars and workshops regarding policies and regulations from time to time 	Environmental laws and regulations <ul style="list-style-type: none"> • Acquisition according to laws the approval in environmental assessments, reuse permits, reuse inspection & registration permits, waste cleaning plans, permits for deployment and operation of solid waste and pollutants equipment and water facilities permits • Assessment on laws and regulations once every three months according to ISO 14001 environmental safety and health management system • Participation in public hearings, seminars and workshops from time to time • Cooperation with competent authorities in onsite inspections or improvement of audited deficiencies
	<ul style="list-style-type: none"> • Official documents, meetings, telephones, faxes, emails, e-newsletters and public information from time to time 	Employment <ul style="list-style-type: none"> • All employees on non-periodic contracts. • Charters and systems in place for employees
	<ul style="list-style-type: none"> • Informal visits and face-to-face communication from time to time 	Succession <ul style="list-style-type: none"> • Enhancement of personnel development and implementation of the succession plan
	<ul style="list-style-type: none"> • Environmental protection audits and labor inspections from time to time • Slag reuse contracts signed annually; onsite visits once every six months 	Wastewater, contaminated water and waste <ul style="list-style-type: none"> • Deployment of wastewater recycling systems to improve the utilization of wastewater • Waste produced are all collected by qualified treatment companies.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

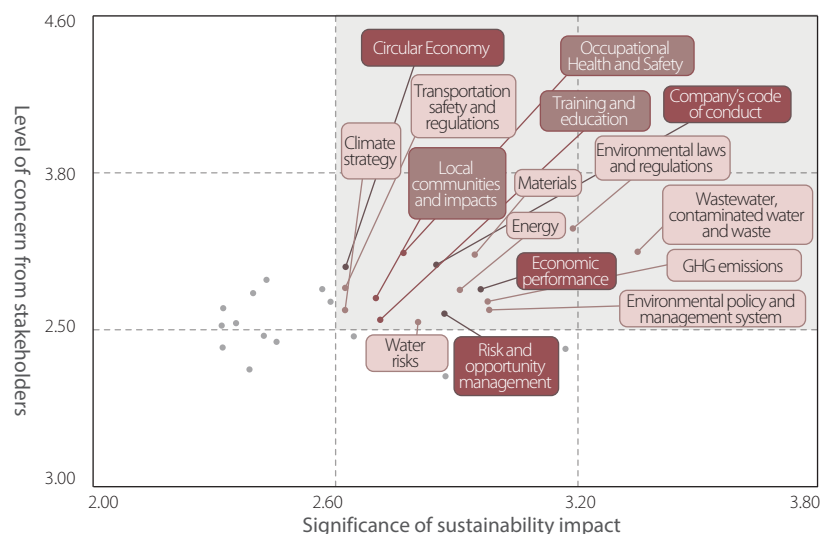
Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

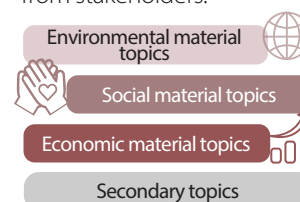
Appendixes

1.3 Management and disclosure of material topics



Assessment of material topics

Taiwan Steel Union defines material topics according to the level of concern from stakeholders and the impact on individual sustainability topics. Material topics have a score of at least 2.6 in sustainability impact and at least 3.8 for level of concern from stakeholders.



Confirmation and connection with material topics

Once a material topic is identified for Taiwan Steel Union, CSR Committee summarizes the identification workflows and results of material topics for the review and confirmation by the Chairman, to ensure that all topics are covered.

ESG category	Material Topics	Report chapters	Page number
 Environmental (E)	Climate strategy	2.4 Climate change strategy and implementation	35
	Environmental policy and management system	5.2 Environmental policy and management system	59
	Materials	5.1 Environmental-friendly green manufacturing process	57
	Energy	5.2 Environmental policy and management system	59
	Water risks	5.4 Water risk management	66
	GHG emissions	5.3 Operational ecosystem efficiency	60
	Environmental laws and regulations	5.6 Environmental laws and regulations	70
	Wastewater, contaminated water and waste	5.5 Wastewater, polluted water and waste	69
	Transportation safety and regulations	4.1 Transportation safety laws and regulations	50
 Social (S)	Occupational Health and Safety	6.4 Occupational safety and health	79
	Training and education	6.3 Talent development	77
	Local communities and impacts	Chapter 7 Social Inclusion	87
 Economic (G)	Company's code of conduct	2.1 Corporate governance summary	26
	Risk and opportunity management	2.2 Risks and opportunities	30
	Economic performance	2.3 Products and economic performance	31
	Circular Economy	Chapter 3 Circular Economy	39

Note: Self-defined material topics include transportation safety and regulations; climate strategy; environmental policy and management system; circular economy; the company's Code of Conduct; risk and opportunity management.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Compliance of material topics

Taiwan Steel Union received three fines for breach of environmental laws and regulations in 2020. (Details in Chapter 5.6 on environmental protection laws and regulations.) All the other material topics complied with laws and regulations.

Meanings of material topics to Taiwan Steel Union

The identified material topics are the most important sustainability issues to Taiwan Steel Union. Management guidelines are put in place for individual material topics. There are also key performance indicators; mid-term, mid-term and long-term goals; and action plans. Implementation updates are disclosed in a transparent manner.

Material Topics	Significance to Taiwan Steel Union (main reasons)	Impact boundary ^{Note 1}	Degrees of impact ^{Note 2}
Climate strategy	Taiwan Steel Union emphasizes climate change issues and plans to introduce the TCFD framework, to respond to risks and opportunities associated with climate change.	L4, L3	D1
Environmental policy management system	Implementation of ISO 14001 environmental management system to create environmental benefits	L4	D1
Materials	Construction of 100% recycle and reuse model for basic materials required for Taiwan Steel Union's operation	L1, L2, L4, L5, L7, L9	D1, D2, D3
Energy ^{Note 3}	Installation of renewable energy equipment to reduce carbon reductions	L4	D1
Water risks	Establishment of water risk assessments and key performance indicators and management of water resource	L4	D1
GHG emissions	The level of mercury (a heavy metal) breached the standard due to equipment fault. All the other air pollutant emissions met the environmental assessment and commitment and regulations. Disclosure was made in a transparent manner.	L4, L8	D1
Environmental laws and regulations	A topic cared most by stakeholders. Establishment of a 100% compliance system by Taiwan Steel Union for environmental laws and regulations	L4	D1
Wastewater, contaminated water and waste	Establishment of key performance indicators for waste management. 100% recycle and reuse Wastewater emissions in compliance with sewage influent standards; enhancement of recycling and reuse	L4, L8	D1
Transportation safety and regulations	Transportation of waste and products cared most by Taiwan Steel Union. 100% legal compliance and safety	L3, L4	D1
Occupational Health and Safety	Creation of a safe work environment. Targeting at zero occupational disaster throughout the year	L4	D1
Training and education ^{Note 3}	Training and development of high-caliber personnel, to become a first-class sustainable company	L4	D1
Local communities and impacts	Taiwan Steel Union denotes to local communities according to environmental assessment and commitments, as part of the community care.	L8	D1
Company's code of conduct	A robust code of conduct has been put in place as part of Taiwan Steel Union's corporate governance system and for the benefit of sustainable development.	L4	D1
Risks and opportunities ^{Note 3}	A robust management mechanism for risks and opportunities, as a cornerstone for sustainability	L4	D1, D2, D3
Economic performance	Taiwan Steel Union's creation of economic benefits and sharing of profits with shareholders and investors	L4	D1
Circular Economy	Most important issue for Taiwan Steel Union's sustainability, for the creation of the circular economy with ESG win-win-wins	L2, L4, L5, L9	D1, D2, D3

Note 1: Impact Boundary, L1 Raw materials excavation, L2 Upstream steel mills and polluted soils, L3 Transportation, L4 Manufacturing (Taiwan Steel Union), L5 Customers, L6 Product utilization, L7 End products, L8 Neighboring community environment, L9 Subsidiaries

Note 2: Degrees of Impact, D1 Directly causing the impact, D2 Contributing to impact, D3 Directly related to the impact via business relations

Note 3: Newly added issues of materiality

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

- 1.1 Identification of sustainability topics
- 1.2 Stakeholder assessments and engagements
- 1.3 Management and disclosure of material topics
- 1.4 Report management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

1.4 Report management

Internal and external audit mechanisms for the report

To make the content and quality of this report robust and comprehensive, the report goes through annual internal audits and external verification as part of the audit mechanism and plan.



Internal audit

Cross audits were performed internally. External experts were hired to enhance the quality by conducting a preliminary assessment based on the TCSA (Taiwan Corporate Sustainability Awards) criteria. The internal audit of the 2020 report was carried out on May 5, 2021.



External verification

To enhance the credibility of the report, BSI Taiwan is commissioned to conduct external verification to ensure that the report meets the AA1000 standard. The external audit on the 2020 report was conducted from June 1, 2021 to June 15, 2021.

Report review and confirmation

After the report has been confirmed by both internal and external audit mechanisms, it was submitted by CSR Committee for the review of CSR Committee Director and for the sign-off by Chairman.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- 2.1 Corporate governance overview
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendix

Chapter 2 Sustainability Corporate Governance

Taiwan Steel Union promotes the circular economy, according to the United Nations' Sustainable Development Goals (SDGs), by developing clean and environmental-friendly industrial processes and stable quality, creation of sustainable profits and distribution of earnings to the investing public and shareholders. Taiwan Steel Union is committed to corporate governance and sustainable development.

Management guidelines on sustainability corporate governance

Material topics: Code of Conduct; risk and opportunity management; economic performance (GRI 201)



Policy

- Company's Sustainability Code of Conduct
- Maximization of shareholders' equity



Target

Annual dividend payout
70% in the absence of major
investments



Effective assessment of economic performance

CSR reports each year to continue
and follow-up the assessment of
effectiveness and results



Management system

- The corporate governance structure consists of the Board of Directors, Audit Committee and Remuneration Committee.
- Establishment of the ISO 9001 quality management system
- Establishment of the ISO 14001 environmental management system
- Establishment of the ISO 45001 occupational safety and health management system



13.2 Inclusion of climate change measures into national/corporate policy, strategy and plan



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGs
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
 - 2.1 Corporate governance overview
 - 2.2 Risks and opportunities
 - 2.3 Products and economic performance
 - 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendix



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- **2.1 Corporate governance overview**
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

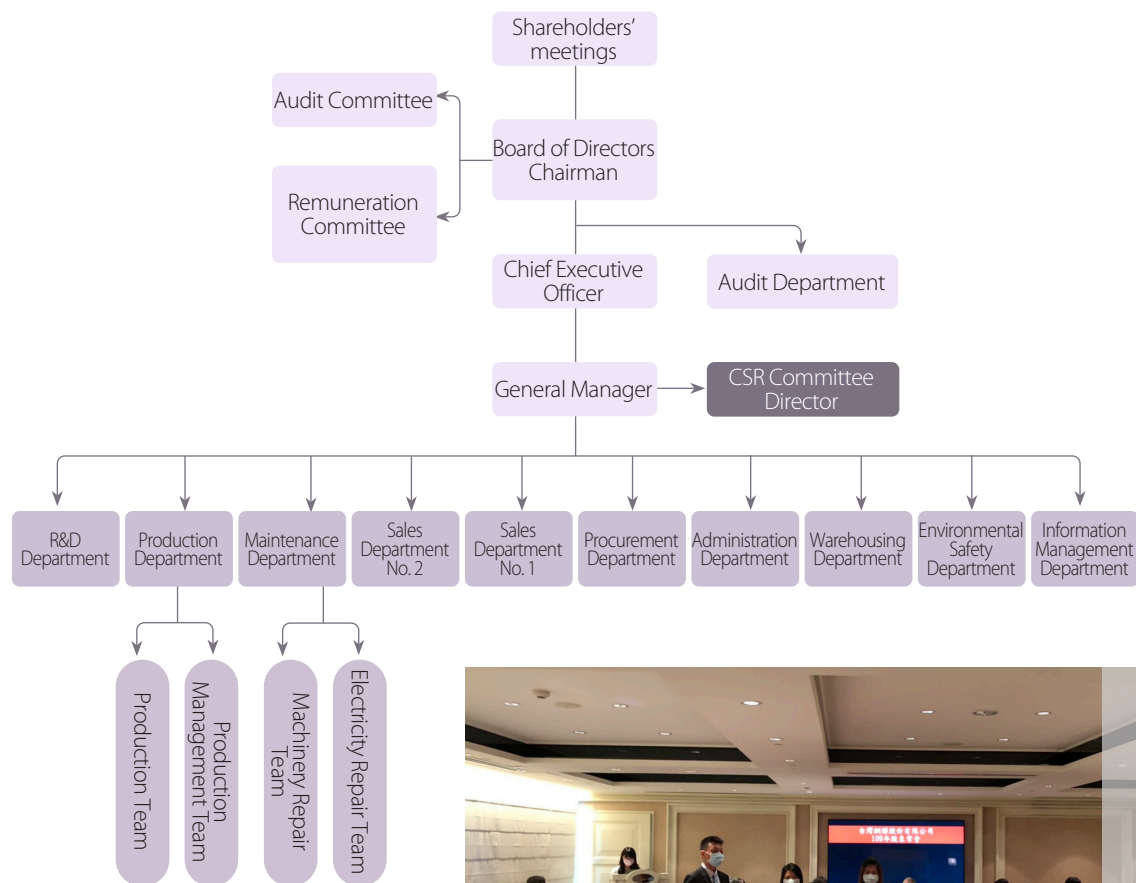
Ch7. Social Inclusion

Appendixes

2.1 Corporate governance summary

Taiwan Steel Union has a rigorous corporate governance structure to fulfill corporate responsibility in sustainability. The Board of Directors overseeing general affairs with efficiency is the foundation of good corporate governance. Under the Board of Directors are Remuneration Committee and Audit Committee, to assist the Board of Directors in providing oversight. To ensure sustainable development, Taiwan Steel Union has established CSR Committee as a functional committee in charge of sustainability reporting. General Manager serves as CSR Committee Director. Administration Department provides support and

implementation, in charge of the committee's functioning, project coordination and data collection. The committee identifies major economic, environmental and social topics and engages with stakeholders through a variety of means by responding to stakeholders' concern in material topics. The purpose is to manage sustainability topics and achieve sustainable operation for Taiwan Steel Union. Taiwan Steel Union periodically submits sustainability reports to the Board of Directors and communicates with shareholders' meetings the relevant sustainability performances.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- **2.1 Corporate governance overview**
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Taiwan Steel Union Overview

Note: Consolidated financial statements

Data type	2020 data
Company name	Taiwan Steel Union Co., Ltd.
No. of employees	91 people
Capitalization	NT\$1.11 billion
Liabilities and equity	Liabilities: NT\$1,485,658 thousand, equity NT\$3,557,375 thousand
Main products	1. Transport and recycle of EAF dust and reducing slag from electric-arc furnaces 2. Recycle of off-site contaminated soil 3. Sale of crude zinc oxide 4. Sale of concrete aggregate; base materials or aggregates for the base of pavement engineering (roads, pedestrian walks, container yards or parking spaces); asphalt concrete aggregate; controlled low-strength backfill material aggregates; concrete products aggregates. 5. Sale of CLSMs (controlled low-strength materials) and non-structured ready-mixed concrete
Chairman	Mark Lin
General Manager	Yen-Bin Fang
Headquarters and operating address	No. 36, Xiangong N. 1st Rd., Changhua Coastal Industrial Park, Shengang Township, Changhua County
Production lines and capacities	Two rotary kilns for high temperature smelting. Annual reusable environmentally permitted volume: 198,900 tons 2020 recycle and treated EAF dust: 147,249 tons 2020 recycle and treated contaminated soils: 12,776 tons
Net sales	2020 net sales: NT\$1,622,229 thousand
Markets serviced	EAF dust, reducing slag: electric-arc furnaces steel industry, dump sites Contaminated soils: contaminated sites in Taiwan Zinc oxide: zinc smelting industry, chemicals industry
Entity included in consolidated financial statements	Subsidiary - Taiwan Steel Resources (trial operation in 2019)
Location	Where EAF dust, reducing slag and contaminated soils are collected: Taiwan Zinc oxide sold to: Taiwan, China, Japan, Belgium, Poland, Thailand and Indonesia



Taiwan Steel Resources: production lines and capacities

- Three autoclaves, annual operating volume permitted: 165,198 tons
- Magnetic separators of crushed slag, annual operating volume permitted: 461,500 tons
- 2020 recycle and treated reducing slag: 49,582 tons
- 2020 recycle and treated volumes with rotary kiln slag : 96,624 tons
- 2020 recycle and treated oxidizing slag: 7,111 tons
- 2020 reported production volume of base materials for pavement engineering: 22,346 tons
- 2020 reported production volume of concrete aggregates (including asphalts): 89,246 tons
- 2020 reported production volume of controlled low-strength materials: 41,725 tons

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- **2.1 Corporate governance overview**
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes



Composition and functioning of the Board of Directors

The Board of Directors is Taiwan Steel Union's highest-level governance unit and key decision maker. We have formulated the Regulations Governing the Election of Directors by specifying qualifications and appointment requirements. This includes diversity and professional knowledge. The tenure of the current board starts from May 29, 2020 and ends on May 28, 2022. The Board of Directors consists of eight directors and three independent directors. There is a female director. Two directors are aged between 30 and 50; all other directors are above 50 years old. Under the leadership of Chairman Mark Lin, the Board of Directors' top priority is to provide supervision via the establishment of functional committees. The purpose is to enhance the quality of oversight and decision-making by the Board of Directors. Taiwan Steel Union's Board of Directors convenes meetings at least once a quarter, to listen to presentations from management team on financials, business and sustainability issues.

Performance Review on Board of Directors

Taiwan Steel Union formulated, with the approval from the Board of Directors, the Regulations Governing the Performance Review on Board of Directors. Performance reviews on the Board of Directors and functional committees are conducted at the beginning of each year. According to the assessment on the 2020 performance, only some directors failed to hit targets in terms of meeting attendances in the self-assessment questionnaires for board members. The results of all the other self-assessment questionnaires were normal. The overall attendance rate of the board reached the average of at least 80% criterion during the year of corporate governance assessments. All the board members completed six hours of training.

Remuneration Committee

Remuneration Committee has been established under Taiwan Steel Union's Board of Directors. The Organization Charter for Remuneration Committee has been put in place. Remuneration Committee is responsible for design and periodical reviews of performance of directors and managers, as well as remuneration policies, systems, standards and structures. All the three members of Remuneration Committee are independent directors. The convener Tien-Chin Chang is an independent director.

Link between Board of Directors' Remuneration and Sustainability Performance

Taiwan Steel Union has put in the Articles of Incorporation that directors' remuneration is based on involvement in and contributions to the company's operations and according to the industry standard in Taiwan. The correlation with the company's operational risks and performance in the future has been factored into the equation. This has been submitted to and approved by Remuneration Committee, to ensure a balance for sustainability and risk control.

Audit Committee

Audit Committee has been established under Taiwan Steel Union's Board of Directors. The Organization Charter for Audit Committee has been put in place. Audit Committee is responsible for the control and supervision of financial reports, internal control and potential risks. All of the three members of Audit Committee are independent directors. The convener Wu Chuan-Chuang is an independent director.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- **2.1 Corporate governance overview**
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Code of Conduct

Taiwan Steel Union has formulated "Code of Conduct" to regulate its directors and managers (including Chief Executive Officer and General Manager and any person who has the right to manage and sign on the behalf of the company) and to prevent conflict of interest and opportunity of seeking personal gains. The Code of Conduct is fully disclosed.

Principles of Ethical Business

To deepen a corporate culture and robust development based on trust and integrity and to establish a healthy framework for business practices, Taiwan Steel Union has established "Principles of Ethical Business" to prohibit unethical behavior. The practice of honest business operations is defined and dishonest behavior is prevented.

Participation in trade associations

Taiwan Steel Union is dedicated to its core business. To stay close contacts and work with different parties of the society for sustainability, we are involved in various organizations in different ways. The trade associations we are involved with as a director or a supervisor include the following: There was no sponsorship in 2020 except for regular membership fees.

Trade associations involved	Participating status	Representative's name
Chinese National Federation of Industries	Vice Chairman	Mark Lin
Taiwan Resource Recycling Industries Association	Director	Yen-Bin Fang
The Formosa Association of Resource Recycling	Member	Taiwan Steel Union
Association of Companies in Changhua Coastal Industrial Park (彰濱產業園區廠協會), Changhua County	Member	Taiwan Steel Union
Taiwan Environmental Management Association	Member	Taiwan Steel Union
Taiwan Carbon Capture Storage and Utilization Association (TCCSUA)	Executive Director	Mark Lin
	Director	Yen-Bin Fang

Company management system

All of Taiwan Steel Union's management systems have been independently verified and have passed inspections.

Economic
ISO 9001

Environmental
ISO 14001
ISO 1464-1

Social
ISO 45001

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- 2.1 Corporate governance overview
- **2.2 Risks and opportunities**
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

2.2 Risks and opportunities

Risk and opportunity assessment

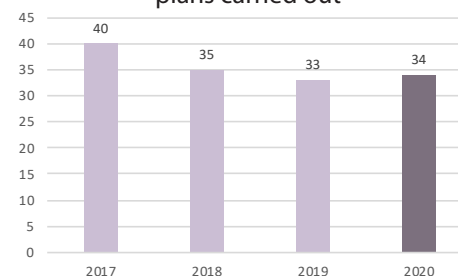
Taiwan Steel Union has formulated the Practical Guides on Corporate Social Responsibility by including an assessment and management mechanism on relevant risks and opportunities for the confirmation of risks and opportunities during the course of company development.

Types of risks and opportunities	Responses to risks and opportunities
Financial risks	We do not have a research department dedicated to exchange rates or international zinc prices. Hence, we do not hedge in any way against the change of exchange rates or international zinc prices.
Human resource risks	Retention of high-caliber employees with remuneration and promotions
Raw material risks	Sourcing of waste with zinc contents other than EAF dust, to make up the insufficiency of raw materials
Operational risks	The regulations governing identification and management of compliance obligations have been put in place. Inventory and identification are conducted each quarter regarding new and amended laws and regulations. Assessment is performed by relevant units; improvement measures are carried out according to assessment results.
Environmental, safety and health risks	Annual maintenance and periodic replacement of consumables to maintain stable operation of equipment
Climate change, water and energy risks	Introduction of the TCFD mechanism, formulation of climate strategy and action plans, planning of rooftop solar Water risk assessment and responding measures
Information security risks	Advocacy of information security policies, establishment of backup server rooms, retention of important data
Legal compliance	Regular and irregular maintenance of pollution control equipment, to ensure normal functioning
Opportunities	Advocacy of the circular economy's contributions to operation and the society
New disease Covid -19	Continued operation plan in response to COVID-19

Responsible audit units and implementation

Audit Department has been established under Taiwan Steel Union's Board of Directors. Audit Department structures, propose and carry out internal audits and annual inspection plans, covering the risk control and management elements defined by management in corporate governance, operating activities and legal compliance. The audits and inspections serve as the basis for the assessment of the functioning and effectiveness of the internal control system in corporate governance, operating activities and legal compliance. The results are produced into audit reports for submission and reporting to the Board of Directors.

No. of internal audit and inspection plans carried out



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- 2.1 Corporate governance overview
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

2.3 Products and economic performance

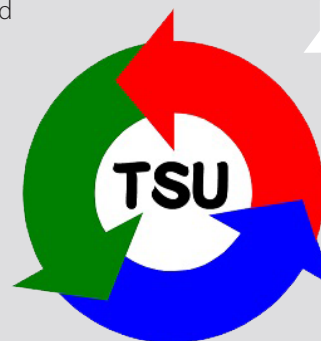
After decades of overdevelopment and overuse, global resources are increasingly depleted. Countries around the world are gradually coming to terms with the limitedness of metal resources. Therefore, the pursuit of sustainable utilization and development of resources has become a key determinant of economic activities going forward. Taiwan Steel Union was incorporated as a EAFD resource recycling company according to the Regulations Governing Co-Treatment Organizations for Industrial Waste

(事業廢棄物共同清除處理機構管理辦法) issued by the Ministry of Economic Affairs and in the co-treatment system established by the Waste Management Department, Environmental Protection Administration and the Industrial Development Bureau, Ministry of Economic Affairs for waste from electric arc furnaces used in steel manufacturing. As a full-service circular economy company, Taiwan Steel Union is capable of evacuating, treating, cleaning and reusing waste.

Taiwan Steel Union's CIS (corporate identity system)

The three arrows forming a circle surround the company's abbreviation in the English language. It is a symbol of our business philosophy in resource sustainability and environmental protection.

Representing the recycled green product zinc oxide and the recycle slag



Representing high-temperature smelting and treatment

Representing EAF dust from electric-arc furnaces as a hazardous industrial waste

Taiwan Steel Union's products and services



Crude zinc oxide



Recycle slag

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- 2.1 Corporate governance overview
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

CIS of Taiwan Steel Resources, a Taiwan Steel Union's 100% subsidiary

The three arrows forming into a circle is a counter-clockwise image of the parent company Taiwan Steel Union's logo. Taiwan Steel Resources is a clockwise circle, surrounding the company's abbreviation, as a symbol of the never-ending circles of resource recycling.



TSR

Taiwan Steel Resources' main equipment, an autoclave, wrapped by the letters TSR, to represent Taiwan Steel Resources



Representing resource recycling and sustainable cycles



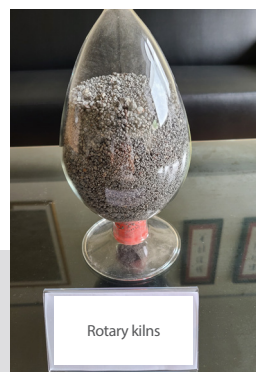
Representing steam, in the high temperature and high pressure inside autoclave



Representing color of slag from electric-arc furnaces

Taiwan Steel Resources' products and services

Products such as steel slag, reducing slag and oxidizing slag



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- 2.1 Corporate governance overview
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

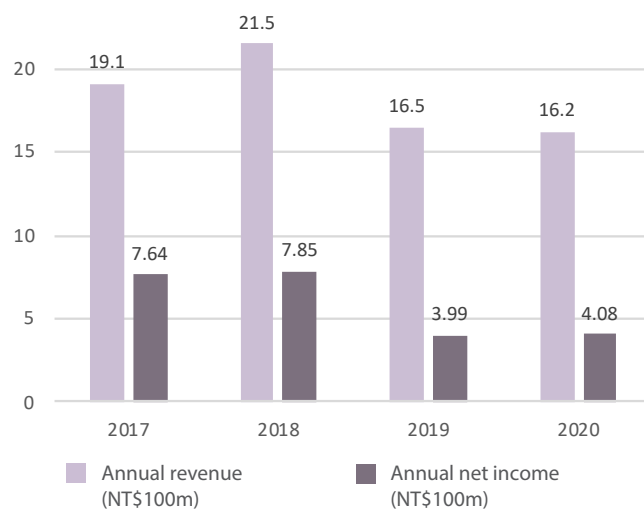
Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendix



Revenue and profit targets

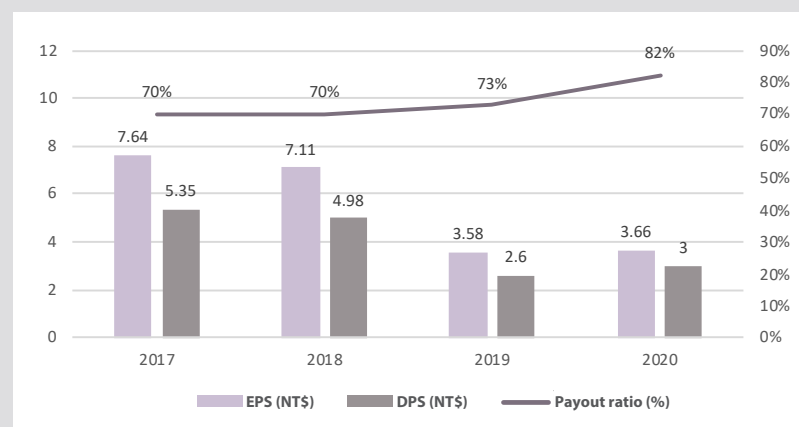
Taiwan Steel Union sets up annual revenue and profit growth targets. The 2020 revenue went up by 1.8% and net income up by 2% year-over-year. The main reason was the adverse effects of COVID-19 during the first half of 2020. The inventory of zinc continued to rise and dampened the international zinc price. During the second half of the year, the decline of the U.S. dollar index and the reopening in Europe and the U.S. gradually increased the international zinc price. The average international zinc price in 2020 was down by US\$284 or 11% from 2019. The unit selling price of zinc oxide affects the selling price of crude zinc oxide.

Expansion of green investment and construction a more comprehensive circular economy system

In 2018, the 100% subsidiary Taiwan Steel Resources was established, to focus on the production of green and environmental-friendly building materials by reusing slag. This was in line with the industry policy on circular economy. Taiwan Steel Resources began formal operation in November 2019 after trial production. The fourth and the fifth autoclaves were completed at the end of 2020, to increase the number of production lines to five. Another 30% processing capacity is planned for 2021. The two factories for recycled aggregates used in ready-mixed concrete started operation at the end of 2020, to enter the market for ready-mixed concrete made with slag. This is an additional revenue stream with internal resources. It is also playing our part for corporate social responsibility.

Annual dividend payout ratio of 70%

Taiwan Steel Union targets at a 70% annual dividend payout as a return to the investing public and sharing of operational results with shareholders. The payout ratio was 82% for 2020, above the target of at least 70%.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- 2.1 Corporate governance overview
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Direct economic value (consolidated financial statements)

Taiwan Steel Union's consolidated financial statements in 2017-2020 are summarized below, without government subsidies.

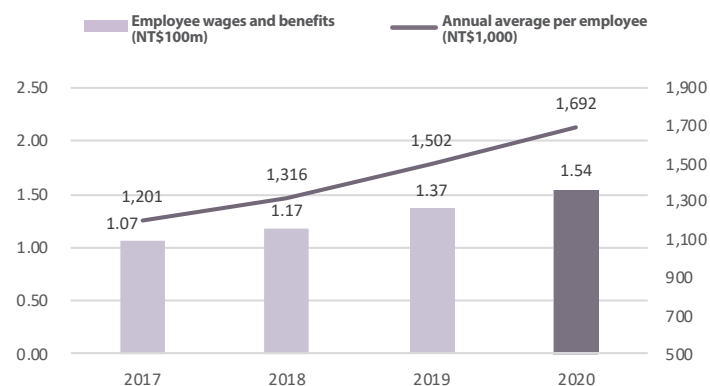
Unit: NT\$1,000

Year	2017	2018	2019	2020
Direct economic value created				
Operating income	1,906,571	2,147,371	1,650,701	1,622,229
Economic value distributed				
Operating cost	767,582	980,613	916,669	883,443
Employee wages and benefits	111,487	126,460	136,662	153,987
Payment to capital providers	346,121	600,444	556,030	297,721
Payment to the government	185,857	163,571	247,960	13,801
Community investments	19,864	26,313	33,263	47,983
Economic value retained				
Direct economic value created -Economic value distributed	475,660	249,970	-239,883	225,294
Other items				
R&D expenses	12,117	11,125	11,429	21,254
Training expenses	527	488	590	489
Environmental expenses	142,954	122,526	106,762	98,204

Note: Consolidated financials including the subsidiary Taiwan Steel Resources Co, Ltd.

Annual growth of employee wages and benefits

Taiwan Steel Union targets at annual growth in employee wages and benefits. The average wages and benefits per employee (including wages and pensions) has been on the rise over the years. The 2020 average wages and benefits stood at NT\$1,692 thousand, up 13% from 2019. Taiwan Steel Union's employee wages and benefits increase each year.



▲ Note: The numbers for 2019 of NT\$137m in total and NT\$1,502 thousand in average are updated and hence different from the numbers shown in the 2019 CSR report.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- 2.1 Corporate governance overview
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

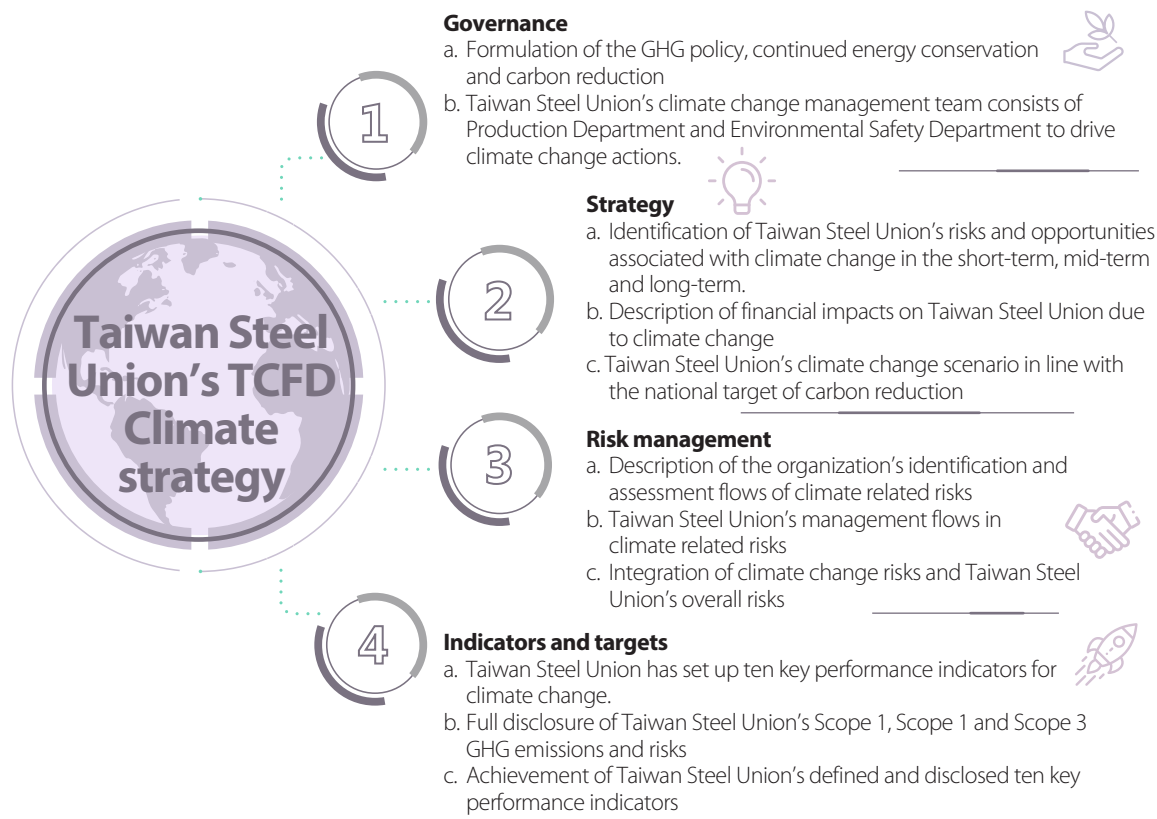
Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

2.4 Climate change strategy and implementation

Taiwan Steel Union follows the management framework advocated by the Task Force on Climate-Related Financial Disclosures (TCFD) in the construction of climate change management and information disclosure.



Governance

Taiwan Steel Union has established CSR Committee as a functional committee. General Manager serves as Committee Director, to confirm environment performances, climate change issues and corporate concerns each year. Formulation of the GHG policy, continued energy conservation and carbon reduction

Taiwan Steel Union offers incentives for proposals of improvement measures regarding climate change. Bonuses of an appropriate amount are provided to the reviewed and adopted proposals in

energy and water conservation and cost reduction. Employees are encouraged to enhance awareness and enthusiasm in work efficiency, energy saving and carbon reduction.

Strategy

Taiwan Steel Union formulates its climate change strategies on products, low-carbon investments and operating activities.

Strategic aspects	Products	Taiwan Steel Union's responding strategy	Circular economy product: crude zinc oxide
	Low-carbon investments		Low-carbon transition projects to achieve carbon reduction goals
	Operating activities		Continued energy conservation and carbon reduction

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- 2.1 Corporate governance overview
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

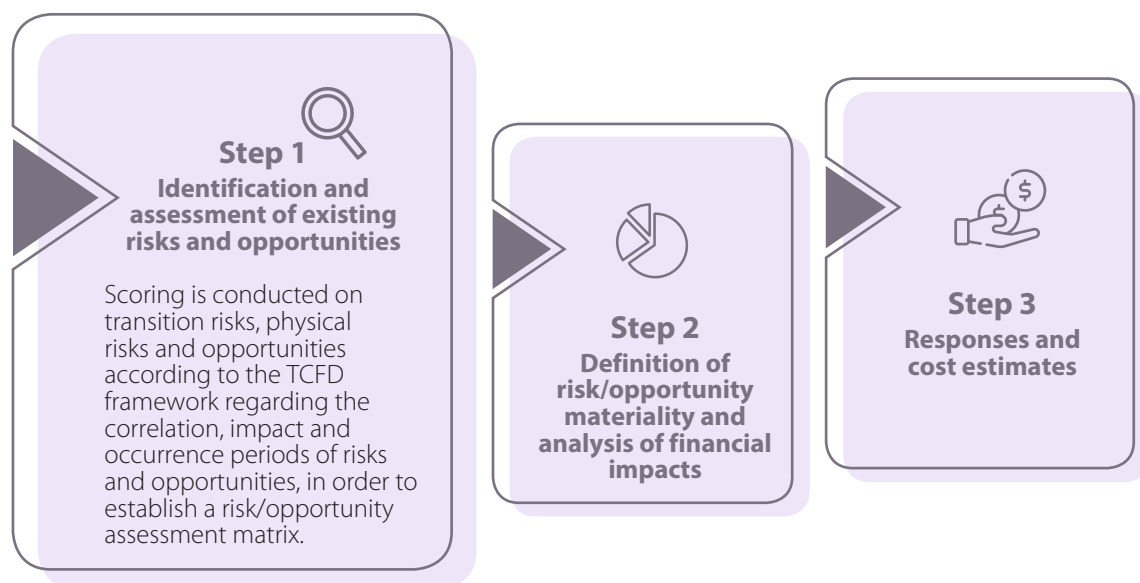
Ch7. Social Inclusion

Appendixes

Response to climate change impact on financials	The climate change impact on Taiwan Steel Union's financials includes a possible increase in operating expenses such as carbon management fees and fines for breaching total control limits.	NDC scenario analysis Transition risks assessment	Taiwan Steel Union's carbon reduction target is based on Taiwan's nationally determined contributions (NDC) to reduce BAU (business-as-usual) GHG emissions by 50% in 2050. Taiwan Steel Union refers to 2012 as the base year and assesses the possible transition risks based on the projection of halving cut annual emissions by 2050.
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Risks and opportunities

Taiwan Steel Union uses its Practical Guides on Corporate Social Responsibility in assessment and management of risks and opportunities due to climate change, formulates, identifies and evaluates strategies, and conducts action plans on climate change. The purpose is to adapt to and mitigate climate change impacts. Corresponding adaptation and action plans are mapped out according to risk analysis and assessment. Emerging business opportunities are explored.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- 2.1 Corporate governance overview
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

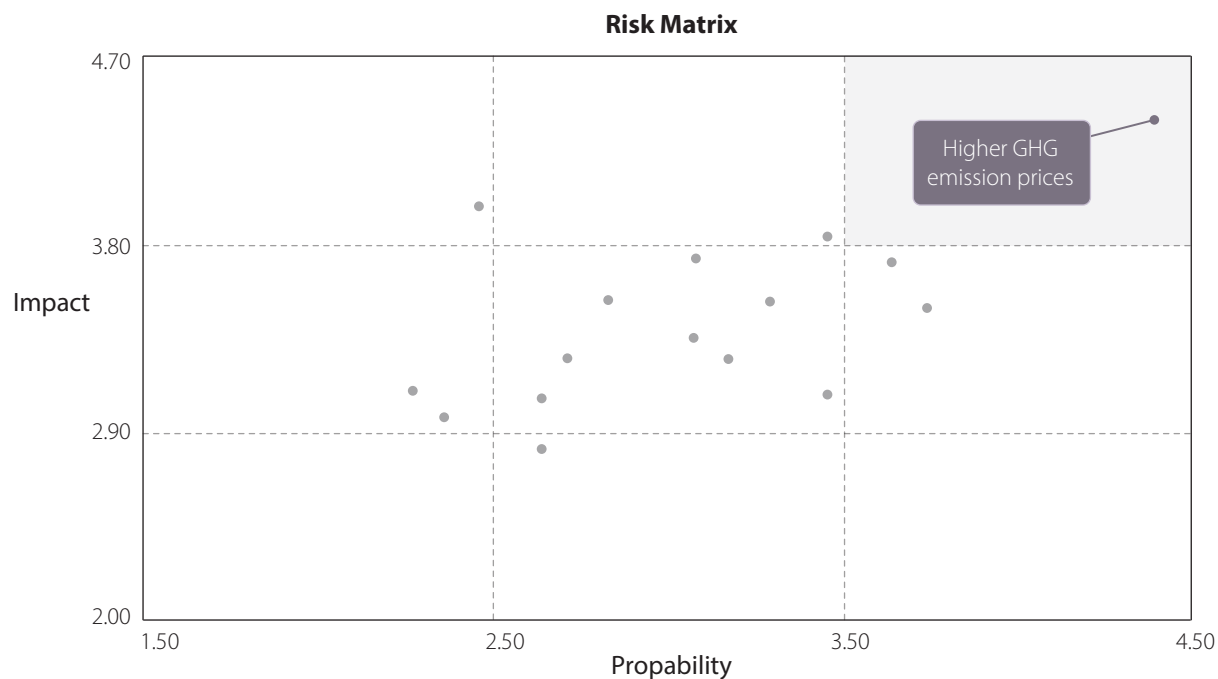
Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Assessment of key risks, potential financial impacts and risk management measures

Taiwan Steel Union's climate change risk assessments and action plans	
Risk type	Transition risks
Item	Policies, laws and regulations
Time	Short-term
Climate related risks	Higher GHG emission prices
Potential financial impacts	Increase of operating costs
Financial impact analysis (Quantitative explanations)	Expected costs and expenses Short-term 2021-2023: about NT\$30m Mid-term 2021-2025: about NT\$60m Long-term 2021-2030: about NT\$140m
Responses (solar energy)	1. Risk transfer (price hikes) 2. Risk mitigation (energy saving, carbon reduction, low-carbon investment)
Estimated costs of responding measures	Carbon reduction investment about NT\$100m (Renewable energy and energy conservation measures)



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

- Management guidelines on sustainability corporate governance
- Sustainability corporate governance highlights
- 2.1 Corporate governance overview
- 2.2 Risks and opportunities
- 2.3 Products and economic performance
- 2.4 Climate change strategy and implementation

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

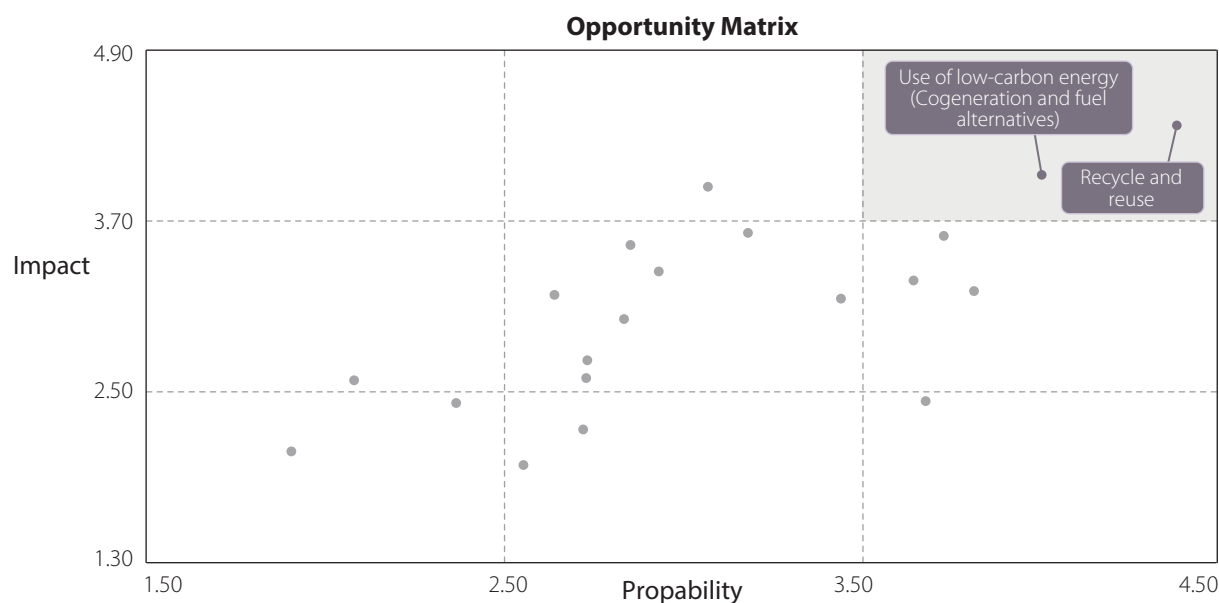
Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Potential financial impact assessment and risk management measures for the two key opportunities

Taiwan Steel Union's climate change opportunity assessments and action plans		
Opportunities	(Slag/zinc oxide/other new waste)	Energy sources
Time	Short-term	Short-term
Climate related risks	Recycle and reuse	Use of low-carbon energy (cogeneration and fuel alternatives)
Potential financial impacts	Increased incomes	Capital expenditures
Financial impact analysis (Quantitative explanations)	Increase of business lines such as incineration fly ash, electroplating sludge, zinc contained waste or industrial waste with high calorific value, to boost the company's revenue	The installation of solar panels to generation 640,000 kWh each year to save an estimated electricity bill of NT\$1.61m based on a tariff of about NT\$2.3 per kWh
Responses	Additional personnel and equipment for pre-treatment before manufacturing process	Addition of solar energy generation as an energy source
Estimated costs of responding measures	Extra personnel expenses and equipment purchase cost	About NT\$30 million for rooftop solar installation



Indicator	Unit	2030 target
Total GHG emissions	CO ₂ e ton/year	20% reduction from 2012
Scope 1 emission intensity	CO ₂ e ton/ton treated	0.53
Scope 2 emission intensity	CO ₂ e ton/ton treated	0.062
Water recycle and reuse rate	%	45%
Water consumption per unit	Water consumption ton/ton treated	0.49

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

- Management guidelines on circular economy
- Circular economy highlights
- 3.1 Circular economy drivers
- 3.2 Special Report on Xinfeng Seaside
- 3.3 Special Report on Circular Economy of Steel Slag
- 3.4 Taiwan Steel Union and Taiwan Steel Resources working together to clean up Electric Arc Furnace dust (EAFD) and slag on high bank of the Dadu River free of charge
- 3.5 Increasing strength of the circular economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Chapter 3 Circular Economy

The circular economy is a regeneration system. The goal of carbon emission reduction is achieved with minimum resource and waste inputs via slowing down, closing up and narrowing the cycles of materials and energies. Production and consumption (purchase) and disposal methods are planned and designed, through principles of reduction, reuse and recycle, to establish an economy and an environment best conducive conditions to sustainable development and resource management.

Management guidelines on circular economy

Main topic: circular economy



Circular economy policy

- Resource recovery, detoxified, stabilization and reuse of dust from electric-arc furnaces and illegal dumpsites are in line with the government's circular economy policy. Valuable heavy metals are recovered from the dust; rotary kiln slag (R-1207) generated are public listed for reuse. The waste are 100% recycled in the circular economy.



Circular economy commitment

- Adherence to laws and regulations; resource recovery, detoxified treatment, stabilization and reuse of dust and reductive slag from electric-arc furnaces are properly managed



Circular economy action and advocacy

- Pro-bono assistance to the government in treatment of EAF dust and slag illegally dumped at Xinfeng Township (western coastal of Fengbi Tunnel) in Hsinchu County and along the Dadu River in Changhua County Promote slag circular economy project



Effectiveness assessment of the circular economy

- Continue tracking the assessment of effectiveness and results via annual CSR reporting

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

- Management guidelines on circular economy
- **Circular economy highlights**
 - 3.1 Circular economy drivers
 - 3.2 Special Report on Xinfeng Seaside
 - 3.3 Special Report on Circular Economy of Steel Slag
 - 3.4 Taiwan Steel Union and Taiwan Steel Resources working together to clean up Electric Arc Furnace dust (EAFD) and slag on high bank of the Dadu River free of charge
 - 3.5 Increasing strength of the circular economy

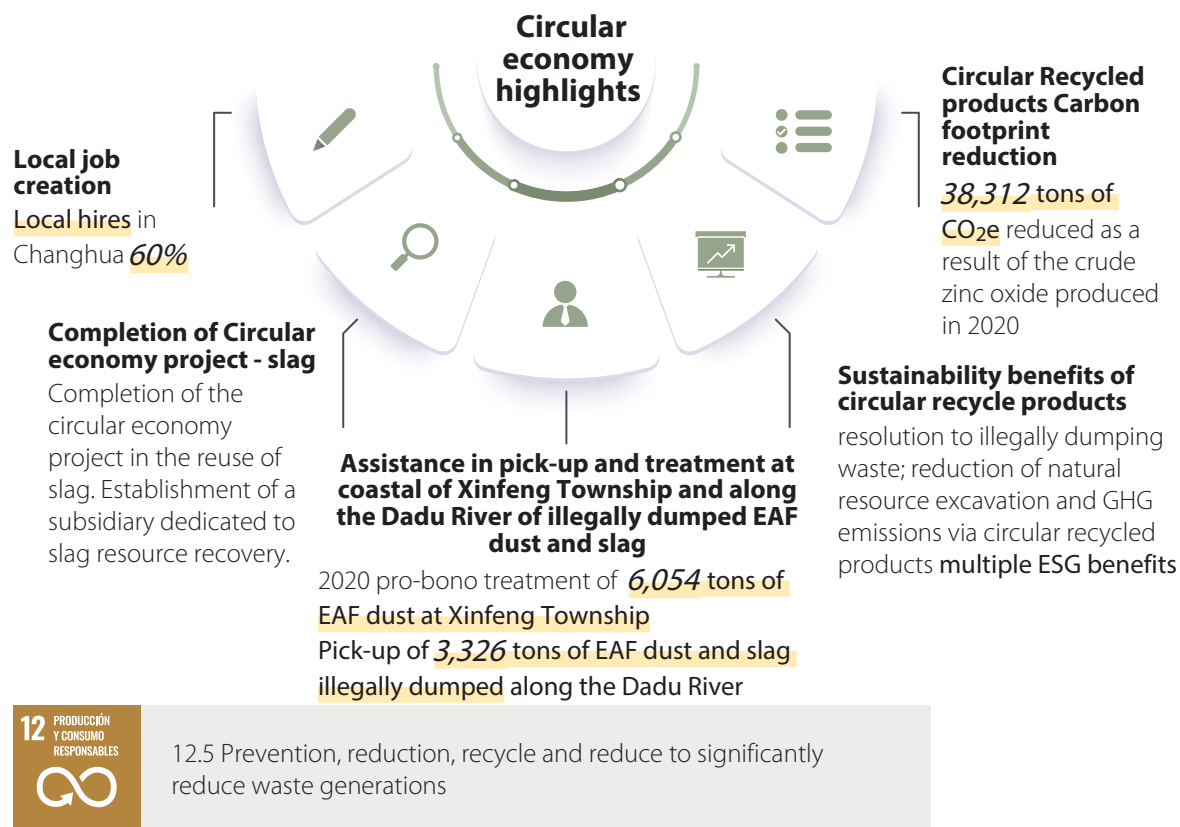
Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

- Management guidelines on circular economy
- Circular economy highlights
- **3.1 Circular economy drivers**
- 3.2 Special Report on Xinfeng Seaside
- 3.3 Special Report on Circular Economy of Steel Slag
- 3.4 Taiwan Steel Union and Taiwan Steel Resources working together to clean up Electric Arc Furnace dust (EAFD) and slag on high bank of the Dadu River free of charge
- 3.5 Increasing strength of the circular economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

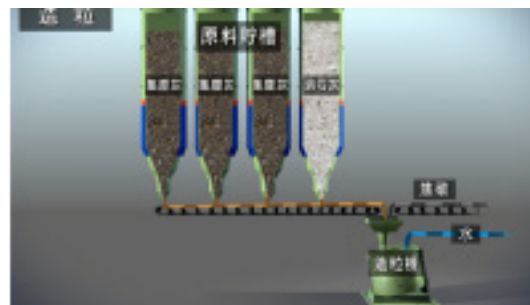
Appendixes

3.1 Circular economy drivers

The circular economy is a philosophy learned from nature in the recycling and reuse of ecosystem resources. It is a new thinking and new development model designed to ensure sustainable recovery, recycle and reuse of resources and reorganization of the society and the economy.

Resource recovery and reuse of dust from electric-arc furnaces is via smelting in high temperatures in rotary kilns. Valuable metals such as lead and zinc are recovered from EAF dust to make crude zinc oxide resource recovery product. Taiwan Steel Union adopts Waelz Kiln Process, a commercially mature technology in use for decades in the U.S., Europe and Japan for resource recovery and reuse of EAF dust.

Waelz Kiln Process starts with blending of pelletized acidic or basic SRP EAF dust, coke, silica sand (or alternative materials such as internally



recycled and reused waste refractory materials, offsite treatment contaminated soils), or lime/hydrated lime/calcium carbonate materials and feeding via conveyor belt in the environment of 1,000°C-1,300°C high temperature treatment in a rotary kiln. The processing can be divided into two steps:

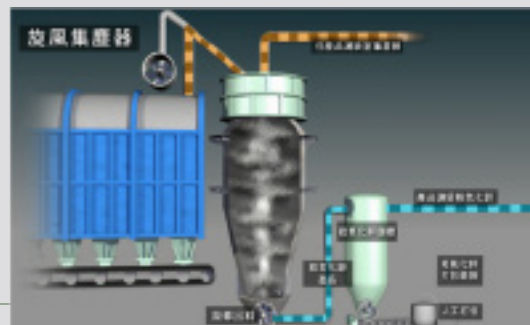


Second step: gas flows

Low-boiling-point ingredients of the feedstock and dust enriched off-gas are processed via air pollution control equipment such as dust settling chamber, Venturi rapid-cooling pipes, cyclone dust collector, activated carbon injection system and two-stage baghouse dust collectors. The processed clean off-gas is then emitted via chimneys. The powder dust materials collected by cyclones and baghouses are bagged as crude zinc oxide products.

First step: material flows

High-boiling-point ingredients in EAF dust and slag forming materials such as silica sand (or alternative) or lime/hydrated lime/calcium carbonate (or alternative) are sintered into rotary kiln slag (reusable waste code R-1207). The slag is discharged from the kiln, air cooled in a cooling drum and transported via conveyors and loading shovels for storage in the slag storage yard. Slag can be reused as road bed grade and reclamation filling materials.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

- Management guidelines on circular economy
- Circular economy highlights
- 3.1 Circular economy drivers
- 3.2 Special Report on Xinfeng Seaside
- 3.3 Special Report on Circular Economy of Steel Slag
- 3.4 Taiwan Steel Union and Taiwan Steel Resources working together to clean up Electric Arc Furnace dust (EAFD) and slag on high bank of the Dadu River free of charge
- 3.5 Increasing strength of the circular economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace




Ch7. Social Inclusion

Appendixes

Sustainability benefits of circular and reuse low-carbon products

A circular economy is an economic and industrial system where resources are recovered and regenerated. This reduces environmental stress and resource consumption. Resources input to the production process can be reduced and waste reuse can be increased by raising resource recovery efficiency to create environmental and economic co-prosperity.

Taiwan Steel Union's crude zinc oxide is a recycled and renewed product as compared to the native product manufactured from ore mining to zinc oxide smelting. Taiwan Steel Union's crude zinc oxide creates multiple sustainability benefits include solution to illegal waste dumping, reduction of natural materials excavation and GHG emissions. The relevant ESG sustainability benefits are as follows:

Type of sustainability benefits	Item	Explanation of sustainability benefits
 Environmental benefits (E)	The demand for natural materials excavation is reduced.	Excavation, processing and transportation affect the environment and the landscape. Conversion of waste into raw materials reduces the environmental impact and enhances the efficiency of natural resources utilization.
	Waste processing services are offered to the society.	Taiwan Steel Union processes waste, to resolve illegal waste dumping and avoid ecosystem destruction.
	Lower CO ₂ emissions	Use of waste as raw materials reduces the carbon emissions associated with excavation, processing and transportation.
	Lower impact on water resources	Use of waste as raw materials reduces the water resource impacts during excavation, processing and transportation..
	Full recycle and reuse of slag	Taiwan Steel Union converts waste slag into valuable resources products, with 100% recycle and reuse.
 Social benefits (S)	Job creation	Create local job opportunities
	Customer relationship improvement	This responds to the expectation from customers and investors and enhances the engagement with stakeholders.
 Economic benefits (G)	Creation of economic benefits	Create positive economic benefits each year
	Resource dependence risk reduction and organizational resilience enhancement	Natural resources are replaced by waste. This reduces the risks of dependency on natural resources and increases Taiwan Steel Union's economic resilience.

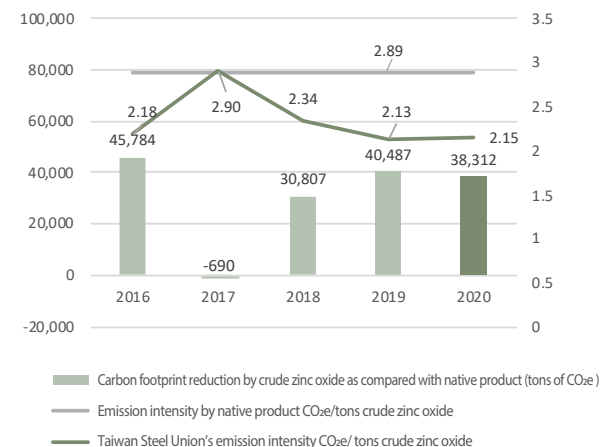
Local job creation

Taiwan Steel Union is located in Changhua Coastal Industrial Park, Changhua County. The company drives for 100% circular economy and prioritizes local employment. 60% of employees are hired locally.

Carbon footprint reduction by recycling and renewed products

Taiwan Steel Union enhances resource efficiency via a circular economy. The production of crude zinc oxide is beneficial to the overall environment and resources, particularly with climate change due to GHG emissions. Compared to the manufacturing process of native zinc oxide, Taiwan Steel Union's recycled and reused products enhance resource efficiency and effectively reduce carbon footprint and GHG emissions throughout lifecycles. The 2020 carbon footprint and emissions were reduced by 38,312 tons of CO₂e. Carbon reduction^{Note} equivalent to carbon removed by 98 Daan Forest Parks.

Note: According to briefings by the Bureau of Energy, Ministry of Economic Affairs (p3 on carbon absorption), one Daan Forest Park absorbs 389 tons of carbon each year.



- Note:
1. Electricity and diesel emission coefficients based on the numbers provided by Environmental Protection Administration's carbon footprint calculation platform
 2. Carbon emission coefficient for coke based on Taiwan Steel Union's material balance calculation
 3. Emission coefficient for native zinc oxide based on Gabi lifecycle assessment (V7.3.0.40)
 4. Carbon footprint reduction not independently verified by third parties

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

- Management guidelines on circular economy
- Circular economy highlights
- 3.1 Circular economy drivers
- **3.2 Special Report on Xinfeng Seaside**
- 3.3 Special Report on Circular Economy of Steel Slag
- 3.4 Taiwan Steel Union and Taiwan Steel Resources working together to clean up Electric Arc Furnace dust (EAFD) and slag on high bank of the Dadu River free of charge
- 3.5 Increasing strength of the circular economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

3.2 Special Report on Xinfeng Seaside

There is a Xinfeng coastal illegal waste dumping site on the western coast of Fengbi Tunnel in Hsinchu County, at the border between Chubei City and Xinfeng Township and the western seashore of Xinfeng Township Landfill site. This seaside area extending about two kilometers became an illegal dumpsite twenty five years ago by corrupt vendors for dumping and burying electric arc furnace dust (EAFD) containing heavy metals and excess dioxins. According to surveys by the Environmental Protection Administration and Hsinchu County's Environmental Protection Bureau, there are construction waste and domestic garbage in addition to hazardous EAFD and slag. This was why Xinfeng Seaside was named "the most toxic coastline".

For social welfare benefits and corporate social responsibility, Taiwan Steel Union offered to assist the transportation and treatment, on a pro-bono basis, the illegally dumped EAFD at Xinfeng Township, Hsinchu County by using own capability in processing and resource recovery of EAFD and contaminated soils. Taiwan Steel Union hence submitted an application for Environmental Impact Assessment Change (the fifth change) for modifications of local EAFD sources allowed. The EIA Change plan was approved in June 2018, with details on helping the Xinfeng site cleaning of about 5,000 tons of waste. Taiwan Steel Union provided assistance in pick-up transportation and treatment according to the plan approved by environmental authorities.

Based on the actual excavation in November 2018, the estimated EAFD would exceed 10,000 tons. Therefore, a submission for second Environmental Impact Assessment Change (the 6th change) was made, to amend the volume of EAFD to be the entire site. The graph below shows the volume of EAFD processed by TSU's help each year. The cleaning up

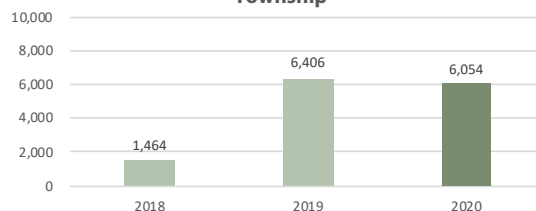
was completed on April 13, 2020, for a total of 13,924 tons and free of charge.

In 2020, the excavation of EAFD toxic waste was completed with full supports from TSU. The most toxic element on the seaside has been tidied up entirely. This once most toxic coastline promises to become the cleanest and the most beautiful one. It is hoped that Xinfeng Seaside can provide and serve as a good spot for recreational activities for local residents. Taiwan Steel Union seeks co-prosperity with the society by contributing our own strength to the environment and social responsibility.



With the assistance from Taiwan Steel Union, the EAFD on the most toxic coastline was removed completely in 2020.

Pro-bono treatment of EAFD (tons) at Xinfeng Township



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

- Management guidelines on circular economy
- Circular economy highlights
- 3.1 Circular economy drivers
- 3.2 Special Report on Xinfeng Seaside
- **3.3 Special Report on Circular Economy of Steel Slag**
- 3.4 Taiwan Steel Union and Taiwan Steel Resources working together to clean up Electric Arc Furnace dust (EAFD) and slag on high bank of the Dadu River free of charge
- 3.5 Increasing strength of the circular economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

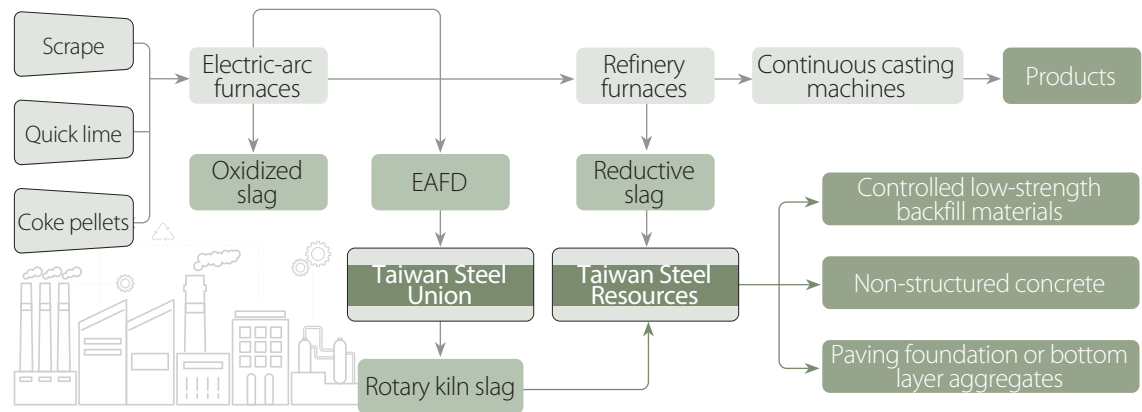
3.3 Special Report on Circular Economy of Slag

The biggest concern with the reuse of reductive slag is the high volumetric expansion, due to a large amount of quick lime not completely reacted. The calcium oxide not fully reacted exists in the form of free-CaO, likely to react with water and carbon oxide digested into calcium hydroxide and calcium carbonate. In the process of free-CaO converting into calcium hydroxide, slag volume will expand causing social incidents so called roads expansion and "pimples" on the walls.

Taiwan Steel Union established the subsidiary company Taiwan Steel Resources mainly for stabilization and treatment of reductive slag. Slag is stabilized utilizing high press and high temperature resource recovery techniques, so that they will no longer expand and can be used as a useful resource product, in combination with the recycling of rotary kiln slag produced by Taiwan Steel Union. Taiwan

Steel Union achieves 100% recycle and reuse model for circular economic and is a role model for the circular economy in Taiwan and abroad. TSU Step feet into reuse of slag for the production of green and environmental-friendly building materials is in line with the circular economy and industrial policy. The fourth and the fifth autoclaves were completed at the end of 2020, to expand the number of production lines to five. Another 30% increased processing capacity is planned for 2021.

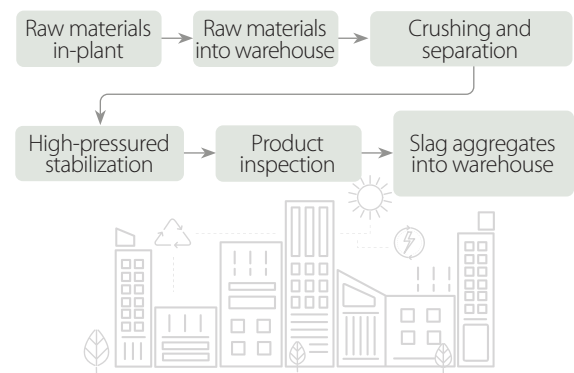
Taiwan Steel Resource also built two in-house ready-mix concrete plants solely made from recycled aggregates also started operation at the end of 2020, will formally enter the market for ready-mix slag concrete business. Dedicated concrete-mix plant for slag with complete tracking and control of material flows. Contracts have been signed with downstream customers and product delivery began already.



Taiwan Steel Resources stabilizes the reductive slag with high temperatures and pressurized steam processes via crushing, magnetic separated and sifted. Pellets are crushed into below 5mm size for conveyor belt transportation to autoclaves for stabilization. Shown in the graph



Five autoclaves



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

- Management guidelines on circular economy
- Circular economy highlights
- 3.1 Circular economy drivers
- 3.2 Special Report on Xinfeng Seaside
- 3.3 Special Report on Circular Economy of Steel Slag
- 3.4 Taiwan Steel Union and Taiwan Steel Resources working together to clean up Electric Arc Furnace dust (EAFD) and slag on high bank of the Dadu River free of charge
- 3.5 Increasing strength of the circular economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

3.4 Taiwan Steel Union and Taiwan Steel Resources working together to clean up Electric Arc Furnace dust (EAFD) and slag on high bank of the Dadu River free of charge

Since 2005, many residents and environmental groups reported the illegal dumping of large quantities of slag and EAFD in the tidal zone along the Changhua side river bank of the Wu River mouth, between 162K West Coast Expressway (Provincial Highway No. 61) and Provincial Highway No. 17 within Changhua County. In 2020, Taiwan Steel Union and Taiwan Steel Resources helped to thoroughly clean up 4,275 tons of EAFD and slag deposited on the high bank of the Dadu River for three decades.

The steelmaking industry in Taiwan produced a large quantity of slag and EAFD in early days. In those days, environmental protection concept was very fragile. Slag and EAFD were often mixed and dumped, as early as in the 1990s. It was not until 2005 when the illegal dumping of EAFD and slag were discovered in the area on the high bank of the Dadu River due to tip-off by local residents.

With the rising awareness for environmental protection, there have been efforts to prevent continued pollutions due to illegal dumping along rivers and public lands. Taiwan Steel Union and Taiwan Steel Resources decided to carry out corporate friendliness measures by actively assisting the local communities in resolving the environmental problem. On a free-of-charge basis, Taiwan Steel Union processed the EAFD and Taiwan Steel Resources screened and processed slag and removed EAFD etc. hazardous waste. The clean-up, screening and removal job duration were completed at the end of December 2020. With the help from Taiwan Steel Union and Taiwan Steel Resources, the EAFD and slag piled on the high bank of the Dadu River for 30 years were completely cleaned up. This action protected the estuary wetland and Wildlife conservation zone of the Dadu River.



On the high bank of the Dadu River
EAFD and slag
With the help from **Taiwan Steel
Union and Taiwan Steel Resources**
were thoroughly removed
Corporate social and
environmental responsibility



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

- Management guidelines on circular economy
- Circular economy highlights
- 3.1 Circular economy drivers
- 3.2 Special Report on Xinfeng Seaside
- 3.3 Special Report on Circular Economy of Steel Slag
- 3.4 Taiwan Steel Union and Taiwan Steel Resources working together to clean up Electric Arc Furnace dust (EAFD) and slag on high bank of the Dadu River free of charge

3.5 Increasing strength of the circular economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

3.5 Increasing strength of the circular economy

To resolve lack of treatment facilities for other reusable waste in Taiwan and to respond to government policy for resource recovery and waste-to-energy, Taiwan Steel Union filed an application on February 15, 2020 for environmental impact assessment changes. The application was passed on November 25, 2020 and approved on January 22, 2021 by Environmental Impact Assessment Committee. The environmental assessment changes approved new acceptable resource waste categories are as follows:

Acceptance Standards and Maximum Treatment Volume for Each Individual Waste

	Acceptable Items	Explanation	Acceptance Standards	Maximum Treatment Volume (ton/year)
Main Raw Materials	Other EAFD from steelmaking	As part of transformation into a General-Case recycle and reuse processor of EAFD (waste code: A-7101), except collection from the existing steelmakers other local electric arc furnaces steel mills (including carbon steel and stainless steel) are newly added.	Zn ≥ 2.5%	28,000
	EAFD from illegal dumpsites	Collection of EAFD (A-7101) at local illegal dumpsites are newly added, to provide proper treatment channel and free speed up the activation and utilization of national land		25,000
	Waste zinc (single metal)	Waste zinc /slag/ashes (R-1303) etc. waste generated from all industrial processes with at least 40% zinc content		1,500
	15%-40% zinc content products from recycle or treatment facilities	Collection of products with lower zinc content of 15%-40% which are produced from recycle or treatment facilities and are difficult to sell are newly added. However, such products can become our company's raw materials for rotary kiln high temperatures smelting process and to be recycled as crude zinc oxide product.		4,000
	Waste zinc-manganese alkaline batteries	Collection of waste zinc-manganese alkaline batteries are newly added to assist the Environmental Protection Administration's Recycling Fund Management Board in resolving lack of proper waste batteries final treatment facilities issue in Taiwan. The valuable zinc metal resources in waste batteries can be recycled as crude zinc oxide product via high-temperature smelting at rotary kilns.		4,000
	EAFD or sludge with zinc content ≥2.5% (e.g., faucet related hardware industry, zinc-copper alloy industry etc.)	Sources of EAFD or sludge from other industries with zinc content ≥2.5% are newly added (e.g., faucet related hardware industry, zinc-copper alloy industry etc.)		2,000
	Electroplating dewatered sludge	Collection of electroplating dewatered sludge (A-8801) with zinc content ≥2.5% which are produced via wastewater treatment plant of electroplating processes are newly added. The primary contents of this waste are heavy metals and can be resource recovered and recycled as crude zinc oxide product via high-temperature smelting processes of our plant's rotary kilns. In this way, the purpose of 100% proper treatment and resource recovery of waste can be achieved.		20,000

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

- Management guidelines on circular economy
- Circular economy highlights
- 3.1 Circular economy drivers
- 3.2 Special Report on Xinfeng Seaside
- 3.3 Special Report on Circular Economy of Steel Slag
- 3.4 Taiwan Steel Union and Taiwan Steel Resources working together to clean up Electric Arc Furnace dust (EAFD) and slag on high bank of the Dadu River free of charge

3.5 Increasing strength of the circular economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

	Feedstock items	Explanation	Acceptance standards	Maximum treatment volume (ton/year)
Additive Raw Materials	Incineration fly ash from municipal solid waste incinerators or public/private waste treatment facilities incinerators	Incineration fly ash containing $\leq 3\%$ chlorine generated from municipal solid waste incinerators or public/private waste treatment facilities incinerators can be used in lieu of the hydrated lime/lime additive raw materials input for high-temperature smelting process in rotary kilns providing proper digestion channels. It mitigates the problems associated with existing incineration fly ash must be solidified and landfilled for a long time and also reduces local landfill site demands and lengthens the service life of existing landfill sites and frees up national land resources.	Cl $\leq 3\%$	35,000
	RDF (or SRF) solid alternative (renewable) fuels	RDF (or SRF) solid alternative (renewable) fuel products are newly added and can be recycled and reused as an auxiliary fuel via high-temperature smelting process in the rotary kilns. This helps the Industrial Development Bureau to resolve the disposal problems of such wastes and also complies with government's promotion of waste-to-energy and the circular economy policies.		
Fuels	Solid (industrial) waste with a heating value	Solid industrial waste with a heating value (acceptance heating value $\geq 1,500$ kcal/kg) or any solid waste with a heating value specially case approved by local/central environmental authorities and produced via screening pre-treatment processes are newly added which can be recycled and reused as a process auxiliary fuel via high-temperature smelting process in the rotary kiln. This is in line with the government's promotion policy for waste-to-energy circular economy.	Heating value $\geq 1,500$ kcal/kg	30,000
	Waste bag filters from electric arc furnaces steel mills	Waste bag filters from electric arc furnaces steel mills (acceptance heating value $\geq 1,500$ kcal/kg) are newly added for the recycled and reused via high-temperature smelting process in the rotary kiln, not only providing auxiliary heating energy for process needs and valuable metal (zinc) in the EAFD residues can also be recycled and reused. This provides proper treatment route of such waste and also complies with the government's promotion policy for waste-to-energy circular economy.		

In 2020, Taiwan Steel Union completed its transformation and preparation is ready for newly added resource waste from various sources in 2021 and injection of motivations for diversified growth gradually. Business discussions have been ongoing with American Zinc Recycling (AZR), the largest zinc smelting company in the U.S. and tests will be conducted soon. As the international zinc price level this year looks to be higher than last year, the company expects new growth in both revenue and profit.

The company expects increasing revenue growths after two decades of planning and arrangements, via the addition of new recyclable resource wastes and production capacity and ready-mix concrete plant expansions completed by Taiwan Steel Resource, in order to ease our revenue impact by international zinc price. The outlook for business performance this year looks brighter than last year.



Taiwan Steel Union's General Manager Yen-Bin Fang (middle), Vice President Tsai-Hsiang (right) and Administrative Department Manager Jackie Lin (left)

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

- Management guidelines on value chains
- Value chain management highlights
- 4.1 Transportation safety laws and regulations
- 4.2 Supply chain management
- 4.3 Customer relation management

Ch5. Green Manufacturing Process

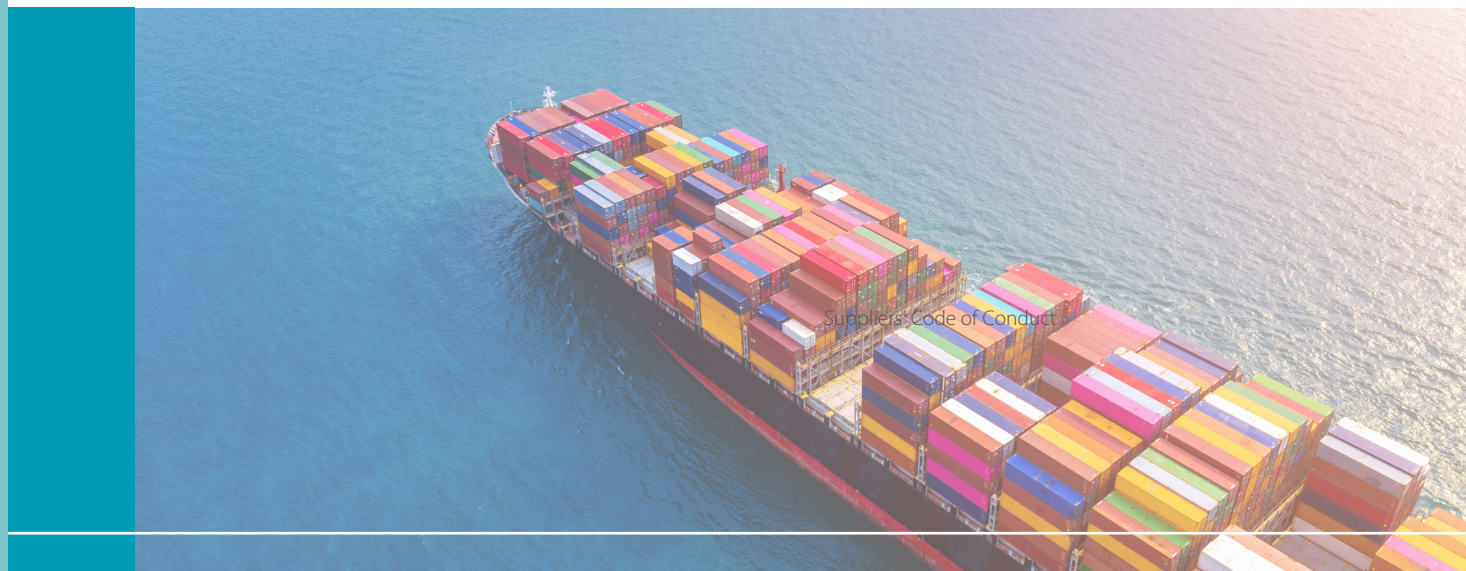
Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Chapter 4 Value Chain Management

Taiwan Steel Union's value chain consists of the supply chain and customers. In the upstream are EAFD or sludge (A-7101) as waste from steelmaking electric-arc furnaces and the resource recovery, processing and treatment of reductive slag. The most important activities downstream are the collection of products and waste, fleet management of collection vehicles and compliance with laws and regulations.



Management guidelines on value chains

Material topic: transportation safety and regulations



3.6 Halving of the number of injuries and deaths due to traffic accidents around the world



Management system

- Transportation safety management and training



Value chain management goals

- 100% compliance with laws and regulations; no major traffic accidents or injuries/deaths
- No violation of environmental laws or regulations

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

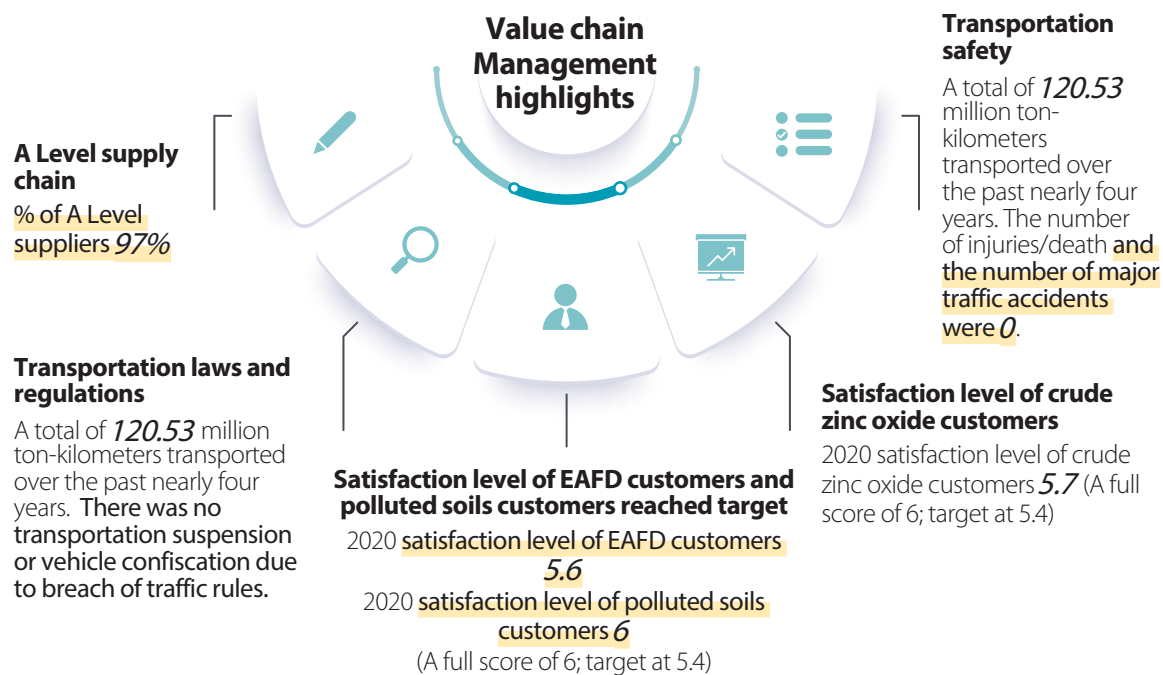
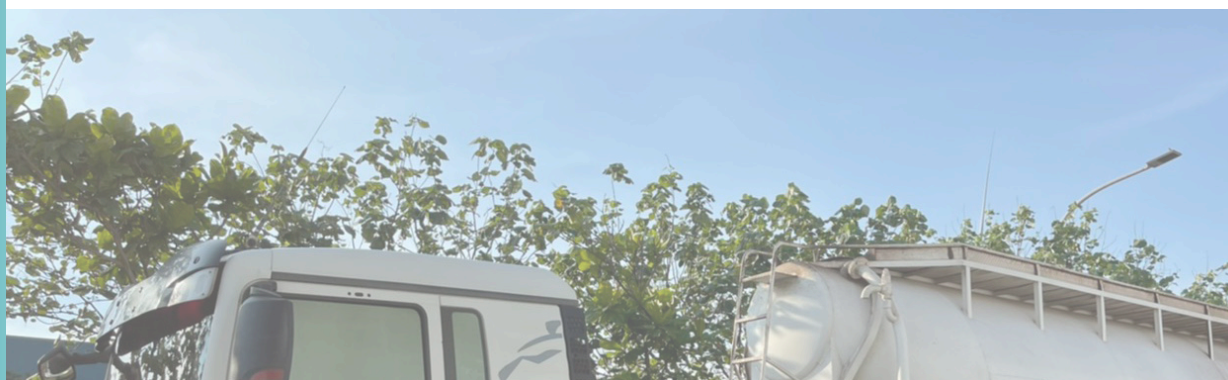
- Management guidelines on value chains
- Value chain management highlights
 - 4.1 Transportation safety laws and regulations
 - 4.2 Supply chain management
 - 4.3 Customer relation management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

- Management guidelines on value chains
- Value chain management highlights
- 4.1 Transportation safety laws and regulations
- 4.2 Supply chain management
- 4.3 Customer relation management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

4.1 Transportation safety laws and regulations

Transportation management

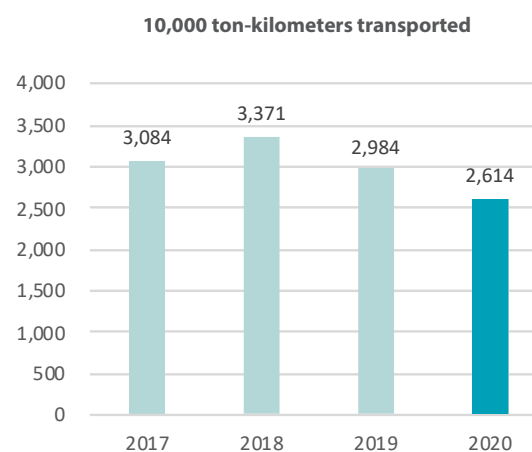
Taiwan Steel Union transports waste such as EAFD from electric-arc furnaces to the designated sustainability sites through fleet contract management, including the installation of the GSP system as required by the Environmental Protection Administration, protective measures required during transportation, training and management of vehicle cleaning and transportation personnel. Transportation management is implemented day-to-day, with a zero-tolerance policy, in order to ensure transportation safety and legal compliance. Motor Vehicles Office's requirement for self-inspections



Transportation safety

Taiwan Steel Union exercises a strict control over transportation safety. The United Nations' Sustainable Development Goal (SDG) 3.6 aims at halving global deaths from road traffic accidents by 2020. Based on this, Taiwan Steel Union sets a zero-tolerance for traffic accidents and resulting injuries/deaths. A total of 120.53 million ton-kilometers transported over the past nearly four years. The number of injuries/death was zero, reaching 100% of the target.

Only one traffic accident occurred in 2020. It was a fender-bender incident caused during roadside parking. No personnel were injured.



Transportation laws and regulations

Taiwan Steel Union demonstrates robust transportation management, without violation of any transportation safety laws or regulations over the past four years.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

- Management guidelines on value chains
- Value chain management highlights
- 4.1 Transportation safety laws and regulations
- **4.2 Supply chain management**
- 4.3 Customer relation management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

4.2 Supply chain management

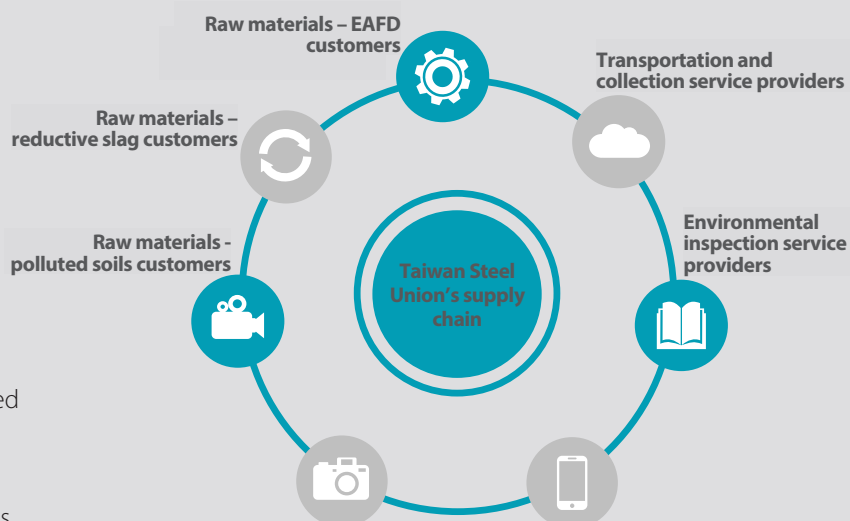
Taiwan Steel Union has put in place "Suppliers' Code of Conduct" for supplier management by incorporating expectations in ethics, healthy and safe environment, labor and human rights.



Suppliers' Code of Conduct



Taiwan Steel Union is a driver of the 100% circular economy. Other than zinc oxide customers and polluted soils customers, the supply chain structure is shown on the right. At the upstream are suppliers of raw materials, equipment maintenance service providers.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

- Management guidelines on value chains
- Value chain management highlights
- 4.1 Transportation safety laws and regulations
- 4.2 Supply chain management
- 4.3 Customer relation management

Ch5. Green Manufacturing Process

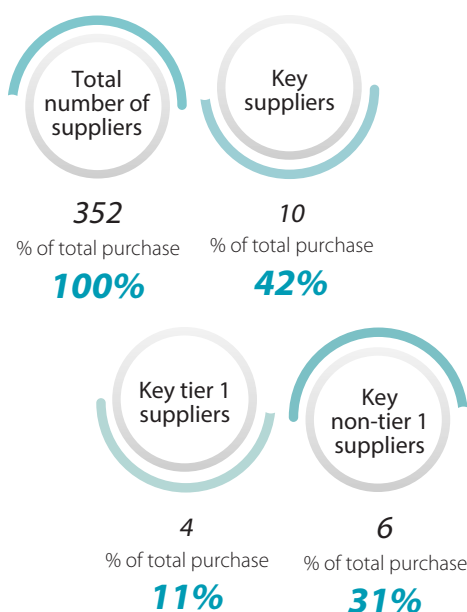
Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Key suppliers

Key materials are the materials necessary for production. Key suppliers are those who supply key materials. Key suppliers are identified to be suppliers of coke, slaked lime and quick lime. The procurement from key suppliers account for 42% of the total purchase.



Taiwan Steel Union's management of key supplier risks

Taiwan Steel Union's management of key supplier risks includes the variety of sources, real-time tenders to avoid stockouts, contracts signing with domestic suppliers to ensure supplies, and at least two suppliers for each key material.

Supplier assessment management

To enhance the sustainability management of supply chains, Taiwan Steel Union has put in place "Supplier Management and Assessment Guidelines" to regulate suppliers and provide a standard for contractor whitelisting and assessment. Assessment when procurement exceeds NT\$200,000 during the annual year of concern

Supplier assessment results

Assessment of suppliers and contractors is divided into monthly assessments and annual assessments, primarily on product delivery, quality, environmental safety and health. Assessment results are categorized for subsequent tiered management. The assessment results in 2015-2020 are as follows: There were a total of 116 suppliers and contractors in 2020. A Level suppliers account for 97% of the total.

Classification	Classification standard	2015 No. of suppliers and contractors	2016 No. of suppliers and contractors	2017 No. of suppliers and contractors	2018 No. of suppliers and contractors	2019 No. of suppliers and contractors	2020 No. of suppliers and contractors
Assessment of suppliers	A Level (90-100 points)	16	27	36	51	44	45
	B Level (61-89 points)	1	1	0	1	1	1
	C Level (≤60 points)	0	0	0	0	0	1
Assessment of contractors	A Level (90-100 points)	40	64	37	68	67	68
	B Level (61-89 points)	1	0	0	0	1	1
	C Level (≤60 points)	0	0	0	0	0	0

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

- Management guidelines on value chains
- Value chain management highlights
- 4.1 Transportation safety laws and regulations
- 4.2 Supply chain management
- 4.3 Customer relation management

Ch5. Green Manufacturing Process

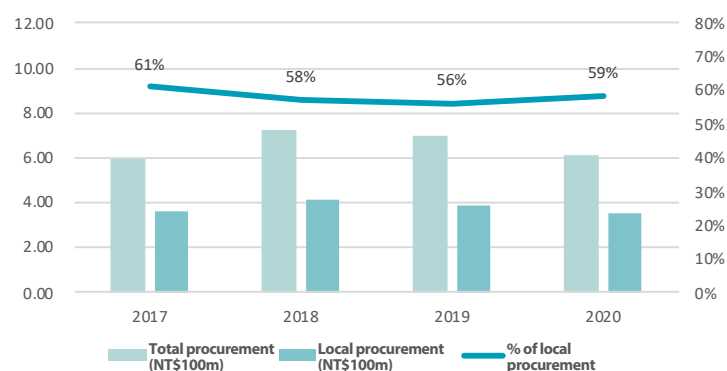
Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Local procurement

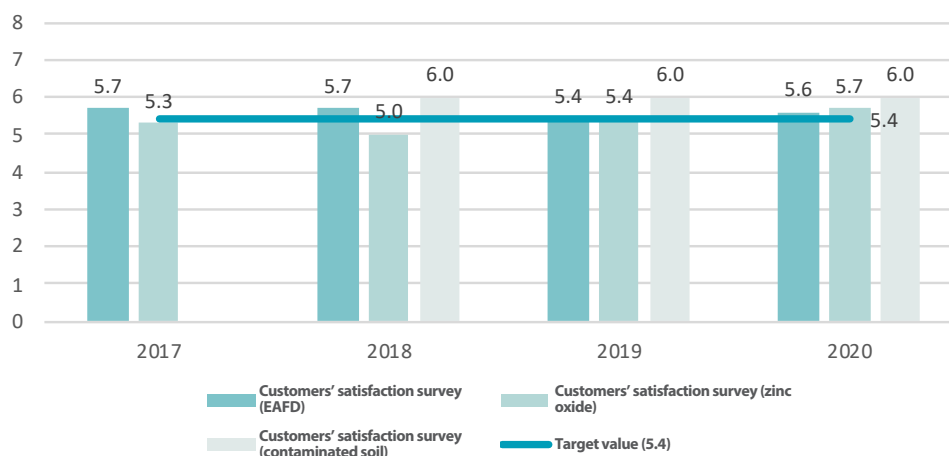
Taiwan Steel Union advocates local procurement in Taiwan, to promote the economic development of Taiwan, by at least purchasing 50% locally. This target was attained in 2017-2020.



4.3 Customer relation management

Taiwan Steel Union conducts annual surveys on levels of satisfaction among EAFD customers and zinc oxide customers, in order to maintain customer trust and manage customer satisfaction. In 2018, the reused soils customers were added to the survey for levels of satisfaction. The rating scale is 5 to 6

points for satisfaction, 3 to 4 points for acceptance, and 1 to 2 points for dissatisfaction. The target is set of 5.4 for high quality. The survey results on all the three customer categories reached the targeted satisfaction level in 2020.



Satisfaction level of EAFD customers

A total of 12 questionnaires were issued to and recovered from EAFD customers. The level of customers' satisfaction has been over the target of 5.4 points for the last four years.

Satisfaction level of reused soils customers

The satisfaction level survey on reused soils customers began in 2018. A total of 15 questionnaires were issued to and recovered from government agencies and private organizations in 2020. The level of customers' satisfaction has all at the perfect 6.

Satisfaction level of zinc oxide customers



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

- Management guidelines on value chains
- Value chain management highlights
- 4.1 Transportation safety laws and regulations
- 4.2 Supply chain management
- 4.3 Customer relation management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

A total of 7 questionnaires were issued to and recovered from zinc oxide customers. The level of customers' satisfaction for 2020 was 5.7, reaching the target of 5.4 points. Taiwan Steel Union maintains good communication with customers and assists customers to keep an eye on the steel market and the zinc ore market in Taiwan and overseas. Hopefully this creates win-win for Taiwan Steel Union and customers with stable demand and supply by helping customers make adjustments to market change and providing materials specific to requirements.

Interaction with customers



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Chapter 5 Green Manufacturing Process

Management guidelines on green manufacturing process

Taiwan Steel Union is a company that reuses waste from steelmaking electric-arc furnaces in Taiwan. To fulfill corporate social responsibility, we translate our long-standing philosophy into effective resource planning. Potential hazards, risks and environmental impacts are effectively controlled with an environmental health and safety management system on production activities, products and services, in order to achieve sustainability.

Material topics: climate change, environment policy management system, materials (GRI 301), energy (GRI 302), water and effluents (GRI 303), GHG emissions (GRI 305), environmental compliance (GRI 307), effluents and waste (GRI 306), occupational health and safety (GRI 403)



Management system

- Continued promotion and maintenance ISO 14001 and ISO 45001 environmental safety and health management system



Green manufacturing process targets

- Compliance with emission standards stipulated in all environmental laws
- 2030 water reclamation and reuse rate of 45%
- 2015-2024 electricity saving 1% p.a.



Assessment of green manufacturing process effectiveness

Annual CSR reports to follow up and assess effectiveness



Green manufacturing process and environmental safety and health policy

- Adherence to the government's laws, regulations and other requirements in environmental safety and health
- Continuing operations in accordance with green, environmental protection and safety policies
- Environmental safety and health education to enhance employees' awareness in environmental safety and health
- Hazard and pollution prevention to establish a quality work environment
- Continued improvement to enhance management performance in environmental safety and health
- Industrial waste reduction to lower pollutant emissions and protect the environment
- Adherence to environmental safety and health issues to achieve sustainable operation
- Safe and healthy environment to prevent injuries and diseases
- More work consultation and involvement to better safety and health performance



6.4 Significant improvement of water consumption efficiency for different industries, to ensure the sustainability of fresh water supply and recycling



7.a. Enhancement of energy infrastructure and investment in clean energy technology

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
 - 5.1 Environmental-friendly green manufacturing process
 - 5.2 Environmental policy and management system
 - 5.3 Operational ecosystem efficiency
 - 5.4 Water risk management
 - 5.5 Wastewater, polluted water and waste
 - 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Green Manufacturing Process Highlights 1

Environmental protection expenses in

2020 totaled
NT\$98 million.

Good energy intensity

2020 energy
intensity was **6.3**
(GJ/ton EAFD +
polluted soils), in
line with standards.

National phased control target reached Total emissions target

2020 GHG emissions have
been **reduced by 18%**
compared to the base
year (2012).

Key Scope 3 emissions

Emissions related to the
transportation of raw materials,
energy and coke excavation
totaled **18,000** tons, or **16%**
of the total emissions.

100% recycle and reuse of materials

Inputs are EAFD and polluted soils.
Outputs are crude zinc oxide and
slag. Slag is converted by Taiwan Steel
Resources into products, for **100%**
recycle and reuse of materials.

Green Manufacturing Process Highlights 2

Water reclamation Good reuse rate

2020 **water
reclamation rate**
38%

Best water consumption intensity in history

Water consumption
per processed unit
(EAFD + polluted
soils) of **0.536** ton,
the best in history.

Good electricity consumption intensity

Electricity consumption
intensity in 2020: **115**
(kWh/ton of EAFD +
polluted soils), in line with
standards.

Coke energy efficiency project

dramatic decline in coke
consumption per ton treated
(EAFD + polluted soils); **35%**
cumulative reduction for two
years.

Close to 100% reuse rate for industrial waste

Close to **100%** reuse rate for general
and hazardous waste; **Slag reuse rate**
100%.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- **5.1 Environmental-friendly green manufacturing process**
- 5.2 Environmental policy and management system
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

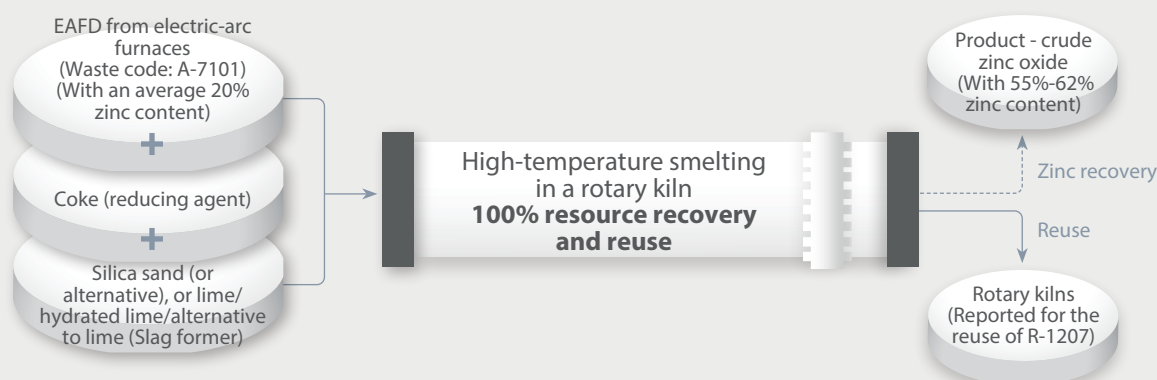
Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

5.1 Environmental-friendly green manufacturing process

Taiwan Steel Union adopts Waelz Kiln Process with high-temperature smelting in rotary kilns, for resource recovery and stabilization of EAFD from electric-arc furnaces (A-7101) and polluted soils. The converted products are crude zinc oxide and reusable slag, 100% recycled and reused in an environmental-friendly process including best available control technology (BACT), the optimal and feasible control technology, optimization and improvement of manufacturing process, an enclosed transportation system, cooling system improvement, thermal recovery and fleet management.



Air pollution control technology

Taiwan Steel Union uses air pollution control equipment of the best available control technology (BACT). This includes a dust settling chamber, Venturi cooling pipes, hydrated-cyclones, activated carbon injectors, hydrated lime injectors, two-stage bag-type dust collectors (product bags and absorption bags), bag-type dust collectors for entry ends and kiln entries. Meanwhile, preventive measures are in place to control fugitive pollution from stored materials. Warehouses are built for raw materials, products and Phase III, so that raw materials as inputs, rotary kiln slag and products as outputs are all kept indoors. This reduces fugitive pollutions due to blowing of strong winds.

Manufacturing process optimization and improvement

Taiwan Steel Union optimizes and improves the manufacturing process such as review of parameters of basicity adjustments and betterment of the cooling system. The purpose is to reduce the consumption of coke and liquid oxygen and the generation of wastewater.

Enclosed transportation system

The transportation system is enclosed in the underground hallway, to reduce fugitive emissions of materials. Dust collectors are installed at the warehouses for incoming materials.

Air cooling and thermal recovery

Taiwan Steel Union's No. 2 Kiln and No. 1 went through revamps for the cooling system in 2015 and 2016, respectively. A cooling kiln was added to recover hot air. The cooling system has been changed from water-based to air-based. Counter-current heat exchange is processed for slag and cold air. After the heat exchange, hot air is recovered at about 320~400°C, as an input to the main rotary kiln to fuel combustion. Once cooled, the temperature of slag can be reduced to 50~80°C, conveyed to the disposal site. The improved manufacturing process saves 10-20% coke consumption. It also reduces the consumption of liquid oxygen and running water and the emission of wastewater. This reduces energy and water consumption, as well as carbon reduction.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Inputs (10,000 tons)

	2017	2018	2019	2020
EAFD	12.1	14.5	14.4	14.7
Polluted soils	1.2	1.7	2.1	1.8
Others	7.1	3.0	3.5	3.3

Outputs – crude zinc oxide (10,000 tons)

	2017	2018	2019	2020
	4.80	5.64	5.35	5.19



Output – slag (10,000 tons)

	2017	2018	2019	2020
	11.1	13.2	13.8	13.7

Output – resource recovery of slag (10,000 tons)

	2017	2018	2019	2020
	11.1	13.2	13.8	13.7

Fleet management

To reduce the pollution risk due to fugitive emissions of dropped materials, the purchase contracts require the cleaning of the vehicle after the uploading of each batch. When leaving the factory, vehicles are inspected at the weighing room for cleaning and prevention of fugitive materials.

100% recycle and reuse of materials

Taiwan Steel Union's inputs are EAFD and polluted soils. Outputs are crude zinc oxide and slag, both non-renewable. The subsidiary Taiwan Steel Resources converts slag into products, with 100% resource recovery and reuse.

In 2020, the subsidiary Taiwan Steel Resources reported the processing of 53,000 tons of reductive slag, 100,000 tons of rotary kiln slag and 7,000 tons of oxidized slag.

Inputs (10,000 tons)

	2020
Reductive slag	4.9
Rotary kiln slag	9.7
Oxidized slag	0.7

Outputs - Base materials for pavement engineering (10,000 tons)

	2020
	2.2



Outputs - concrete aggregates (including asphalts) (10,000 tons)

	2020
	8.9

Outputs - Controlled low- strength backfill material aggregates (10,000 tons)

	2020
	4.2

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- **5.2 Environmental policy and management system**
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

5.2 Environmental policy and management system

To implement ISO 14001 environmental management system, ISO 45001 occupational health and safety management system and to fulfill corporate social responsibility, Taiwan Steel Union has formulated its environmental health and safety policy as the highest principle for environmental health and safety management.



Environmental standards and policy

Taiwan Steel Union is a company that reuses waste from steelmaking electric-arc furnaces in Taiwan. To fulfill corporate social responsibility, we translate our philosophy into effective resource planning. Potential hazards, risks and environmental impacts are effectively controlled with an environmental health and safety management system on production activities, products and services, in order to achieve sustainability.

Environmental management system implementation and validation

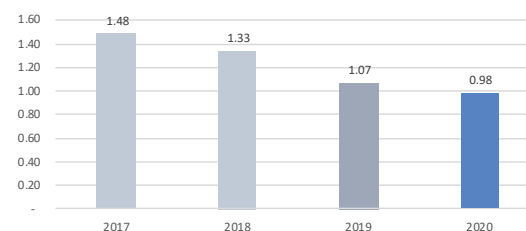
Taiwan Steel Union continues to drive its environmental health and safety management system, with annual targets, goals and management initiatives. A robust management method is implemented to reduce pollutions and emissions, improve the operating environment and enhance management performance in environmental health and safety. The purpose is to ensure the environmental friendliness of the manufacturing process and the creation of a safe operating environment.

Environmental protection expenses

Taiwan Steel Union's environmental protection expenses include wastewater treatment and emission charges, air pollution processing and emission charges, waste collection and processing fees, regular inspection fees, cleaning and maintenance of factory facilities and cultivated plants and costs for environmental management and preventive measures. 2020 expenses: NT\$98 million



Environmental protection expenses (NT\$100m)



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- **5.3 Operational ecosystem efficiency**
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

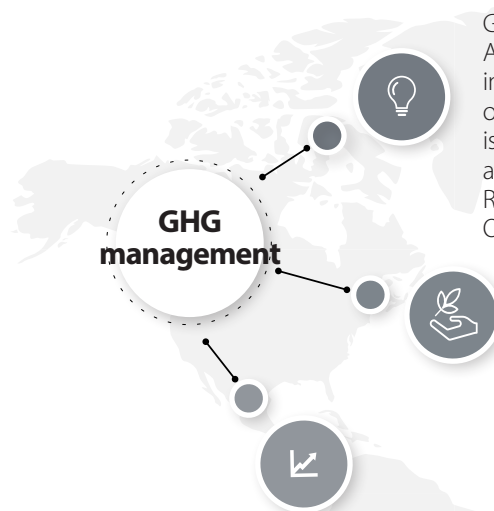
Ch7. Social Inclusion

Appendixes

5.3 Operational ecosystem efficiency

GHG inventory verification and registration

GHG management is a major issue for Taiwan Steel Union. A GHG policy has been put in place. We conduct GHG inventory and registration each year according to the operational guidelines on GHG inventory registrations issued by the Environmental Protection Administration and ISO 14064-1 Organization Quantification and Reporting of Green House Gases - GHG Emissions Inventory & Reporting. Our base year is set at 2012.



National GHG reduction target and planning

The Greenhouse Gas Reduction and Management Act has set up stages of five years. The central competent authorities discuss with government agencies in the formation of control targets for each stage. After the discussion with the central competent authorities, The Environmental Protection Administration has set up the first phase target (2016-2020) for Taiwan, to reduce GHG emissions in 2020 by 2% from the base year. According to the laws and the phased target, Taiwan Steel Union has set up a plan for gradual emission reduction by referring to 2012 as the base year. The 2020 GHG emission has been reduced by 18% from the base year level.

New KPIs and targets in GHG management

Taiwan Steel Union has set up new KPIs and targets for GHG management. This includes the total emissions based on the national phased control target, Scope 1 emission intensity target (ton CO₂e/ton EAFD+ polluted soils) and Scope 2 emission intensity target (ton CO₂e/ ton EAFD+ polluted soils).

KPIs and targets in GHG management

Key Performance Indicators	Long-term target for 2030
• Total emission target based on national phased control	<ul style="list-style-type: none"> • 2% reduction by 2020 • 10% reduction by 2025 • 20% reduction by 2030
• Scope 1 emission intensity target (tonCO ₂ e/ ton EAFD+ polluted soils)	<ul style="list-style-type: none"> • 2025 target: 0.56 • 2030 target: 0.53
• Scope 2 emission intensity target (tonCO ₂ e/ton EAFD+ polluted soils)	<ul style="list-style-type: none"> • 2025 target: 0.064 • 2030 target: 0.062

2020 KPIs

Phased control reduction target (%)	Scope 1 emission intensity (ton CO ₂ e/ ton EAFD+ polluted soils)	Scope 2 emission intensity (ton CO ₂ e/ ton EAFD+ polluted soils)
2020 18	2020 0.556	2020 0.061
2019 17	2019 0.540	2019 0.063
2018 1	2018 0.668	2018 0.064
2017 9	2017 0.738	2017 0.082

2020 target achievement

Reduction by 18% in 2020, achieving the 2025 target	2020: Scope 1 emission intensity of 0.556, achieving the 2025 target	2020: Scope 2 emission intensity of 0.061, achieving the 2025 target
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Note: The 2020 KPIs are different from Scope 1/2 emission intensity of 0.540/0.063 stated for 2019 stated in the 2019 report. Data has been updated.

2020 CSR Report: Table of Content

- About CSR the Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

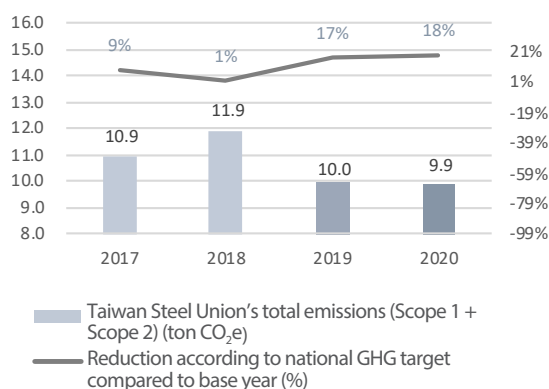
Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

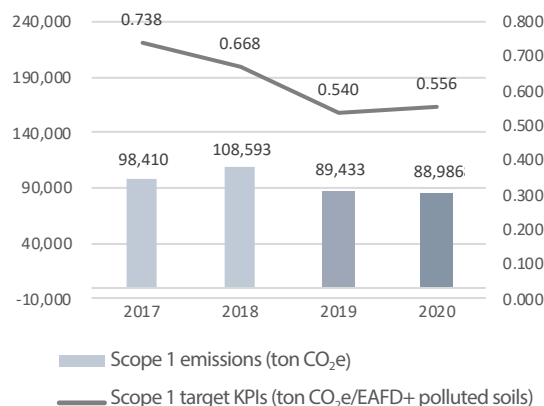
Taiwan Steel Union's total GHG emissions (Scope 1+ Scope 2)

Total emission target based on national phased control



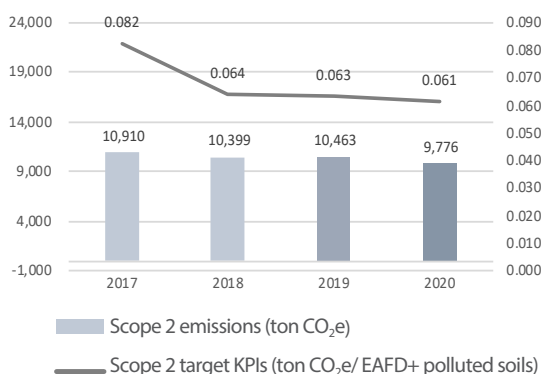
Taiwan Steel Union's Scope 1 emission

Emission intensity (ton CO₂e/ ton EAFD+ polluted soils)



Taiwan Steel Union's Scope 2 emissions

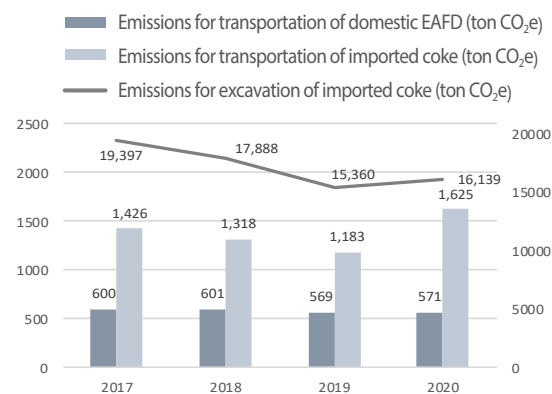
Emission intensity (ton CO₂e/ ton EAFD+ polluted soils)



Taiwan Steel Union's Scope 3 emissions

Taiwan Steel Union follows the TCFD framework in conducting and disclosing the inventory of Scope 1 to Scope 3 emissions. Our identification of the key Scope 3 emissions are the transportation of EAFD as a raw material, the transportation of energy and coke and the excavation of coke as an energy input. Each Scope 3 GHG emission is as follows: (lifecycle emission coefficients based on the numbers provided by Environmental Protection Administration's carbon footprint calculation platform

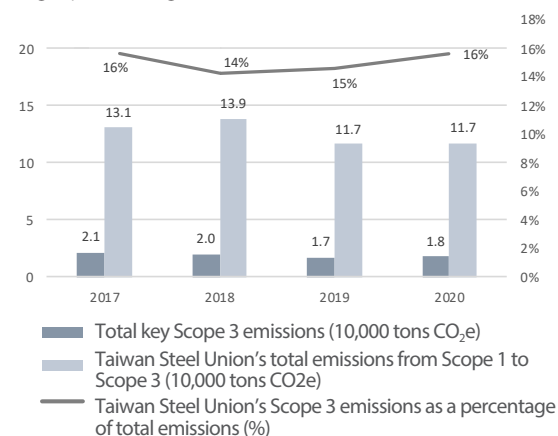
Taiwan Steel Union Scope 3 emissions (tonCO₂e)



Note: The emissions associated with the excavation of imported coke are higher than the other two items and off the chart. A linear graph is used, instead of a bar chart.

Taiwan Steel Union's Scope 3 emission risks

Taiwan Steel Union's Scope 3 emissions account for 14%-16% of the total emissions. This is not a high percentage.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- **5.3 Operational ecosystem efficiency**
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Taiwan Steel Union's GHG reduction measures

- The company plans to plant 76 indigenous arbor trees from March 2021 to May 2021 on No. 52 greenspace for offsetting carbon, in order to increase carbon fixation effects.
- We expect to adopt two variable frequency air compressors before the first quarter of 2021, to save approximately 271,960 kWh of electricity p.a. According to the electricity carbon emission of 0.509 kg CO₂e/kWh most recently released by the Bureau of Energy in 2019, this reduces GHG emissions by about 138 tons. Variable frequency models will be adopted to reduce energy consumption and carbon emission, for any large air compressors or blower/exhaust fan used in the high-temperature smelting process.
- Starting in 2021, we plan to add RDF (or SRF) solid alternative fuels and solid industrial waste/solid waste/waste bag filters for steel-making electric arc furnaces with a thermal value to replace up to 6,429 tons of coke each year. This provides carbon reduction benefits in the midterm.

- We plan to install a rooftop solar energy generation system of more than 5,000 square meters in 2023, for internal consumption or selling to TaiPower. The system is expected to be 600 kW in capacity (based on 100 W/m²) and generate 638,750 kWh of electricity each year. This reduces about 325 tons of GHG emissions per year and achieves long-term and stable carbon reduction benefits.

Energy management

- Taiwan Steel Union continues to implement action plans for energy efficiency and carbon reduction, by improving energy consumption efficiency and energy performance. Taiwan Steel Union is categorized as an electricity user for at least 800kW capacity and subject to the Regulations on Setting Energy Conservation Objectives and Execution Plans for Energy Users. This requires at least 1% average electricity saving rate p.a. in 2015-2024. By 2020, the average electricity saving rate is 1.51%, with saved thermal value of 6.54TJ.

Year	2016	2017	2018	2019	2020
Total electricity consumption (kWh)	21,586,400	18,850,400	18,669,600	18,717,600	18,332,000
Annual electricity saving (kWh)	347,865	106,425	683,664	10,764	645,980
Energy saving (TJ)	1.3	0.4	2.5	0.04	2.3
Annual electricity saving rate %	0.85	0.76	1.41	1.16	1.51
Carbon reduction (ton CO ₂ e)	199	59	364	6	329

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

New KPIs and targets in energy management

Taiwan Steel Union has set up new KPIs and targets for energy management. This includes the average annual electricity saving rate in 2015-2024, energy intensity target (GJ/ton EAFD+ polluted soils), energy consumption intensity target (kWh/EAFD+ polluted soils).

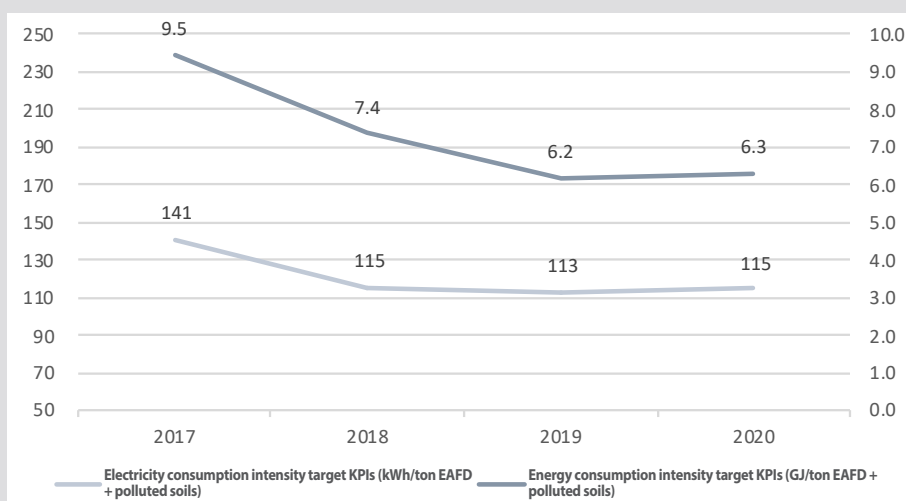
KPIs and targets in energy management		
Key Performance Indicators	Long-term target for 2030	
<ul style="list-style-type: none"> • Annual electricity saving rate in 2015-2024 • Energy consumption intensity target (GJ/ EAFD+ polluted soils) • Electricity consumption intensity target (kWh/ EAFD+ polluted soils) 	<ul style="list-style-type: none"> • Annual electricity saving 1% to 2024 (10% over the 10 year period) • 6 • 110 	

2020 KPIs		
Annual average electricity saving rate (%)	Energy consumption intensity target (GJ/EAFD+ polluted soils)	Electricity consumption intensity target (kWh/EAFD+ polluted soils)
2020 1.51	2020 6.3	2020 115
2019 1.16	2019 6.2	2019 113
2018 1.41	2018 7.4	2018 115
2017 0.76	2017 9.5	2017 141

2020 target achievement		
Target achieved	Ongoing	Ongoing

Note: 2020 KPIs are different from the average electricity saving rate target of 1.16 and the energy consumption intensity target of 6.2 stated in the 2019 report. Data has been updated.

Taiwan Steel Union's energy consumption intensity target and electricity consumption intensity target



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- **5.3 Operational ecosystem efficiency**
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

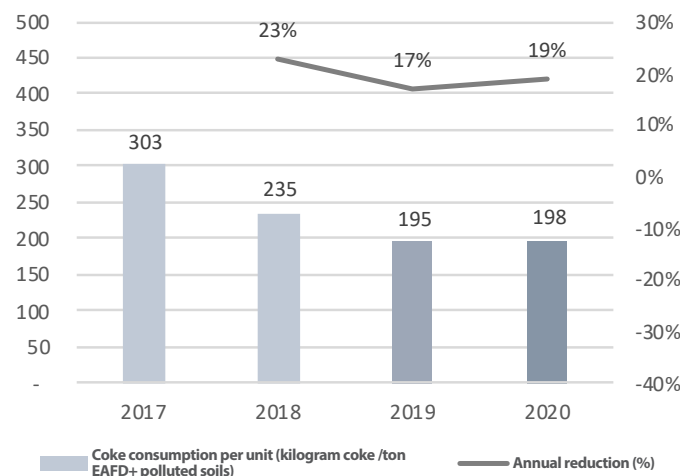
Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Coke energy efficiency improvement project

Taiwan Steel Union implemented a coke energy efficiency improvement project in 2018-2020. The reuse rate of polluted soils was increased by adjusting basicity in a timely basis. With gradual reduction of coke as an input and at a lower ratio of coke to EAFD, the reaction within a kiln can slowly stabilize. Coke consumption per ton of EAFD+ polluted soils treated dropped from 303 kilograms in 2017 by 35% to 198 kilograms in 2020.



Air pollution emission management

Taiwan Steel Union carries out air pollution control measures to ensure all the pollution control equipment maximize effectiveness. We also strictly adhere to laws, regulations and environmental assessment and commitment and make transparent disclosure.

Environmental-friendly air pollution control

Taiwan Steel Union controls air pollution in a robust and environmental-friendly manner. This includes the transportation enclosure in vehicles for incoming materials, reduction of fugitive emission by using container bags, vehicle cleaning after uploading, highly efficient dust collectors, enclosed transportation systems in underground hallways, back-end pollution control facilities and ongoing monitoring and analysis of air pollutants. Except the main chimney for No. 1 Kiln slightly breaching the committed value in environmental assessments for mercury (a heavy metal) emission in the fourth quarter of 2019, all the other emissions to date have been lower than legal standards or maximums committed in environmental assessments. To enhance mercury pollution control in waste air, special filters of activated carbon were introduced in 2021 to improve mercury removal rate by over 90% in the air pollution control equipment.



Regular monitoring and transparent disclosure

In addition to air pollution inspection at the chimney outlets, Taiwan Steel Union regularly monitors the ambient air quality for two stations, dioxins in the air for three stations, dioxins in the air dust for three stations. Despite a lack of control standards on dioxins in the air and in the air dust in Taiwan, Taiwan Steel Union has been monitoring and analyzing the data and disclosing the results in its official website each quarter.

100% compliance with air pollution laws and regulations

The emissions of nitrogen oxides (NOx), sulfur oxides (Sox) and particle matters have been lower than the maximums committed in environmental assessments. The emission of volatile organic compounds (VOC) is limited to fugitive from the diesel storage tank and only 0.004 tons p.a. The subsidiary Taiwan Steel Resources emitted 5.10 tons of NOx and 0.11 ton of particle matters in 2020. Air pollution emissions were in line with legal standards. To exercise strict control, the company is committed to significant reduction of annual air pollution emissions starting in 2021, to a maximum of 95% reduction. This showcases our corporate social responsibility to maintain lowest emissions with best available control technology (BACT).

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGs
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

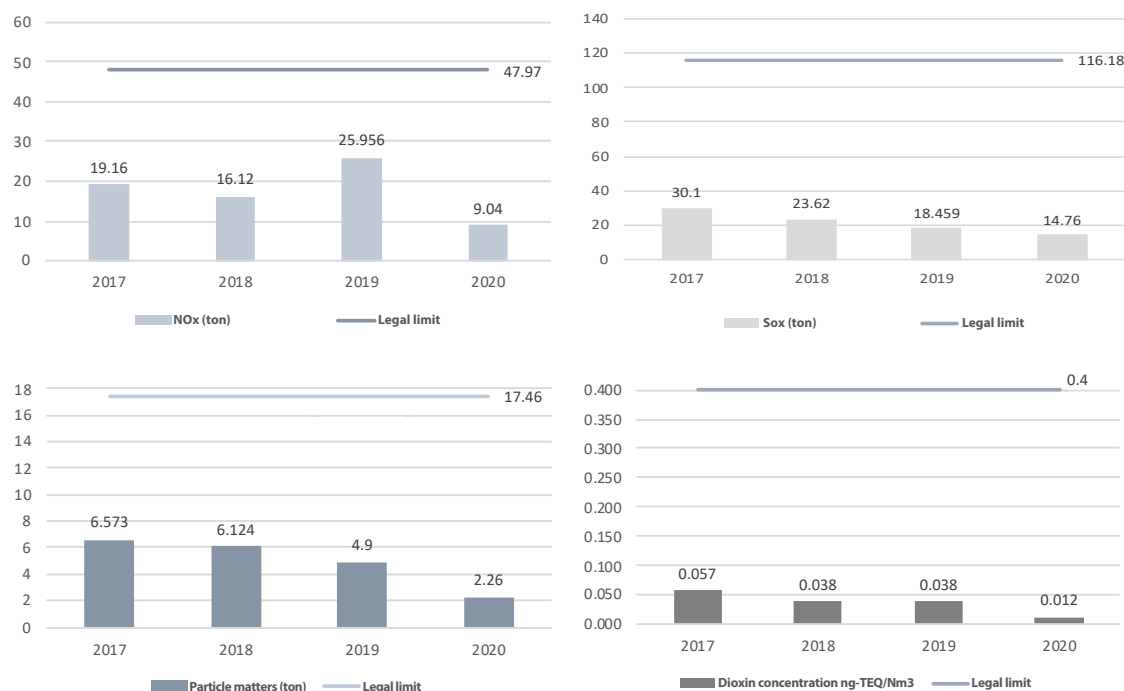
- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

2020 air pollution emissions



Our commitment to annual air pollution emission reduction

Year	Committed emissions starting in 2021	Original committed emissions in environmental assessments	Committed reduction percentage	Actual emissions in 2020
Particle matters (ton/year)	5.48	17.46	-69%	2.26
SOx (ton/year)	20.64	116.18	-82%	14.76
NOx (ton/year)	28.36	47.97	-41%	9.04
Lead (ton/year)	0.06	0.51	-88%	0.014
Zinc (ton/year)	0.43	2.31	-81%	0.151
Cadmium (ton/year)	0.0024	0.01	-76%	0.00087
Mercury (ton/year)	0.432	0.54	-20%	0.0705
Dioxin (gram/year)	0.04	0.717	-95%	0.017

Annual
monitoring data



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

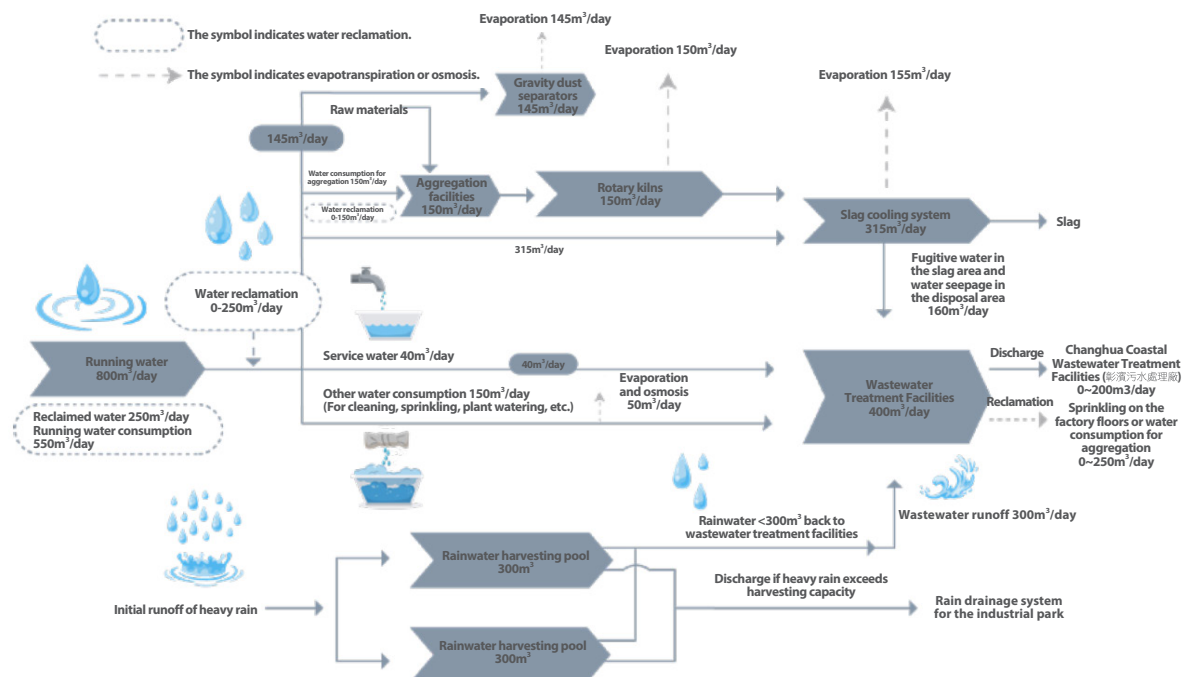
5.4 Water risk management

Water resource management is Taiwan Steel Union's priority. We have put in place a water risk management policy to assess water consumption risks. We are committed to water reclamation and reuse. A set of KPIs on water resource management have been established. We also manage and monitor wastewater emissions and provide transparent disclosure.



Water risk assessment

Taiwan Steel Union is located in Changhua Coastal Industrial Park, Changhua County. Water resource is from running water (from the third party). According to the official website of Changhua Coastal Industrial Park, local running water is from Carp Pond Water Reservoir. The reservoir supplies about 700,000 tons of water each day, and among this 15,000 tons daily to Changhua Coastal Industrial Park. Taiwan Steel Union's average water assumption per day is approx. 1.8% of the reservoir's daily supply. The water acquisition method and volume do not cause significantly adverse influence on the water source. The scarcity risk of water resources is low. It is not a water resource stress spot.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

New KPIs and targets for water resource management

Taiwan Steel Union has set up a new set of KPIs and targets for water resource management. This includes water reclamation rates, water consumption per unit (EAFD + polluted soils), and wastewater emission compliant with sewage influent standards of Changhua Coastal Industrial Park.

KPIs and targets for water resource management

Key Performance Indicators	Long-term target for 2030
<ul style="list-style-type: none"> • Water recycle and reuse rate • Water consumption per unit treated (EAFD + polluted soils) • Wastewater influent pipes 	<ul style="list-style-type: none"> • 45% • 0.49 • No material breach

2020 KPIs

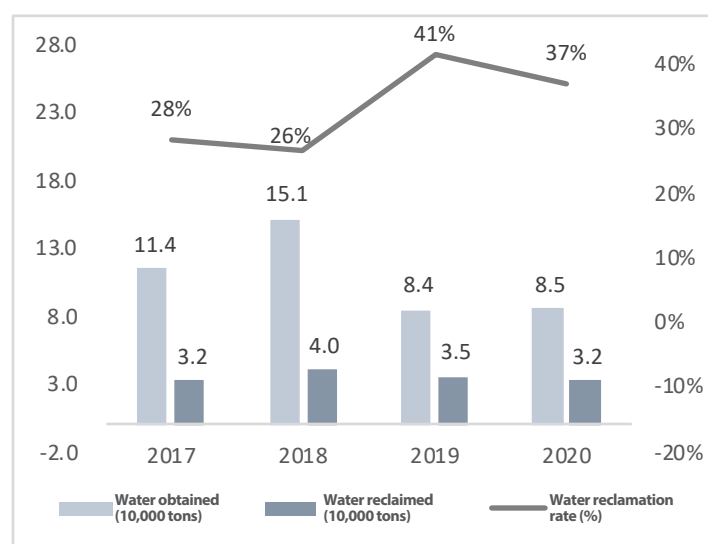
Water recycle and reuse rate (%)	Water consumption per unit (ton/ton waste treated)	Zero breach
2020 37	2020 0.536	2020 0
2019 41	2019 0.507	2019 0
2018 26	2018 0.927	2018 0
2017 28	2017 0.858	2017 0

2020 target achievement

Ongoing	Ongoing	Target achievement
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Water reclamation and reuse

Taiwan Steel Union uses water primarily for aggregation manufacturing process, rotary kilns, slag cooling, pollution prevention, cleaning, sprinkling and watering, service water for employees, etc. A portion of water is evaporated. To effectively use water resources, the water used for the manufacturing process is reclaimed and reused. The harvested rainwater and pre-treated wastewater from the manufacturing process are reused for aggregation manufacturing, road sprinkling and cleaning onsite. Total water obtained in 2020 was 85.764 ML, reclaimed and reused volume 31.789 (ML), at a reclamation rate of 37%.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

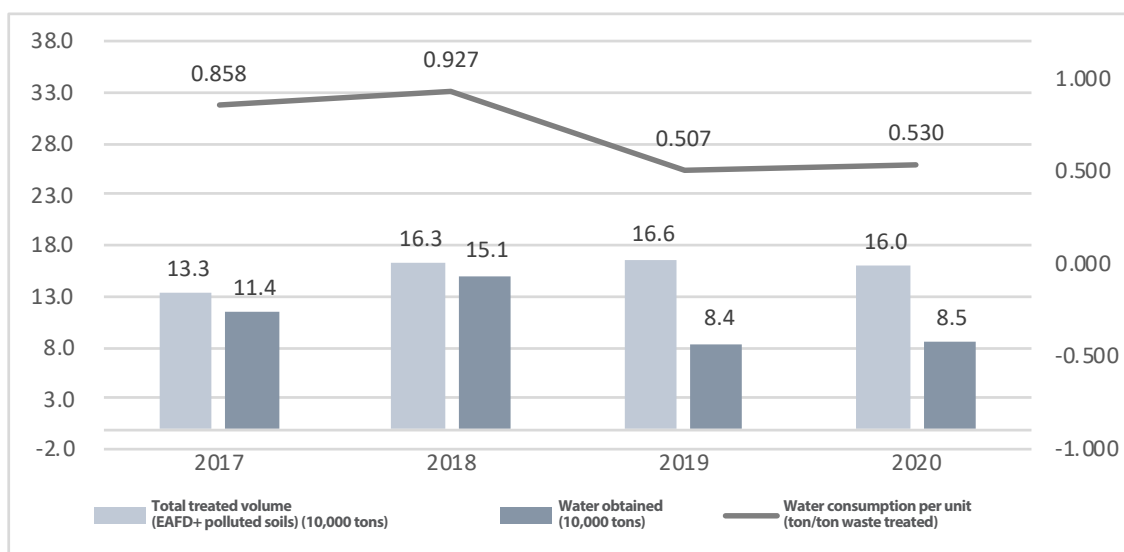


2020 water consumption improvement plan

Taiwan Steel Union has established a water resource monitoring system. In 2018, we identified continued increase of running water consumption, above the normal level. The thorough investigation found broken running water pipes and ongoing leakage in the factory site. After the pipelines were dug out for repair, the water consumption significantly dropped.

To boost the water reclamation rate for the

manufacturing process, the reclamation and reuse automation control system for sewage pipes was changed in 2020, by prioritizing the reclaimed sewage for aggregation. This is followed by sprinkling onsite before excess is discharged. This has greatly reduced running water consumption. The water consumption per unit treated (EAFD+ polluted soils) was reduced noticeably to 0.530 ton for per ton treated.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- **5.5 Wastewater, polluted water and waste**
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

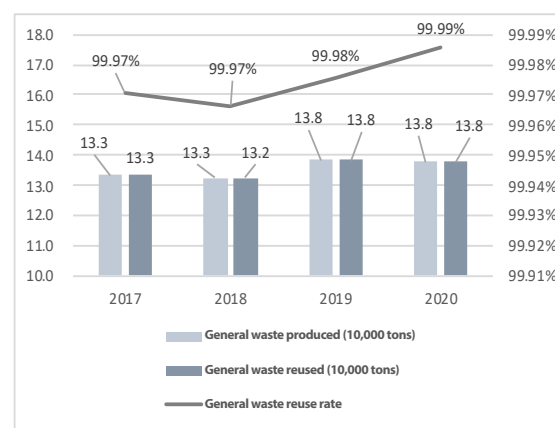
5.5 Wastewater, polluted water and waste

Waste management

Taiwan Steel Union is a 100% recycle and reuse company, from cradle to cradle. We have set up a waste recycle and reuse policy, carried out the slag reuse project, established waste reuse KPIs and made transparent disclosure.

• Waste reuse

Taiwan Steel Union's total waste in 2020 weighed 139,289 tons, comprised of general industrial waste of 137,914 tons and hazardous waste of 1,375 tons. All the waste are return scrap. The outsourced treatment of general waste includes 5 tons of domestic waste for incineration, 15 tons of waste timber for reuse. The bulk of general waste is 137,894 tons of rotary kiln slag (R-1207), for resource recovery and reuse for products. The slag reuse rate was 100% and the industrial waste reuse rate was 99.99% in 2020.



• New KPIs and targets in waste reuse management

Taiwan Steel Union has set up a new set of KPIs and targets for waste reuse. This includes general waste reuse rates, hazardous waste reuse rates and no major waste leakages or breaches.

KPIs and targets in waste reuse

Key Performance Indicators	Long-term target for 2030
• Industrial waste reuse rate	• Close to 100%
• Slag reuse rate	• 100%
• Major waste leakages or breaches	• No major leakages or breaches

2020 KPIs

Industrial waste reuse rate (%)	Slag reuse rate (%)	No. of major waste leakages and breaches (No. of times)
2020 99.99	2020 100	2020 0
2019 99.98	2019 100	2019 0
2018 99.97	2018 100	2018 0
2017 99.97	2017 100	2017 0

2020 target achievement

Target achievement	Target achievement	Target achievement
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2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

- Management guidelines on green manufacturing process
- Green manufacturing process highlights
- 5.1 Environmental-friendly green manufacturing process
- 5.2 Environmental policy and management system
- 5.3 Operational ecosystem efficiency
- 5.4 Water risk management
- 5.5 Wastewater, polluted water and waste
- 5.6 Environmental laws and regulations

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

Wastewater emission management

All of Taiwan Steel Union's wastewater is pre-treated onsite, to the standards required by Changhua Coastal Industrial Park, in order to become influents to Changhua Coastal Industrial Park's sewage system. There is no emission of wastewaters directly to the ground. In addition to the water quality examination for influents to the sewage system, regular inspections are conducted on the water harvesting pool for two stations, upstream/downstream groundwater for two stations, and soils for two stations. Strict monitoring and data analytics are performed. Quarterly monitoring results are disclosed via the official website.

5.6 Environmental laws and regulations

Adherence to environmental laws and regulations is the most important issue to Taiwan Steel Union. We strive to meet all the regulatory requirements in energy, air pollution, wastewater, waste, transportation, reporting and monitoring.

Details of environmental regulatory breaches

There were three fines for violation of environmental regulations in 2020. We proceeded with corrective measures according to ISO14001 management system post events. The issues were included for environmental management follow-ups, to avoid recurrence.

Penalties under environmental laws	Penalty-issuing authority and official letter No.	Fine amount	Improvement
According to the operating permit for Taiwan Steel Union's rotary kilns (E001) for M01 manufacturing process as a fixed source of pollutions, inspections should be conducted once every three months. Heavy metals were examined on December 18, 2019, as required. According to the regular inspection report submitted, the tested value for mercury was 0.409 mg/Nm3, breaching the limit of 0.232 mg/Nm3 (committed value for environmental assessments) according to the operating permit for the fixed source of pollutions. This was a violation of Article 20-1 of the Air Pollution Control Act.	Environmental Protection Bureau, Changhua County April 24, 2020 Chang-Environment-Air No. 1090134394 (Penalty Notification No.: 20-109-040004)	NT\$300,000	Repair of air pollution control equipment completed and approved by the Environmental Protection Bureau Fine paid before specified deadline.
Taiwan Steel Union's vehicle No. KEJ-7757@HAA-6322 collected R-1207 (Serial No.: N16071411091905 for a total of eight entries) on June 20, 2020. However, the vehicle inspection was not submitted to the Environmental Protection Bureau, Changhua County until July 2, 2020. The real-time tracking system was not installed as required. This was a violation of the third paragraph of Article 31-1 of the Waste Disposal Act.	Environmental Protection Bureau, Changhua County August 12, 2020 Chang-Environment-Waste No. 1090045235 (Penalty Notification No.: 40-109-080017)	NT\$6,000	It has been stipulated that the application for real-time tracking systems should be handled along with the transfer of vehicles. Fine paid before specified deadline.
Taiwan Steel Union did not complete the reuse of polluted soils before designated deadlines for Serial No. N09A458210800160 (multiple entries) from July 2019 to April 2020. This was a violation of the second paragraph of Article 31-1 of the Waste Disposal Act.	Environmental Protection Bureau, Changhua County August 12, 2020 Chang-Environment-Waste No. 1090045235 (Penalty Notification No.: 40-109-080016)	NT\$6,000	The input volume of polluted soils was increased. The treatment of polluted soils was completed before the contractual deadline. Fine paid before specified deadline.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

Chapter 6 Happy Workplace

Employees are the irreplaceable asset of the company. Taiwan Steel Union believes that only at a safe work environment can our healthy employees provide trustworthy products and services.

Management approach to a happy workplace

Material topics: occupational health and safety (GRI 403), training and education (GRI 404)



Happy workplace commitment

- A zero-hazard work environment is created to protect the health and safety of employees. Annual health inspections and comprehensive training & education are offered.



Happy workplace targets

- No major occupational injuries occur each year. The target is to keep improving on the record of zero hazard hours.
- Regular and ad-hoc training and education programs or external training resources are provided.



Happy workplace complaint mechanism

- Establishment of an opinion box for employees and convening of labor relation meetings from time to time as channels for employees to provide feedback on a timely basis.



Happy workplace effectiveness evaluation

- Annual CSR reports for ongoing evaluation of effectiveness.



Happy workplace management system

- Operating environment monitoring is carried out according to the frequency stipulated by the Occupational Safety and Health Act. General health checks are offered to all employees. Health checks for special operations and tiered health management are also in place.
- Plan management and performance reviews are performed annually. ISO 45001 occupational health and safety management system is promoted and maintained.
- Employees receive training according to the frequency and hours required by law.



Happy workplace responsibilities

- Health and safety management, employees' health checks, employee training and education are planned and implemented.
- Division managers: instructions according to job duties and authorities, supervision of operations carried out by employees, oversight on health and safety matters, and coordination and guidance on implementation by personnel.
- All employees: obligation to undertake training and education in health and safety, adherence to "Health and Safety Work Rules" and "Training and Education Implementation Rules".



8.8 Protection of labor interest, promotion of workplace safety

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

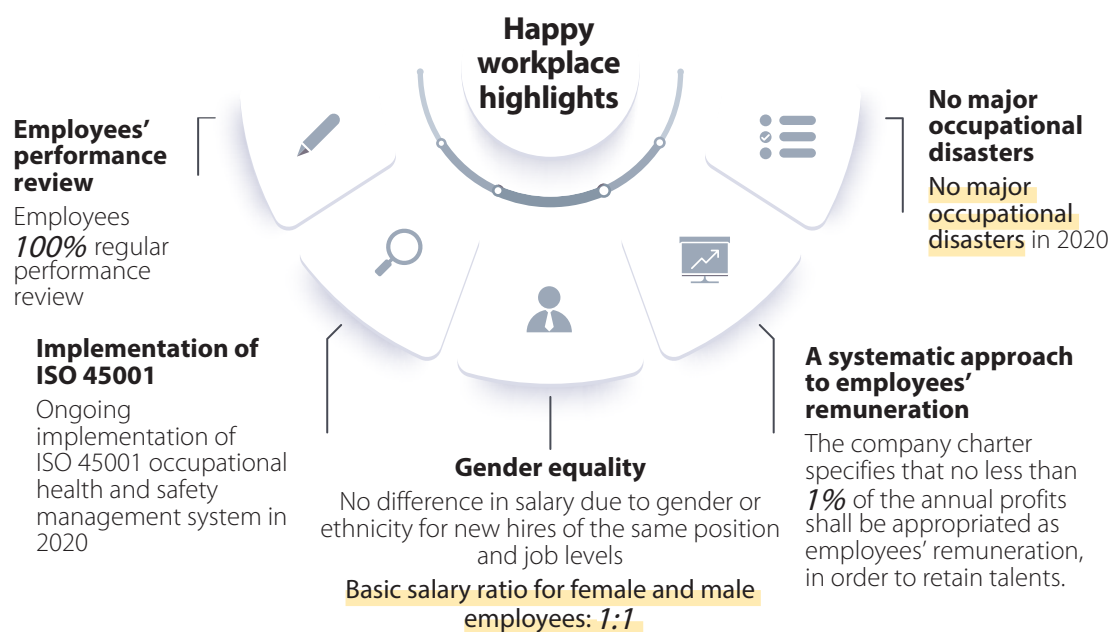
- Management approach to a happy workplace
- Happy workplace highlights
 - 6.1 Human resource management
 - 6.2 Talent attraction and retention
 - 6.3 Talent development
 - 6.4 Occupational safety and health
 - 6.5 Human rights

Ch7. Social Inclusion

Appendixes



Happy workplace – Taiwan Steel Union's employees praying for blessing



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- **6.1 Human resource management**
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

6.1 Human resource management

Employees are Taiwan Steel Union's most valuable asset. The company has established a fair, reasonable and competitive remuneration and promotion systems for human resources management and employees' right protection. We observe all the regulations outlined in the Basic Labour Standards Act. We have a reasonable structure for employees' salaries. We regularly organize communication meetings and the welfare committee meetings for employees' opinions. The two-way communication with employees is

healthy.

To encourage a strong work ethic, we and employees work together for the business. We have put in place relevant codes of conduct, incentive schemes and penalty standards for employees. We have also established a comprehensive communication mechanism. A letterbox was provided to employees for complaints, in order to protect employees' rights. The number of complaints regarding labor conditions is zero in 2020.

Employment

As of the end of 2020, Taiwan Steel Union had a total of 91 employees, including twenty male foreign workers on term contracts for operator. All the others are full-time permanent employees and Taiwanese citizens. As a traditional environmental protection business, most of TSU's employees are male. In 2020, we had 78 male employees, or 86% of the total. The number of female employees was 13. Taiwan Steel Union is a stable SME (small-and-medium enterprise). The change over the years was limited.

Category		Taiwan Steel Union						Taiwan Steel Resources			
		2017		2018		2019		2020		2020	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Managers	<30	0	0	0	0	0	0	0	0	0	0
	30-50	7	0	7	0	8	0	7	0	5	2
	>50	4	1	4	1	4	1	5	1	1	0
Administration staff	<30	0	2	0	1	0	2	0	2	4	2
	30-50	8	5	8	6	9	6	6	6	16	7
	>50	2	0	2	0	1	0	2	0	2	0
Field operator	<30	3	0	1	0	1	0	1	0	5	0
	30-50	49	4	52	4	49	4	49	4	16	0
	>50	4	0	3	0	6	0	8	0	0	0
Total		77	12	77	12	78	13	78	13	49	11

Note 1: All of Taiwan Steel Union's employees are full time. We do not hire temps or part-time personnel.

Note 2: Managerial personnel is directors or above.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- **6.1 Human resource management**
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

New and resigned employees

In 2020, Taiwan Steel Union had a total of 91 employees, including 11 new staff and 11 resigned. The subsidiary Taiwan Steel Resources had a total of 60 employees, including 19 new hires and 14 resigned.

Category		Taiwan Steel Union								Taiwan Steel Resources	
		2017		2018		2019		2020		2020	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
New staff	<30	0	0	0	0	0	2	0	0	5	0
	30-50	8	0	5	0	10	0	11	0	10	2
	>50	1	0	0	0	0	0	0	0	2	0

Category		Taiwan Steel Union								Taiwan Steel Resources	
		2017		2018		2019		2020		2020	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
New staff rate %	<30	0%	0%	0%	0%	0%	100%	0%	0%	56%	0%
	30-50	13%	0%	7%	0%	15%	0%	18%	0%	27%	22%
	>50	10%	0%	0%	0%	0%	0%	0%	0%	67%	0%
Total new staff rate %		12%	0%	6%	0%	13%	15%	14%	0%	35%	18%

Note: The new staff rate is the number of new staff divided by the total number of employees for each category by the end of the year.

Category		Taiwan Steel Union								Taiwan Steel Resources	
		2017		2018		2019		2020		2020	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Resigned	<30	2	0	1	0	0	0	0	0	1	0
	30-50	4	0	3	0	9	1	7	0	12	0
	>50	0	0	1	0	0	0	4	0	1	0

Category		Taiwan Steel Union								Taiwan Steel Resources	
		2017		2018		2019		2020		2020	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Resigned rate	<30	67%	0%	100%	0%	0%	0%	0%	0%	11%	0%
	30-50	6%	0%	4%	0%	14%	10%	11%	0%	32%	0%
	>50	0%	0%	11%	0%	0%	0%	27%	0%	33%	0%
Total resigned rate %		8%	0%	6%	0%	12%	8%	14%	0%	29%	0%

Note: The resigned rate is the number of resigned divided by the total number of employees for each category by the end of the year.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

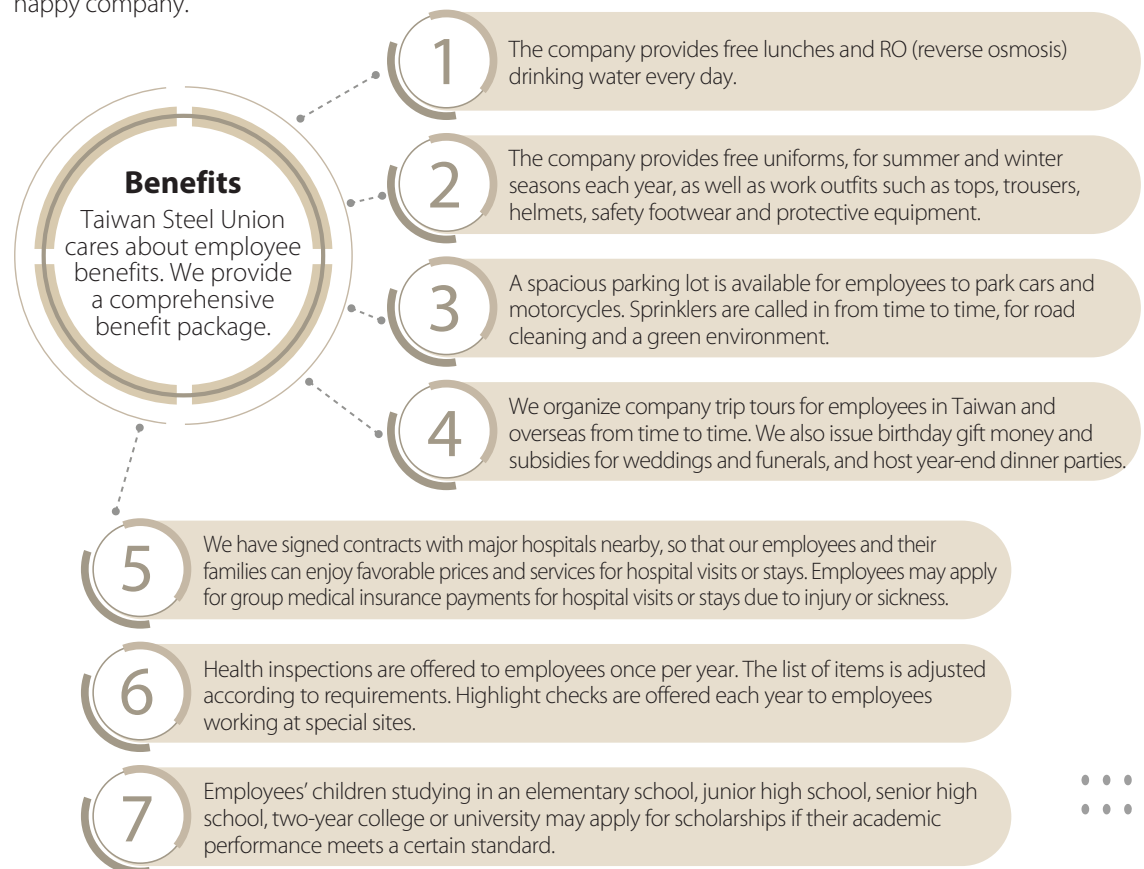
Gender equality

Remuneration Committee has been established under Taiwan Steel Union's Board of Directors. The Organization Regulation for Remuneration Committee has been put in place. Remuneration Committee is responsible for design and periodical reviews of performance of directors and managers,

as well as remuneration policies, systems, standards and structures. There is no difference in remuneration due to gender or ethnicity for new hires of the same position and grade. Basic salary ratio for female and male employees is 1:1.

6.2 Talent attraction and retention

Taiwan Steel Union has established a comprehensive scheme for employee benefits and retirements. The company shares profits with employees. The company's charter stipulates that no less than 1% of the annual profits shall be appropriated as employees' remuneration, in order to retain talents. Employees' Welfare Committee often organizes leisure and cultural activities for relaxation and bonding between colleagues, in order to make Taiwan Steel Union a happy company.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

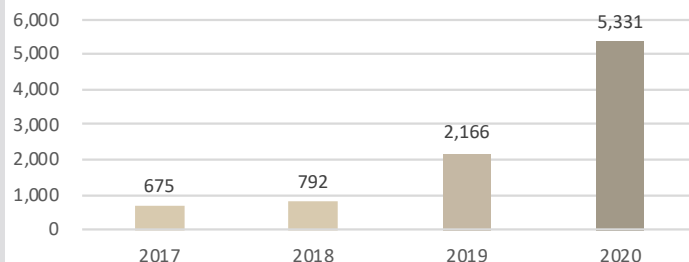


Taiwan Steel Union has put in place the retirement scheme for employees. We have also set up Labor Pension Supervisory Committee with government approval.



Taiwan Steel Union started in 1997 to hire actuaries to calculate pensions, according to relevant requirements set forth in the Labour Standards Act.

Taiwan Steel Union contributes 15% of the monthly salary (the highest rate of the statutory range) to the labor pension reserves (NT\$1,000).



Taiwan Steel Union works with the new Labor Pension Act for the new hires from July 1, 2005 onwards and the employees entitled to the tenure under the old system based on the Labour Standards Act but opt for the new system starting on July 1, 2005, the company contributes to the individual pension accounts of employees according to the Labor Pension Act.

Retaining the position without pay for baby nursing

Colleagues may request for up to two years of unpaid parental leaves before children are three full years old. To help employees return to their jobs after unpaid parental leaves, we provide refresher courses for an update. None of the three male employees entitled for unpaid parental leaves in 2020 requested for such a leave. No application for unpaid parental leaves in 2018-2020 with Taiwan Steel Union or Taiwan Steel Resources.

Employee performance evaluation

Taiwan Steel Union conducts periodical performance evaluation on all employees. Annual scores are assigned based on employees' self-assessments and interviews with managers and finalized by General Manager. The scores for division managers and auditors are finalized by Chairman.



Awards to employees with a tenure of 20 years

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- **6.3 Talent development**
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

6.3 Training talent

Employees are Taiwan Steel Union's most valuable assets. To become a happy company, we have established a comprehensive human resource management system in remuneration, benefits and promotions. Training & education programs or external training resources are provided to employees each year, to enhance the technical competences, capabilities, knowledge and attitude required for work.

Employee training and development

The purpose of the training and education provided by Taiwan Steel Union is to enhance the caliber and core competences of employees. This increases work efficiency and expands the talent pool. "Training and Education Implementation Rules" have been formulated to govern all the matters associated with the company's training and education. Including:

- Training and education is provided or professional technicians are invited from overseas to assist the company's technical personnel and enhance core competences.
- Employees are encouraged to participate in external workshops, seminars and professional training classes. New hires are provided assistance in sitting for qualification tests in order to obtain operational licenses. The fees are fully paid by the company.
- Internal employee training: Internal training programs are organized to meet divisional requirements. Dedicated departments are responsible for progress monitoring.
- External training courses: Employees are encouraged to participate in external training classes and obtain relevant licenses.



Employee training programs

Taiwan Steel Union organizes regular and ad-hoc employee training or provides external training resources each year. Through training, employees enhance technical competences, capabilities, knowledge and attitude required for work.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

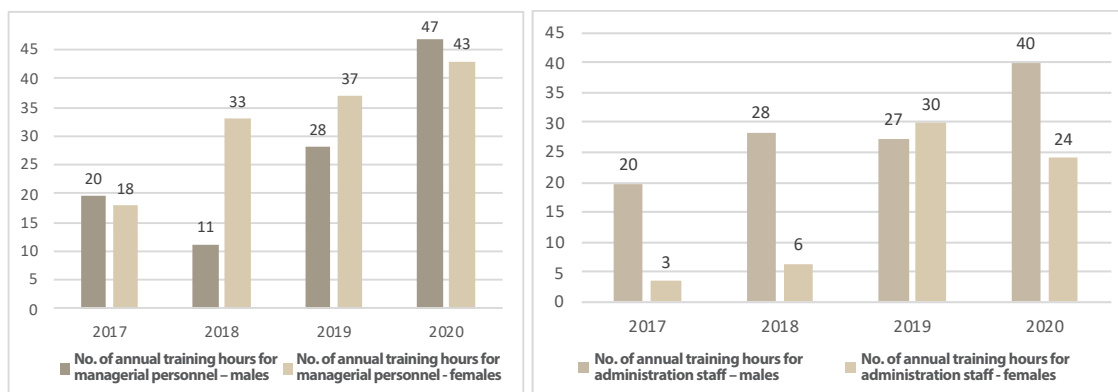
- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- **6.3 Talent development**
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

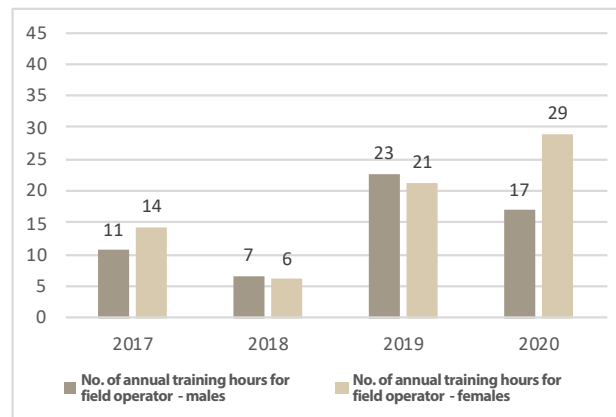
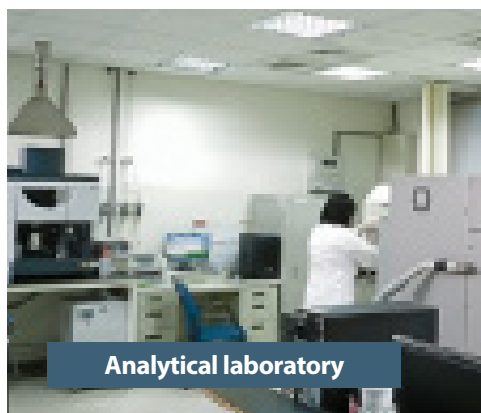
Appendixes

Implementation and assessment of employee training

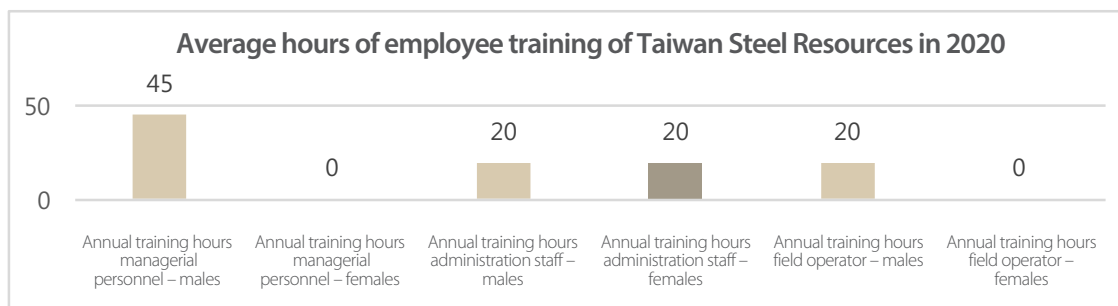
Taiwan Steel Union organizes regular and ad-hoc employee training or provides external training courses each year. Employees receive on the job training according to the frequency and hours required by law. Managerial personnel received training in 2017-2020 according to law. The number of training hours received by managerial personnel has been on the rise over the years. The average number of training hours was higher for males with the subsidiary Taiwan Steel Resources in 2020.



Note: In 2020, the average number of training hours for managerial personnel and administration was higher for males than females in Taiwan Steel Union. This was because more classes are offered to managers and most women are clerks and not necessary receiving work-related training each year.



Note: In 2020, the average number of training hours for field operator was higher for females than males in Taiwan Steel Union. This is because the field operator includes foreign migrant workers not receiving external training. (Training is primarily internal. There is no external training.)



Note 1: The average number of training hours was zero for managerial personnel (females). Classes are not arranged each year, but on a need basis.

Note 2: There is no female operator.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- 6.3 Talent development
- **6.4 Occupational safety and health**
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes



6.4 Occupational safety and health

Occupational health and safety is one of the most important issues for stakeholders. Employees and employees' families are all concerned with this issue. To create a healthy and safe workplace for employees, Taiwan Steel Union revised its occupational health and safety management system into ISO 45001 in 2020. We strive to create a healthy and safe organizational culture. We continue to improve and offer a healthy and safe work environment so that our employees and their families can rest assured.

Occupational health and safety management system

Taiwan Steel Union implements ISO 45001 occupational health and safety management system. The management includes the following:

- Workplace monitoring: monitoring conducted according to the frequency stipulated in the Occupational Safety and Health Act
- Health checks: General health checks for employees and health checks for special operators are provided each year. Tiered health management is administered according to regulations.
- Training & education in health and safety: New hires and employees are offered training and education. This consists of internal training and external training (e.g., training and refresher courses in health and safety qualifications). The purpose is to enhance the employees' awareness in health and safety.
- A deficiency improvement system has been established for environmental health and safety issues. Any problems identified are immediately registered, notified and followed up for improvement.
- Plan management and performance reviews are performed annually. Occupational health and safety management system is promoted and maintained.

Employees' health management and workplace monitoring

In adherence to the Occupational Safety and Health Act, Taiwan Steel Union conducts risk assessments on hazardous workplace with noise, dusts and ionizing radiation. Relevant health and safety operational standards are set up accordingly. Workplace monitoring plans are drawn in line with regulations. The sampling items and frequencies for workplace monitoring are listed in the table below. Environmental monitoring and inspection and personnel health checks are conducted regularly by commissioned external parties. Specialty doctors are hired to visit the sites and observe the workplace, in order to provide health and safety assessments and suggestions for improvement.

According to the Occupational Safety and Health Act and the Labor Health Protection Act, labor selection and task assignments should be implemented based on the physical examination forms submitted by new hires. Tiered management should be administered based on regular health checks for laborers and health inspections for laborers working on hazardous operations. The nature of jobs should be adjusted appropriately according to health status.

Taiwan Steel Union provides periodical health checks and personal protective equipment to employees. This is to protect the health of employees and avoid injury to physical health due to work process or damage to laborers' right to life. The operational items of high risks or with high incidence of specific diseases include slag removal from rotary kilns, PAP (process air pipe) replacement, corrugated roof sheet replacement, replacement of fire-retardant materials and filter bags for rotary kilns during periodical maintenance. Strict management is exercised on occupational health and safety.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

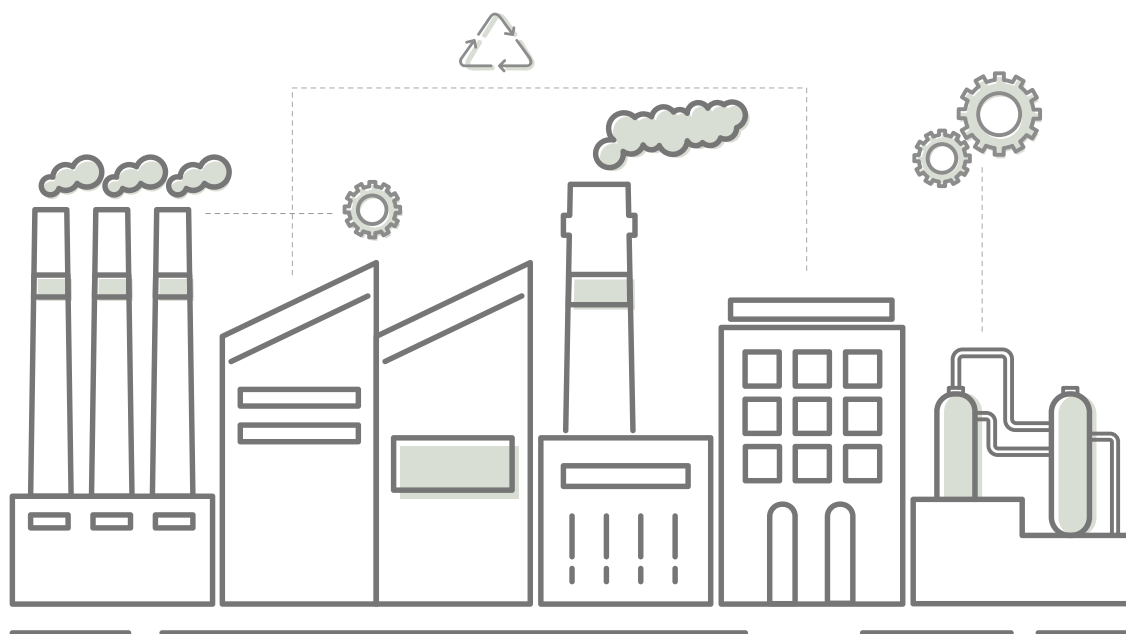
Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

No.	Item		Monitoring frequency
1	Total dust amount		Once every six months
2	Respirable dust		
3	Heavy metals	Lead	
4		Manganese	
5		Cadmium	
6		Zinc	
7	CO ₂		
8	Oxygen		
9	Noise		
10	Wet Bulb Globe Temperature (WBGT)		Once a quarter
11	Sulfuric acid		Once every six months
12	Wind velocity		



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

Training & education in health and safety; regular fire drills

To enhance the caliber, technical and core competences of our personnel, to establish awareness in health and safety and the ability to prevent hazards, Taiwan Steel Union organized periodical and ad-hoc training and education in health and safety in 2020. Fire drills were conducted regularly. All the internal training, external training and license acquisitions were in compliance with laws and regulations.



Rescue Division



Evacuation Division



Training & education



Instruction & Guidance Division



Fire Extinguishing Division



Reporting and communication division

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

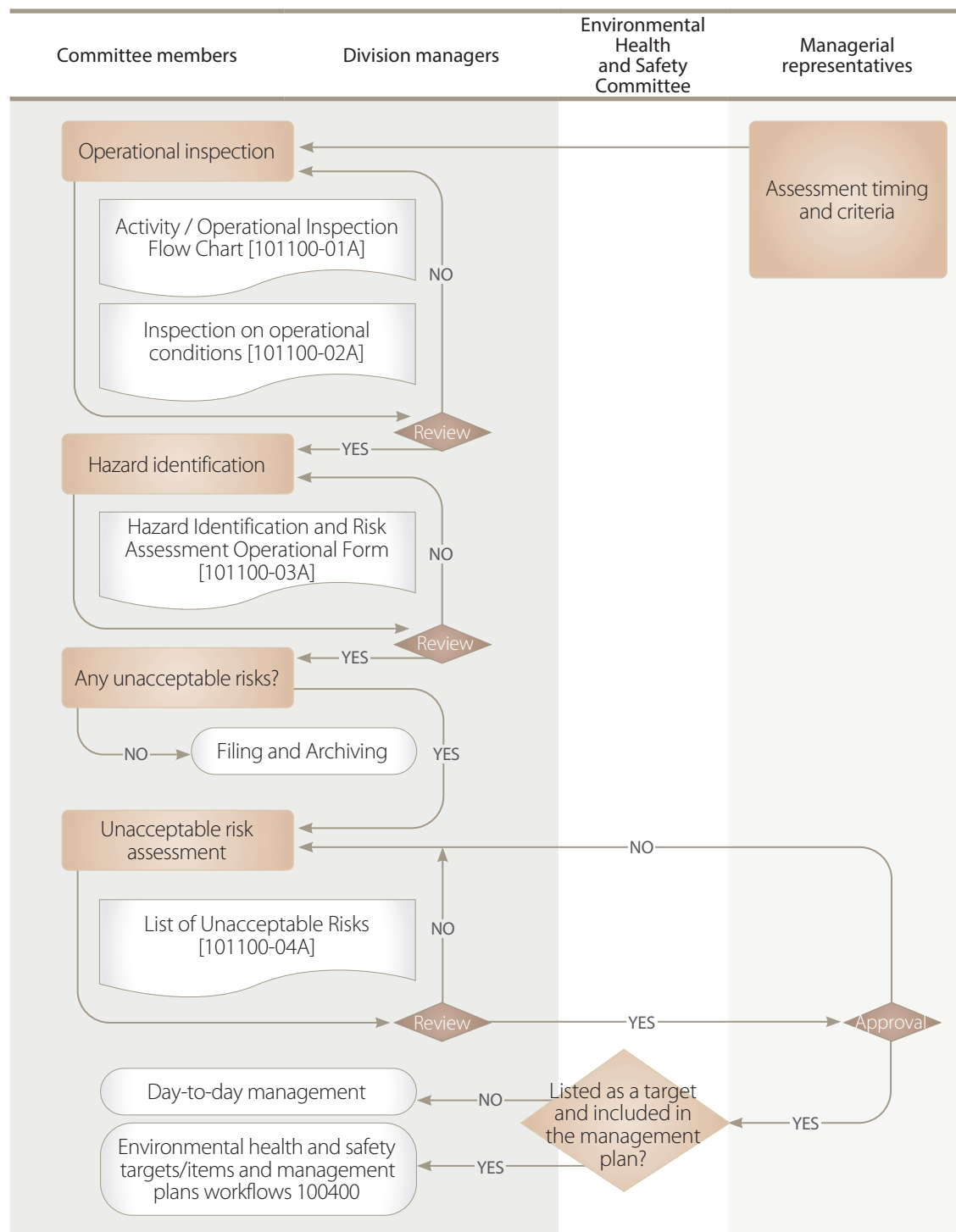
- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

Hazard identification and risks assessment process

Taiwan Steel Union refers to Hazard Identification and Risk Assessment Operational Form in the analysis of inherent and potential operational risks by considering personnel, machinery, facilities, methods, materials, energy and relations with workplace. Hazard identification and risk assessment are conducted on operational activities and procedures, by considering the causes, consequences, characteristics and hazard characteristics (e.g., physical, chemical, biological and ergonomic).



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

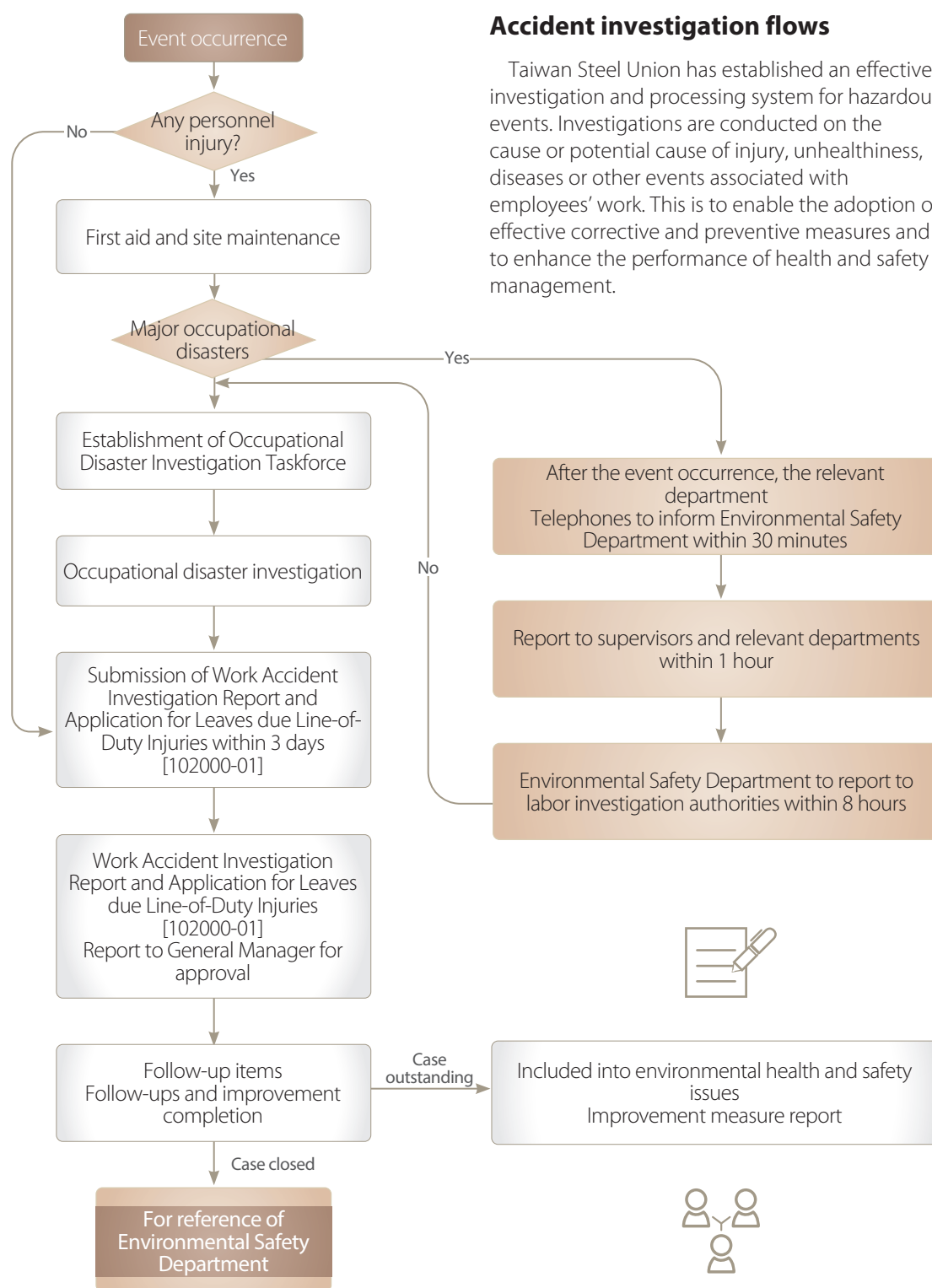
- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

Accident investigation flows

Taiwan Steel Union has established an effective investigation and processing system for hazardous events. Investigations are conducted on the cause or potential cause of injury, unhealthiness, diseases or other events associated with employees' work. This is to enable the adoption of effective corrective and preventive measures and to enhance the performance of health and safety management.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

Agreement organization and hazard notifications

Taiwan Steel Union has integrated contractors into an agreement organization and treats their laborers as ours. In addition to onsite audits and highlight support, we also provide relevant training and education to enhance health and safety performance. Based on the type of operations and the list of potential hazard factors, contractors should require hazard prevention measures such as training and education, protective equipment or qualifications in machinery operation. It is necessary to be equipped with personal protective equipment (helmets, work shoes, dust masks, workwear, and gloves) when entering the loading/unloading area of EAFD.



Employee Health Promotion and Management

Employee Health Check and Management

According to the Occupational Safety and Health Act and the Labor Health Protection Act, Taiwan Steel Union requires new hires to hand in physical examination forms. Employee health checks are carried out each year. The examination includes chest X rays, cardiopulmonary functions, liver functions and blood lead levels, per the environmental requirements of operations in contact with dust. In case of an excess blood lead level, tiered health management is implemented. Regular follow-ups and re-checks are carried out. Jobs are changed, if necessary, in order to protect employees' health.

Employee health promotion activities

Employees' Welfare Committee often organizes leisure and cultural activities for relaxation and bonding between colleagues of Taiwan Steel Union.

Maternal health protection for female laborers

Maternal Health Protection Plan has been put in place. "Classification Reference for Hazards and Risks to Maternal Health" is provided, along with Job Suitability Arrangements Forms. "Operational Venue Hazard Assessments and Measures Adopted for Maternal Health" is the form for hazard and risk classification of the operational venues. For assistance in female health, referrals can be made to labor health service centers or occupational injury/disease prevention centers commissioned by the Occupational Safety and Health Administration (OSHA).

Protection against unusual workhours, ergonomic issues and workplace violence

"Overwork Assessment Form and Overload Assessment Questionnaire" and "Survey on Musculoskeletal Symptoms" are available. The current status obtained from questionnaires and surveys on unusual work hours or musculoskeletal of employees is compared against the relevant database, for the analysis of existing and potential risks of work zones or hazards of operations and the appropriate arrangements with the laborers concerned. Advocacy on preventive measures at workplace is conducted from time to time to avoid illegal or unusual violations in the work environment.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

Occupational hazard statistics

Taiwan Steel Union's annual statistics on occupational disasters are based on the disability indicators published by the Ministry of Labor. A comprehensive reporting procedure and an event investigation mechanism are in place, to report the investigation findings to relevant departments. Corrective and preventive measures are initiated, to reduce the likelihood of the same events and continue to improve workplace safety. **Taiwan Steel Union reported no major occupational disasters in 2020. Our contractors reported no occupational injury during the year.**

		Taiwan Steel Union							
Item		2017		2018		2019		2020	
		Male	Female	Male	Female	Male	Female	Male	Female
Occupational disaster statistics	Disabling frequency rate (FR)	6.57	0.00	19.22	0.00	0.00	0.00	0.00	0.00
	Disabling severity rate (SR)	13	0	1147	0	0	0	0	0
	Frequency-severity indicator (FSI)	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00
	Occupational disease rate (ODR)	0	0	0	0	0	0	0	0
	Line-of-duty deaths	0	0	0	0	0	0	0	0
Absence rate	Absence rate (AR)	0.36%	0.00%	1.22%	0.26%	1.64%	0.32%	3.21%	1.27%

Note 1: The above occupational disasters exclude traffic accidents.

Note 2: The calculation of occupational disasters and absence rates are as follows:

Note 3: Taiwan Steel Union's total work hours were 161,236 hours and the contractors' total work hours were 50,368 hours in 2020.

FR= No. of disabling injuries ×1,000,000 / total work hours

SR= No. of days lost due to disabling injuries ×1,000,000 / total work hours

FSI = $\sqrt{(SR \times FR) / 1000}$

AR= (Hours of sick leaves + hours of leaves due to line-of-duty injuries + menstrual leave)/total work hours*100%.



Accident statistics and the reporting system	2017	2018	2019	2020	Remark
Occupational health and safety management system	1	2	0	2	No. of accidents surveyed
Occupational Safety and Health Administration (OSHA) online reporting system (Occupational disaster reporting by business units)	1	1	0	0	Reporting according to Article 37 of the Labor Occupational Accident Insurance and Protection Act (Hospital stay for 1 person or more)

Note 1: The subsidiary Taiwan Steel Resources did not have an occupational health and safety management system in 2020. 2 reported via occupational Safety and Health Administration (OSHA) online reporting system.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

- Management approach to a happy workplace
- Happy workplace highlights
- 6.1 Human resource management
- 6.2 Talent attraction and retention
- 6.3 Talent development
- 6.4 Occupational safety and health
- 6.5 Human rights

Ch7. Social Inclusion

Appendixes

6.5 Human rights

Taiwan Steel Union follows the OECD principles and adheres to the internationally recognized human rights standards such as the United Nations' Universal Declaration of Human Rights, Global Compact and International Labour Organization Conventions. Relevant regulations have been put in place to provide a fair workplace and a safe work environment, respect human rights at the workplace and ensure information security.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

- Management approach on social inclusion
- Social inclusion highlights
- 7.1 Social impact assessment
- 7.2 Community concerns
- 7.3 Circular economy education

Appendixes

Chapter 7 Social Inclusion

Taiwan Steel Union supports the social care of the communities where it operates. Community impact assessments were conducted at the beginning of the facility builds. There are also ongoing community engagements.

Management approach on social inclusion

Material topic: Local communities and impacts (GRI 413)



Social inclusion target

- Social expenditures as % of net income: 3%.



Social inclusion actions

- Social care projects and schemes
- Circular economy and environmental education
- Sponsorships for local windbreak forests and streetlamps
- Student bus at Keliao communities



Social inclusion policy

- The percentage of community donations is included into the commitment in Environmental Impact Statement (EIS). NT\$150 is contributed to the good neighbors account for each ton of EAFD reused. Monthly remittances are made to the accounts dedicated to Shengang Township and Xianxi Township for use by township offices.
- Sponsorship for windbreak forests for maintenance of the ecosystem and the environment



Social inclusion effectiveness assessment

- Annual CSR reports for ongoing assessment of effectiveness



4.7 Assurance that all students acquire necessary knowledge and skills to contribute to sustainability



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

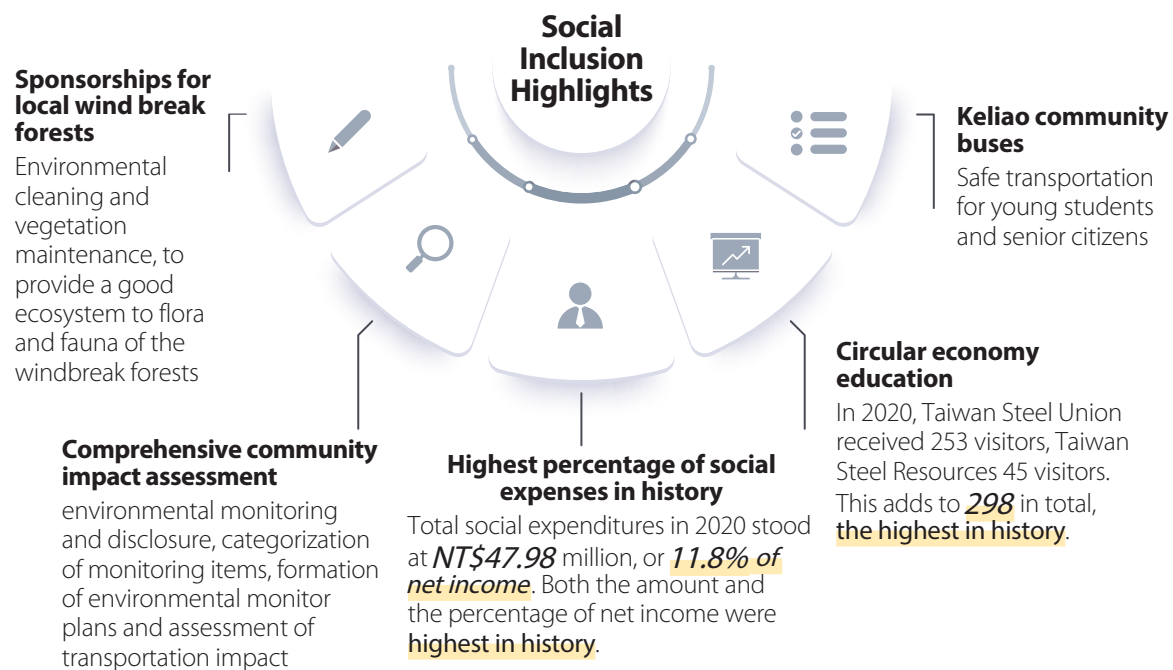
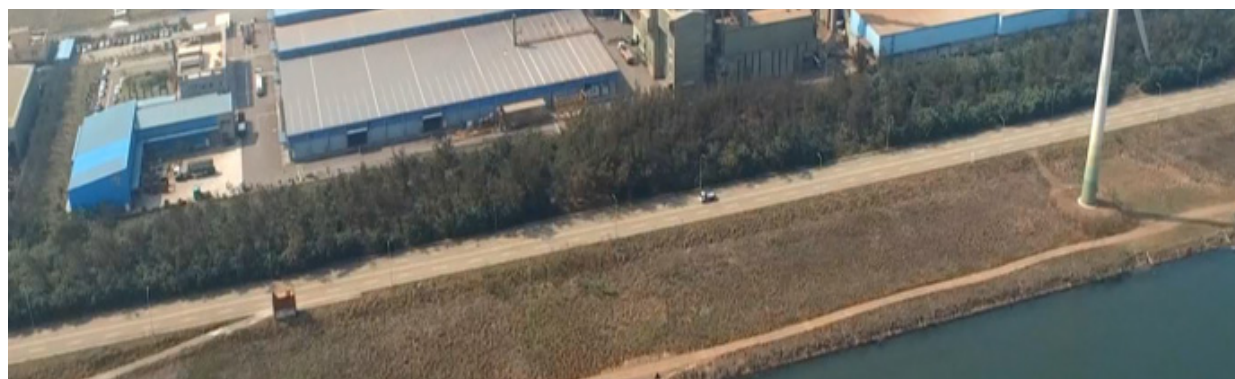
Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

- Management approach on social inclusion
- **Social inclusion highlights**
 - 7.1 Social impact assessment
 - 7.2 Community concerns
 - 7.3 Circular economy education

Appendixes



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

- Management approach on social inclusion
- Social inclusion highlights
- 7.1 Social impact assessment
- 7.2 Community concerns
- 7.3 Circular economy education

Appendixes

7.1 Community impact assessment

Taiwan Steel Union supports the social care of the communities where it operates. Community impact assessments were conducted at the beginning of the facility builds. This includes environmental monitoring and disclosure, categorization of monitoring items, formation of environmental monitor plans and assessment of transportation impact.

Strict environmental monitoring and transparent disclosure

Taiwan Steel Union strictly monitors the environment according to the environment assessment and commitment. There are 21 items in 10 categories for monitoring. All the environmental monitoring data is published quarterly at official website for downloads.



[Taiwan Steel Union monitoring information](#)

Environmental monitoring plan

Monitoring categories	Monitoring frequency	Monitoring locations
Groundwater	Operating period (once per month)	One upstream location and one downstream location of the factory site
Rainwater	Operating period (once per month)	Two rainwater storage tanks
Waste water	Operating period (once per month)	Waste water outlets on the factory site
Soils	Operating period (once per quarter)	One location for the operational processing zone inside the factory
Waste gases	Operating period (once per quarter)	Flue gas outlet (Two locations, P001 for No. 1 Kiln, P003 for No. 2 Kiln)
Slag	Operating period (once every six months)	Temporary storage area for slag
Fugitive granules	Operating period (once every six months)	One upwind location, one downwind location of the factory site
Dioxin in the air	Once per quarter	Southern side of the factory site (next to offices)
	Once every six months	One stop at the Keliao community, one stop at Xian Xi Elementary School
Dust fall	Operating period (once per month)	Three test stations, one at the factory site, on Qingan Road's side, and between Qingan North Road and Zhangbin Road
Zinc oxide	Operating period (once every six months)	Zinc oxide packing area

Note 1: Inspection once per quarter on chloride salt, salinity, TDS and BOD of groundwater

Note 2: Inspection once every six months on arsenic in soils and dioxin

Transportation impact

A transportation impact analysis was conducted on West Coast Expressway, adjacent to our factory. The current traffic status indicates the road's level of service is between A and B, in a good condition.

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

- Management approach on social inclusion
- Social inclusion highlights
- 7.1 Social impact assessment
- 7.2 Community concerns
- 7.3 Circular economy education

Appendixes

7.2 Community care

We center social care projects and schemes based on local community needs. This includes the transportation for community safety and sponsorship for the maintenance of windbreak forests in the local industrial park.

Safety transportation for the community

In addition to community donations, Taiwan Steel Union has been sponsoring the coach buses and event activities of the local Keliao community for NT\$1 million each year. This provides safe transportation for young students and senior citizens and promotes community events.



Sponsorship for charity singing competitions

Taiwan Steel Union supports culture and singing talents in Taiwan by sponsoring charity singing contests.



Sponsorship for maintenance of windbreak forests in local industrial park

Taiwan Steel Union supports the cleaning and maintenance of the local environments. We sponsor windbreak forecasts in the local industrial park for environmental cleaning and vegetation maintenance. The windbreak forest serves as a great habitat for flora and fauna and enriches the ecosystem resources. Hopefully this assists Changhua Coastal Industrial Park in the utilization of resources from the companies onsite and reduces the burden of the government. It enables effective management and use of public spaces and green spaces, beautifies the surroundings of the company, and boosts the morale and efficiency of employees. The involvement from companies is encouraged in order to establish a common ground and achieve the expected benefits of sponsorships for windbreak forests. Under the maintenance by Taiwan Steel Union, the windbreak forest has become a beautiful park and a comfortable place for relaxation. Many couples come up for pre-wedding photoshoots.



Windbreak forest as a popular site for pre-wedding photoshoots

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

- Management approach on social inclusion
- Social inclusion highlights
- 7.1 Social impact assessment
- 7.2 Community concerns
- 7.3 Circular economy education

Appendixes



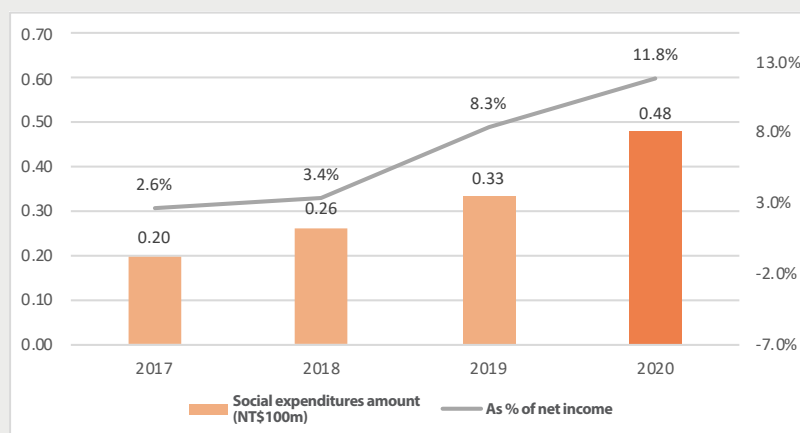
Sponsorship for streetlamps of Xianxi Township

Taiwan Steel Union participates in the sponsorship program organized by Xianxi Township for streetlamps. We sponsor 10 streetlamps of Xianxi Township each year, to help the township office maintain the safety and illumination of the streets at night and lighten up the roads for community residents going home.



Social expenditures

Taiwan Steel Union denotes to the local communities according to the recycle volume of EAFD. We also sponsor buses for the Keliao community and the maintenance of the windbreak forest. Starting in 2018, we helped to assist the processing of illegally dumped EAFD on Xinfeng Seaside. In 2020, total social expenditures were NT\$47.98 million, or 11.8% of net income. Both the amount and the percentage of net income were highest in history. Taiwan Steel Union endeavors to return to the society and fulfill our corporate social responsibility.



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

- Management approach on social inclusion
- Social inclusion highlights
- 7.1 Social impact assessment
- 7.2 Community concerns
- 7.3 Circular economy education

Appendixes



China Productivity Center – academia-industry exchange



National Chung Hsing University: visit



Tunghai University – visit from Class A waste treatment class

7.3 Circular economy education

Taiwan Steel Union promotes the education on circular economy. We receive visitors from the students in the second year of Hsien-Hsi Junior High School and provide career development tours for colleges and universities, so that students can get a better picture of resource recycling and the environmental protection industry in Taiwan. We offer onsite tours on the processing of Class A and Class B waste and training classes for clean-up technicians. This allows those who are learning about the environmental protection industry to get a hands-on understanding of processing control technology and operational management. Our arranged tours advocate the importance of environmental conservation and resource recycling and promote the efficient use of resources. Our visitors come from academia and industries. In 2020, we received a total of 298 visitors, to experience the practicality of the circular economy.



Visitors from Chaoyang University of Technology



Visit from Hsien-Hsi Junior High School



Visit from Class B waste treatment class, Tunghai University

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

- ISO 26000 Guidance on Social Responsibility
- GRI Standards Content Index: General Disclosures
- GRI Standards Content Index: Specific Disclosures
- AA 1000 V3 External Assurance Statement

Appendixes

ISO 26000 Guidance on Social Responsibility

ISO 26000 topics relevant to Taiwan Steel Union	Taiwan Steel Union's report chapters and contents
Acknowledgement and understanding of corporate social responsibility	Report Message from Management
Identification and involvement of stakeholders	Chapter 1: Sustainability Management
Organizational governance	Chapter 2: Sustainability Corporate Governance
Human rights	Chapter 6: Happy Workplace
Labor practice	
Environmental	Chapter 5: Green Manufacturing Process
Fair practice	Chapter 1: Sustainability Management
Community involvement and development	Chapter 7: Social Inclusion
Action plans	Chapter management guidelines of this report
Communication of social responsibility	Communication through annual reports and website pages
Review and enhancement of corporate social responsibility	CSR Committee has been established as a functional committee, to implement corporate governance according to department functions and scopes, to protect public interest and to monitor day-to-day CSR activities, depending on requirements and legal regulations.
Relation between organizational characteristics and social responsibility	Taiwan Steel Union operates a 100% recycle and reuse process, to convert hazardous waste from electric-arc furnaces into valuable products and contributes to resource utilization and circular economy in Taiwan and the rest of the world. Chapter 4: Supply Chain Management

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

- ISO 26000 Guidance on Social Responsibility
- **GRI Standards Content Index: General Disclosures**
- GRI Standards Content Index: Specific Disclosures
- AA 1000 V3 External Assurance Statement

GRI Standards Content Index: General Disclosures

	GRI 102: 2016		Page number	External verification
Organizational profile	102-1	<u>Name of the organization</u>	26	V
	102-2	<u>Events, brands, products and services</u>	31	V
	102-3	<u>Location of headquarters</u>	26	V
	102-4	<u>Location of operations</u>	27	V
	102-5	<u>Ownership nature and legal forms</u>	27	V
	102-6	<u>Markets served</u>	27	V
	102-7	<u>Scale of the organization</u>	27	V
	102-8	<u>Information on employees and other workers</u>	73~74	V
	102-9	<u>Supply chains</u>	51	V
	102-10	<u>Significant changes to the organization and its supply chain</u>	No major change	V
	102-11	<u>Precautionary Principle or approach</u>	30	V
	102-12	<u>External initiatives</u>	4	V
	102-13	<u>Membership of associations</u>	28	V
Strategy	102-14	<u>Statement from senior decision-maker</u>	5, 6	V
Moral ethics	102-16	<u>Values, principles, standards and codes of conduct</u>	7, 29	V
Governance	102-18	<u>Governance structure</u>	26	V
Stakeholder engagements	102-40	<u>List of stakeholder groups</u>	13	V
	102-41	<u>Collective bargaining agreements</u>	None	V
	102-42	<u>Identifying and selecting stakeholders</u>	13	V
	102-43	<u>Approach to stakeholder engagement</u>	13~20	V
	102-44	<u>Key topics and concerns raised</u>	13~20	V



2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

- ISO 26000 Guidance on Social Responsibility
- GRI Standards Content Index: General Disclosures
- **GRI Standards Content Index: Specific Disclosures**
- AA 1000 V3 External Assurance Statement

GRI Standards Content Index: General Disclosures

GRI 102: 2016		Page number	External verification	
Report parameters	102-45	<u>Entities included in the consolidated financial statements</u>	26~27	V
	102-46	<u>Defining report content and topic Boundaries</u>	20~21	V
	102-47	<u>List of material topics</u>	20~21	V
	102-48	<u>Restatements of information</u>	4 Including the subsidiary Taiwan Steel Resources	V
	102-49	<u>Changes in reporting</u>	21	V
	102-50	<u>Reporting period</u>	4	V
	102-51	<u>Date of most recent report</u>	4	V
	102-52	<u>Reporting cycle</u>	4	V
	102-53	<u>Contact point for questions regarding the report</u>	4	V
	102-54	<u>Claims of reporting in accordance with the GRI Standards</u>	4	V
	102-55	<u>GRI content index</u>	94~98	V
	102-56	<u>External assurance/verification</u>	99~100	V

GRI Standards Content Index: Specific Disclosures

Economic material topics	Management guidelines and indicators		Page number	External verification
Economic performance GRI 201: 2016		<u>103 Management Approach</u>	24	V
	201-1	<u>Direct economic value generated and distributed by the organization</u>	33~34	V
	201-2	<u>Financial implications and other risks and opportunities due to climate change</u>	35~38	V
	201-3	<u>Defined benefit plan obligations and other retirement plans</u>	76	V
	201-4	<u>Financial assistance received from government</u>	34	V

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

- ISO 26000 Guidance on Social Responsibility
- GRI Standards Content Index: General Disclosures
- **GRI Standards Content Index: Specific Disclosures**
- AA 1000 V3 External Assurance Statement

GRI Standards Content Index: Specific Disclosures

Economic material topics	Management guidelines and indicators	Page number	External verification
Taiwan Steel Union's self-defined material topics			
Company's code of conduct	103 Management Approach	24	V
Risk and opportunity management	103 Management Approach	24	V
Circular Economy	103 Management Approach	39	V
Environmental material topics	Management guidelines and indicators	Page number	External verification
Materials GRI 301: 2016	103 Management Approach	55	V
	301-1 Materials used by weight or volume	58	V
Energy GRI 302: 2016	103 Management Approach	55	V
	302-1 Energy consumption with the organization	62~64	V
	302-3 Energy intensity	62~64	V
	302-4 Energy consumption reduction	63	V
Water and effluents GRI 303: 2018	103 Management Approach	66	V
	303-1 Interactions with water as a shared resource	66	V
	303-2 Management of water discharge-related impacts	67	V
	303-3 Water withdrawal	67	V
Emissions GRI 305: 2016	103 Management Approach	55	V
	305-1 Direct (Scope 1) GHG emissions	61	V
	305-2 Energy indirect (Scope 2) GHG emissions	61	V
	305-3 Other indirect (Scope 3) GHG emissions	61	V
	305-4 GHG emissions intensity	60	V
	305-5 Reduction of GHG emissions	60	V
	305-7 NOx, SOx and other major gas emissions	65	V

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

- ISO 26000 Guidance on Social Responsibility
- GRI Standards Content Index: General Disclosures
- **GRI Standards Content Index: Specific Disclosures**
- AA 1000 V3 External Assurance Statement

GRI Standards Content Index: Specific Disclosures

Economic material topics	Management guidelines and indicators		Page number	External verification
Wastewater and waste GRI 306: 2016	<u>103 Management Approach</u>		55	V
	306-2	<u>Waste by categorization and by treatment methods</u>	69	V
	306-3	<u>Serious leakage</u>	69	V
Environmental protection law compliance GRI 307: 2016	<u>Management Approach</u>		55	V
	307-1	<u>Non-compliance with environmental laws and regulations</u>	72	V
Taiwan Steel Union's self-defined material topics				
Transportation safety and regulations	<u>Management Approach</u>		48	V
	Transportation safety	<u>No. of safe ton kilometers and No. of injuries/deaths due to traffic accidents</u>	50	V
	Transportation laws and regulations	<u>Degree of compliance of transportation laws and regulations</u>	48	V
Climate strategy	<u>Management Approach</u>		35	V
	TCFD	<u>TCFD adherence</u>	35	V
Environmental policy management system	<u>Management Approach</u>		55	V
	Environmental policy	<u>Environmental standards and policy</u>	55	V
	Environmental management PDCA (plan-do-check-act)	<u>ISO 14001 environmental management system</u>	59	V

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

- ISO 26000 Guidance on Social Responsibility
- GRI Standards Content Index: General Disclosures
- **GRI Standards Content Index: Specific Disclosures**
- AA 1000 V3 External Assurance Statement

GRI Standards Content Index: Specific Disclosures

Social material topics	Management guidelines and indicators	Page number	External verification
Wastewater, contaminated water and waste GRI 306: 2016	<u>103 Management Approach</u>	55	V
	306-2 <u>Waste by categorization and by treatment methods</u>	70	V
	306-3 <u>Serious leakage</u>	70	V
Occupational Health and Safety GRI 403:2018	403-1 <u>Occupational health and safety management system</u>	80	V
	403-2 <u>Hazard identification, risk assessment and event investigations</u>	82	V
	403-3 <u>Occupational health services</u>	80	V
	403-4 <u>Worker participation, consultation, and communication on occupational health and safety</u>	81	V
	403-5 <u>Worker training on occupational health and safety</u>	81	V
	403-6 <u>Workers' health promotion</u>	83	V
	403-7 <u>Prevention and mitigation of occupational health and safety impacts directly linked by business relationships</u>	83	V
	403-9 <u>Occupational injuries</u>	84	V
Training and education GRI 404:2016	<u>103 Management Approach</u>	72	V
	404-1 <u>Average hours of training per year per employee</u>	79	V
Local communities GRI 413	<u>103 Management Approach</u>	86	V
	413-1 <u>Operations with local community engagement, impact assessments, and development programs</u>	88~90	V

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

- ISO 26000 Guidance on Social Responsibility
- GRI Standards Content Index: General Disclosures
- GRI Standards Content Index: Specific Disclosures
- AA 1000 V3 External Assurance Statement

AA 1000 v3 External Assurance Statement



獨立保證意見聲明書

2020 年台灣鋼聯股份有限公司企業社會責任報告書

英國標準協會與台灣鋼聯股份有限公司(簡稱鋼聯)為相互獨立自公司，英國標準協會除了針對 2020 年台灣鋼聯股份有限公司企業社會責任報告書進行評估和查證外，與鋼聯並無任何財務上的關係。

本獨立保證意見聲明書之目的，僅作為對 2020 年台灣鋼聯股份有限公司企業社會責任報告書所界定範圍內的相關事項進行保證之結論，而不作為其他之用途。除對查證事實提出獨立保證意見聲明書外，對於其也目的之使用，或閱讀此獨立保證意見聲明書的任何人，英國標準協會並不負有或承擔任何有關法律或其他之責任。

本獨立保證意見聲明書係英國標準協會審查鋼聯提供之相關資訊所作成之結論，因此審查範圍乃基於並局限於這些提供的資訊內容之內。英國標準協會認為這些資訊內容都是完整且準確的。

對於這份獨立保證意見聲明書所載內容或相關事項之任何疑問，將由鋼聯一併回覆。

查證範圍

鋼聯與英國標準協會協議的查證範圍包括：

1. 本查證作業範疇與 2020 年台灣鋼聯股份有限公司企業社會責任報告書揭露之報告範疇一致。
 2. 依照 AA1000 保證標準 v3 的第 1 應用類型評估鋼聯遵循 AA1000 當責性原則(2018)的本質和程度，不包括對於報告書揭露的資訊/數據之可信賴度的查證。
- 本聲明書以英文作成並已翻譯為中文以供參考。

意見聲明

我們總結 2020 年台灣鋼聯股份有限公司企業社會責任報告書內容，對於鋼聯之相關運作與績效提供了一個公平的觀點。基於保證範圍內之事項，鋼聯所提供資訊與數據以及採樣之測試，此報告書並無重大之不實陳述。我們相信有關鋼聯 2020 年度的經濟、社會及環境等績效資訊是被正確無誤地呈現。報告書所揭露之績效資訊展現了鋼聯對識別利害關係人的努力。

我們的工作是由一組具有依據 AA1000 保證標準 v3 查證能力之團隊執行，以及規劃和執行這部分的工作，以獲得必要之訊息資料及說明。我們認為就鋼聯所提供之足夠證據，表明其依據 AA1000 保證標準 v3 的報告方法與自我聲明符合 GRI 永續性披露標準核心選項專屬允允的。

查證方法

為了收集與作成討論有關的證據，我們執行了以下工作：

- 對來自外部團體的匯報相關於鋼聯計畫進行測試，以確認本報告書中聲明書的合適性
- 與管理層討論有關利害關係人參與的方式，然而，我們並無直接接觸外部利害關係人
- 訪談 5 位與永續性管理、報告書編製及資訊提供有關的員工
- 審查有關組織的組織性證據
- 審查內部證據的發現
- 審查報告書中所作宣告的支持性證據
- 針對公司報告書及其相關 AA1000 當責性原則(2018)中有關包容性、重大性、回應性及衝擊性原則之流程管理進行審查

2020 CSR Report: Table of Content

- About the CSR Report
- Message from Management
- 2020 CSR Highlights
- Taiwan Steel Union's CSR Policy
- Taiwan Steel Union and SDGS
- Short, Mid and Long Term ESG Targets

Ch1. Sustainability Management

Ch2. Sustainability Corporate Governance

Ch3. Circular Economy

Ch4. Value Chain Management

Ch5. Green Manufacturing Process

Ch6. Happy Workplace

Ch7. Social Inclusion

Appendixes

- ISO 26000 Guidance on Social Responsibility
- GRI Standards Content Index: General Disclosures
- GRI Standards Content Index: Specific Disclosures
- AA 1000 V3 External Assurance Statement

AA 1000 v3 External Assurance Statement

結論

針對 AA1000 實質性原則(2015)之包容性、重大性、回應性及衝擊性與 GRI 永續性標準等原則的詳細審查結果如下：

包容性

2020 年報告書反映由鋼聯已持續尋求利害關係人之參與，並建立重大永續主題，以發展及達成對企業社會責任具有責任且策略性的回應。報告書中已公正地報告與揭露經濟、社會和環境的訊息，足以支持適當的計畫與目標設定。以我們的專業意見而言，這份報告書涵蓋了鋼聯之包容性議題。

重大性

鋼聯公布對組織及其利害關係人之評估、決策、行動和績效會產生實質性影響與衝擊之重大主題。永續性資訊揭露與透明程度，提供利害關係人與外部利益相關者，以瞭解其經營管理方針、計劃與企業活動如何影響社會與環境議題。

回應性

鋼聯執行來自利害關係人的期待與看法之回應。鋼聯已發展相關道德政策，作為其對進一步回應利害關係人的機會，並能對利害關係人所關切之議題作出及時性回應。以我們的專業意見而言，這份報告書涵蓋了鋼聯之回應性議題。

衝擊性

鋼聯已識別並以平衡和有益之量測及揭露方式公正展現其衝擊。鋼聯已建立監督、量測、評估和管理衝擊之流程，既而在組織內實現更有效之決策和發展管理。以我們的專業意見而言，這份報告書涵蓋了鋼聯之衝擊性議題。

GRI 永續性報導原則

鋼聯提供有關依循 GRI 永續性報導原則之自我宣告。真相等於「核心選項」(每個涵蓋特定主題 GRI 原則之重大主題，至少一個特定主題的揭露項目係指其全部的報導要求)的相關資料。基於審查的結果，我們確認報告書中多項 GRI 永續性報導原則的社會責任與永續發展之相關揭露項目已被報告、部分報告或省略。以我們的專業意見而言，此自我宣告涵蓋了鋼聯的社會責任與永續性主題。

保證等級

依據 AA1000 保證標準 v3 我們審查本聲明書為中度保證等級，如同本聲明書中所描述之範圍與方法。

責任

這份企業社會責任報告書所屬責任，如同責任性中所宣稱，為鋼聯負責人所有。我們的責任為基於所描述之範圍與方法，提供專業意見並提供利害關係人一個獨立的保證意見聲明書。

能力與獨立性

英國標準協會於 1901 年成立，為全球標準與驗證的領導者。本保證團隊係由其專業背景，直接受過如 AA1000AS、ISO 14001、ISO 45001、ISO 14004 及 ISO 9001 之一系列永續性、環境及社會等管理標準的訓練，具有主導稽核員資格之成員組成。本保證團隊依據 BSI 公平交易原則執行。

For and on behalf of BSI:



Statement No: SRA-TW-2021115
2021-06-25


Peter Fu, Managing Director BSI Taiwan

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Taiwan Headquarters: 2nd Floor, No. 37, Ji-Hu Rd., Nii-Hu Dist., Taipei 114, Taiwan, R.O.C.
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