SCGC

Sustainability through Innovation

Sustainability Report 2022
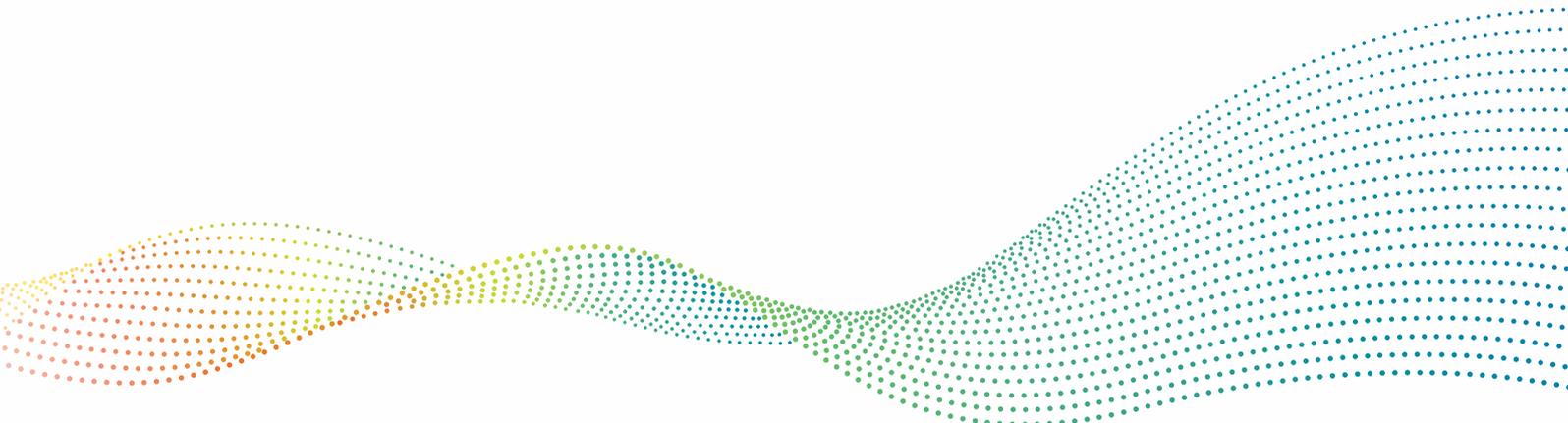
SCG Chemicals Public Company Limited

SCG Business Philosophy

ADHERENCE TO FAIRNESS

DEDICATION TO EXCELLENCE

BELIEF IN THE VALUE OF THE INDIVIDUAL

CONCERN FOR SOCIAL RESPONSIBILITY

SCGC is committed to sustainable business with good corporate governance by integrating ESG to become a world-class leader.
All of which are handled through creation of products and solutions for a better world, sustainable operations along the value chain, and development of solutions for society.
The Company has continued to enhance quality of life and create value for stakeholders through the concept of "Innovation that's Real"

Content

Message from Chairman and CEO and President

Although the COVID-19 pandemic is starting to recede, the world is still facing a broad range of issues, including the global economic recession induced by interest rate adjustments, high variable energy costs, and the geopolitical tension. As a result, the economy has not recovered adequately, resulting in a prolonged crisis and challenges in business operations.

SCGC has embraced an ESG approach to establish business strategies and direction throughout the entire value chain and to transform a crisis into an opportunity by making a difference. These efforts are made to achieve sustainable growth and bring about resilience, agility, and speed; to develop personnel by reskilling and upskilling to increase productivity; to accelerate technology and innovation developments to increase competitiveness; and to maintain leadership in the ASEAN. The company has outlined three sustainable operations strategies: Increase our products and solutions for a better world, Engage sustainable operations throughout business value chain, and Enhance solutions for our society

Increase Our Products and Solutions for a Better World

SCGC developed innovative SCGC GREEN POLYMER™ products based on 4 circular economy principles with sales of 137,125 tons in 2022, exceeding the target.

Reduce: SMX™ products help customers lower the amount of plastic resins used for molding. As a result of its superior strength compared to conventional plastic resins, it enables manufacturers to reduce greenhouse gas emissions by 10-20%.

Recyclable: The company developed solutions to make packaging that employs PP or PE alone as mono-material solutions to replace multi-material packaging, allowing it to be recycled more easily. The output keeps the same properties of maintaining the integrity of the contents and helps address the issue of difficult-to-recycle plastic waste.

Recycle: The company manufactures High Quality Post-Consumer Recycle Resin (PCR) that has been certified by ISCC Plus as a result of the implementation of advanced recycling across the supply chain. It also expands the business of PCR in Europe by increasing its investment in Sirplaste, Europe's leading plastic recycler, and acquiring Recycling Holding Volendam BV (Kras), a leading waste management company in the Netherlands, to tap into the upstream market of collecting used plastic for recycling into PCR and gain more knowledge to further develop SCGC GREEN POLYMER™ products.

Renewable: Explore the feasibility of establishing a bio ethylene manufacturing facility in partnership with Braskem.

> ## "ESG is a way of doing business that helps businesses grow in a sustainable way and makes a country more competitive. This leads to the sustainable development of the country."

**Mr. Chumpol
Na Lamlieng**

Engage Sustainable Operations throughout Business Value Chain

Move toward achieving carbon neutrality by 2050: The essence of achieving the Paris Agreement's target is to keep the rise in global average temperatures below 2 degrees Celsius relative to the pre-industrial baseline and try to limit the rise to 1.5 degrees Celsius by 2050. This is done to prevent the adverse consequences of climate change that could impact the control measures implemented by many countries to impose high carbon tariffs or emission taxes. As a result, SCGC is advancing its strategy toward carbon neutrality by boosting energy efficiency, increasing the proportion of clean and renewable energy utilization, and enhancing carbon capture and offsetting. SCGC has collaborated with the SINTEF Institute in Norway to launch the project PYROCO2 to study carbon dioxide capture and utilization technologies and build partnerships across the value chain to produce low-carbon products and solutions throughout the life cycle.

SCGC ensuring the safety and health of employees and business partners working in SCGC's operational area continues to be a priority at SCGC. The company adheres to achieving accident-free and occupational illness-free goals by developing health and safety operational measures, serving as a model for international health and safety organizations alongside promoting the health of employees and business partners while raising safety awareness both on and off the job.

Enhance Solutions for Our Society

Close the Loop Plastic Waste: SCGC has implemented social and community projects to increase public awareness of plastic waste management and reintroduce it to the recycling process. It also expanded partnerships with organizations in the public, private, and community sectors during the past year, in which SCGC has been able to reintroduce more than 2,470 tons of plastic waste into the recycling process. In addition, the company's extended Waste-free Community project has been approved by the Thailand Greenhouse Gas Management Organization (Public Organization) for the Low Emission Support Scheme (LESS), which will serve as the foundation for a sustainable low-carbon society.

Promote Community Enterprise Projects: SCGC places a strong emphasis on improving potentials of the communities with the help of experts so that they can become self-reliant in a sustainable way. These efforts have improved capabilities of over 1,000 people and create over 7 million baht income per year.

Transparent and Fair: SCGC believes that sustainable business practices are achieved by adhering to the principles of ethical and socially responsible business practices and prioritizing stakeholders' interests, which will contribute to continued future growth. The Board of Directors and management team are the organization's leaders and drivers for stability and sustainability. The company has performed its duties with transparency, accountability, honesty, and fairness in compliance with the principles of Good Corporate Governance, the SCGC Code of Conduct, and the requirements of the Stock Exchange of Thailand. This is undertaken to boost competitiveness, generate long-term returns for shareholders, and gain stakeholders' trust.

Entering its 40th year. In 2022, SCGC has transformed into SCG Chemicals Public Company Limited, a significant transition for the company's continued growth. With nearly 40 years of success in Thailand, we are prepared to continue expanding to become an ASEAN leader in sustainable chemicals and innovative excellence under the concept of "Innovation that's Real".

Mr. Tanawong Areeratchakul

Mr. Chumpol Na Lamlieng,
Chairman of the Board of Directors

Mr. Tanawong Areeratchakul,
CEO and President

Vision and Mission

SCGC will lead the region in tandem
with strengthening ASEAN's sustainable
prosperity and will seek to create value
for its customers, employees, investor,
business partners, and communities in which it
operates, following the principles of corporate
governance and global safety standards.
We also aim to improve the quality of life
of individuals through the production
of quality products and services, technological
advancement, innovation excellence,
and adherence to our four core values.
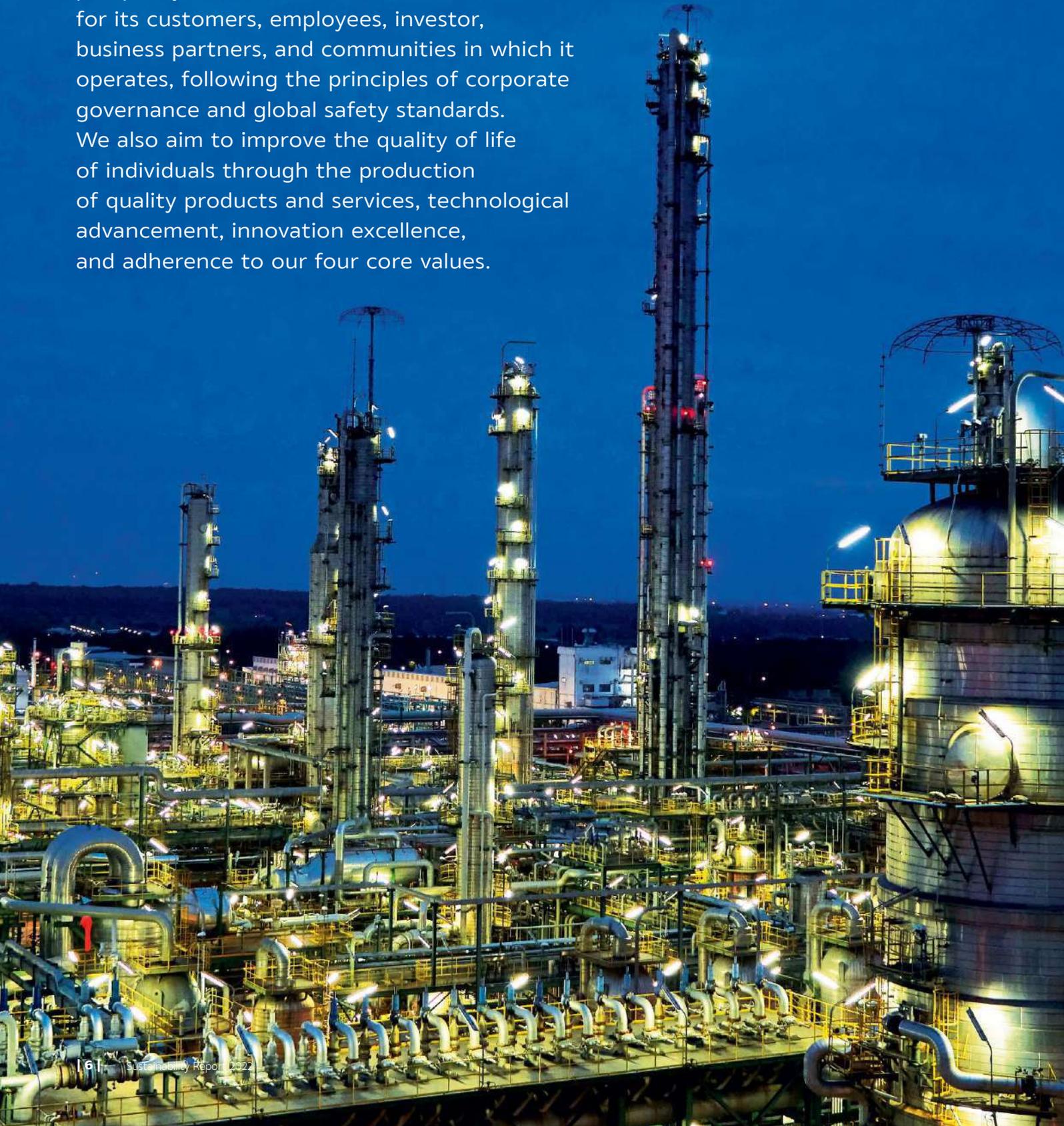
Key Strategies for Moving toward the Chemicals Business for Sustainability

① ASEAN Chemicals Leader

SCGC responses to the tremendous potential of the chemical industry growth in ASEAN, such as Vietnam and Indonesia. The construction of Long Son Petrochemicals Complex, the first integrated petrochemical complex with capabilities to produce ethylene, propylene, polyethylene, polypropylene and steam cracking capabilities in Vietnam, is operated by Long Son Petrochemicals Company Limited (LSP), a wholly-owned subsidiary of SCGC. The commercial operation is expected to commence in the first half of 2023. Moreover, SCGC holds a 30.57% equity interest in PT Chandra Asri Petrochemical Tbk (CAP), making it the second largest shareholder of CAP, the only integrated petrochemical plant in Indonesia.

② Fully Integrated Vinyl Player

SCGC aims to enhance the integration of the vinyl business to strengthen profitability, with the intention to expand the business of PVC resins and PVC finished products to increase growth prospects in high-growing markets in ASEAN. SCGC also seeks to expand upstream businesses in Thailand, Vietnam, and Indonesia, as well as increase cost competitiveness and strengthen profitability across the value chain.

③ Global Leader in Sustainability

SCGC is striving to become a leader in sustainable business, with ambitions to achieve 1 million tons per year of the total sales volume of green polymer portfolio by 2030 and reduce carbon dioxide emissions from the production process with goal to reach carbon neutrality by 2050.
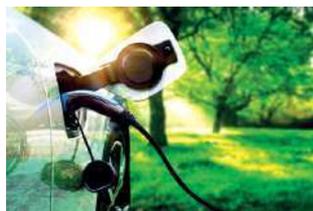
④ Strong Portfolio of HVA Grades

SCGC accelerates its growth of the portfolio of differentiated and competitive High Value Added Products and Services (HVA) which is differentiated and creates competitive advantages to drive higher growth opportunities by focusing on five key industries with strong growth potential: consumer packaging, medical and well-being, automotive, infrastructure, and energy solutions, by leveraging on research and development efforts from in-house experts as well as domestic and international research and development partners.

⑤ Leading Operator

SCGC strengthens leadership on operational excellence by adopting digital technology and data analytics across the value chain to increase competitiveness with more rapid and precise response to consumer needs by conducting business in accordance with ESG principles, responsibly addressing the impact on the environment, society, and governance.

About SCGC

SCGC is a leading integrated chemical player in the ASEAN, covering the entire value chain of petrochemicals from manufacturing, marketing, to distribution of upstream products, such as monomers, to downstream products, such as polymers or plastic resins. Its product portfolio includes other petrochemical derivatives and finished products. The main products of SCGC are essential raw materials for producing consumer goods and industrial products used in daily life.

SCGC conducts its operations through holding companies and subsidiaries in Thailand and overseas. SCGC's 3 core businesses are: 1) Olefins Chain in Thailand, 2) Vinyl Chain, and 3) Other Businesses such as Overseas olefins chain, Recycling businesses, Service and solution businesses.

The 2022 Revenue Structure Breakdown by Business Segment.

Percentage of revenue for the relevant year/period

185,549 million baht
Olefins Chain in Thailand
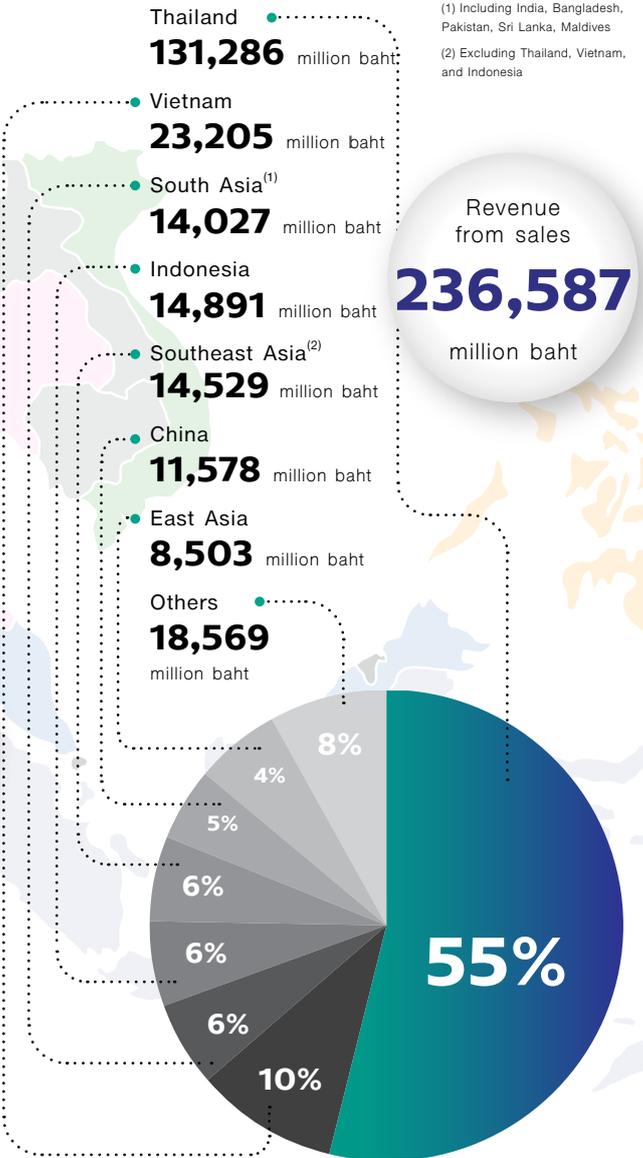
48,574 million baht
Vinyl Chain

15,674 million baht
Other Businesses

(13,209) million baht
Intercompany transactions

Revenue from sales
236,587 million baht
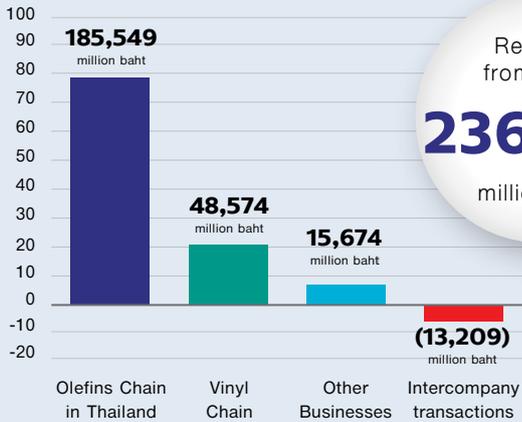
*The intercompany transactions are primarily driven using one or several upstream petrochemical products from the Olefins Chain in Thailand as raw materials for the Vinyl Chain and the sale and purchase of products among the Olefins Chain in Thailand and other businesses.

The Revenue Structure Breakdown by Geographical Location of Customers

(1) Including India, Bangladesh, Pakistan, Sri Lanka, Maldives

(2) Excluding Thailand, Vietnam, and Indonesia

Thailand
131,286 million baht

Vietnam
23,205 million baht

South Asia[1]
14,027 million baht

Indonesia
14,891 million baht

Southeast Asia[2]
14,529 million baht

China
11,578 million baht

East Asia
8,503 million baht

Others
18,569 million baht

Revenue from sales
236,587 million baht

55%
10%
6%
6%
6%
5%
4%
8%

Business Structure	Production Capacity (Million Ton per Year)	No. of Factories
Olefins Chain in Thailand		12
• Upstream olefins	3.4	
• Downstream polyolefin	2.13	
• Downstream operate by associate companies integrated with olefins business	2.4	
Vinyl Chain		21
• PVC Resin and PVC Compound	0.886	
• PVC finished products	0.43	
Other Businesses		8
• Overseas olefins chain		
• Recycling business		
• Service and solution businesses		

High Value Added Product and Service

Businesses and Product Types	Properties	Product Application

Olefins Chain in Thailand

PE Wax HVAs	Product physical appearance and thermal properties improvement for a broad range of industries	Synthetic Wax
HDPE HVAs-Compound	Thickness reduction, high pressure and slow crack growth resistance, extend life service	Water pipe, Gas pipe, etc.
HDPE HVAs-SMX™ Technology	Stronger, lighter, more durable and environmentally friendly	Beverage caps & closures, Intermediate Bulk Containers; IBCs, etc.
MDPE HVAs	Anti-microbial, anti-static, excellent weathering, and UV resistance, Provided in various grades and colors, light weight	Water Storage Tanks, Cooler Boxes, Kayaks, Fuel Tanks, etc.
LDPE HVAs	Excellent draw ability with being suitable for high speed machine and scratch resistance	Coating and lamination applications
PP HVAs	Lightweight material, excellent impact resistance, durable, low gloss performance	Automotive parts

Vinyl Chain

PVC Resins Low-K Value	Excellent processing at a low viscosity	Pipe and Fitting, etc.
PVC Resins High-K Value	Fatigue, abrasion, and long-term heat resistance	Medical tube, Electrical wire, cable, etc.
PVC Finished Products	Good toughness, durable, excellent UV, and high impact resistance	Pipe and fitting, Door and window frame, Construction Profile, Ductile, etc.

Other Business

Recycle Business-High Quality PCR Resins		
Service and Solution Business		• Integrated industrial solution consists of CiBot™, Tank Inspection Robot, etc. • Floating Solar Solution • Digital Asset Solution • Patent Solution

Sustainable Value Chain

SCG Chemicals or SCGC integrates circular economy principles with innovation and advance technology across the value chain and product life cycle to maximize resource use, boost recycling, minimize greenhouse gas emissions, and meet the needs of customers and environmentally conscious consumers.

Resource and Raw Material Management

1. **Energy:** Reduce the usage of fossil fuels and raise the proportion of renewable energy usage, such as solar energy, through research and development.

2. **Raw Materials:** Reduce the usage of raw materials, raise the proportion of recycled raw material use, and maximize waste reintroduction approach for processing through research and development.

3. **Water:** Reduce water usage, efficiently utilize water, and increase the proportion of recycle wastewater usage.

Product Life Cycle

- Resource and Raw Material Management
- Development of Products, Services, and Solutions
- Advance Production Processes Management to Reduce Pollution and Waste
- Product Usage and Recycling

Stakeholder Caring for Sustainable Development

Circular Economy
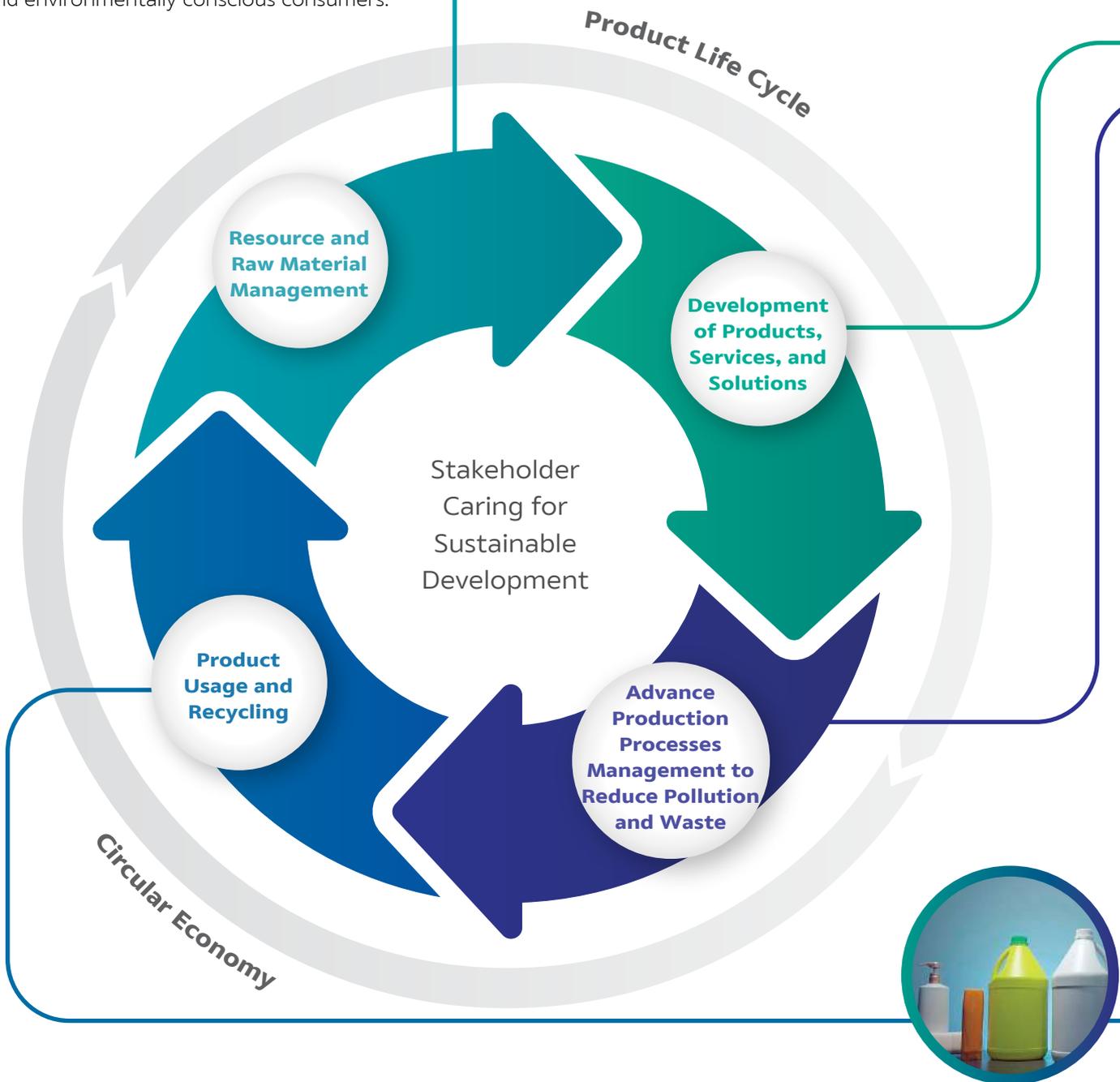
Development of Products, Services, and Solutions

4. **Technology-driven Innovation:** Research and development efforts are made to create innovations and incorporate technology into the development of products, services, and solutions, encompassing end-to-end eco-friendly processes from design to sourcing, manufacturing, sales, transportation, usage, and recycling. Efficiently use energy and resources as well as minimizing residues or waste to be disposed.

5. **Collaboration with Customers:** Identify real customer needs and develop products that meet the required and desired standards while also adding value to customers with environmentally friendly solutions, reducing energy and resource consumption, lowering greenhouse gas emissions, reducing waste to be disposed of, and extending the product's lifespan.

Advance Production Processes Management to Reduce Pollution and Waste

6. **Production Efficiency Enhancement:** Optimize equipment and processes to minimize pollution and waste from the manufacturing process, including greenhouse gas emissions, air pollution, and waste.

7. **Waste Recycling from the Production Process:** Study properties of wastes and develop technology for waste recycling, reprocess into raw materials for use in plants, or transfer to other plants as raw materials.

8. **Quality Control Before Released into the Environment:** Use technology to continuously control, monitor, and inspect the waste quality to meet or exceed legal standards.

Product Usage and Recycling

9. **Product Performance Enhancement:** Develop products that are more durable and consume fewer resources while retaining the properties that enable lower energy consumption and recycling.

10. **Waste Collection for Recycling in Manufacturing Processes:** Develop technology to manage waste collection from expired products for efficient reintroduction into manufacturing processes.

11. **Collaboration with All Sectors to Drive the Circular Economy:** Coordinate with the government, private sector, academic institutions, and civil society to form a comprehensive waste management collaboration network, create economic value through waste recycling by generating income for the community, or provide public benefits including decrease the amount of waste to be disposed of and reduce greenhouse gas emissions.
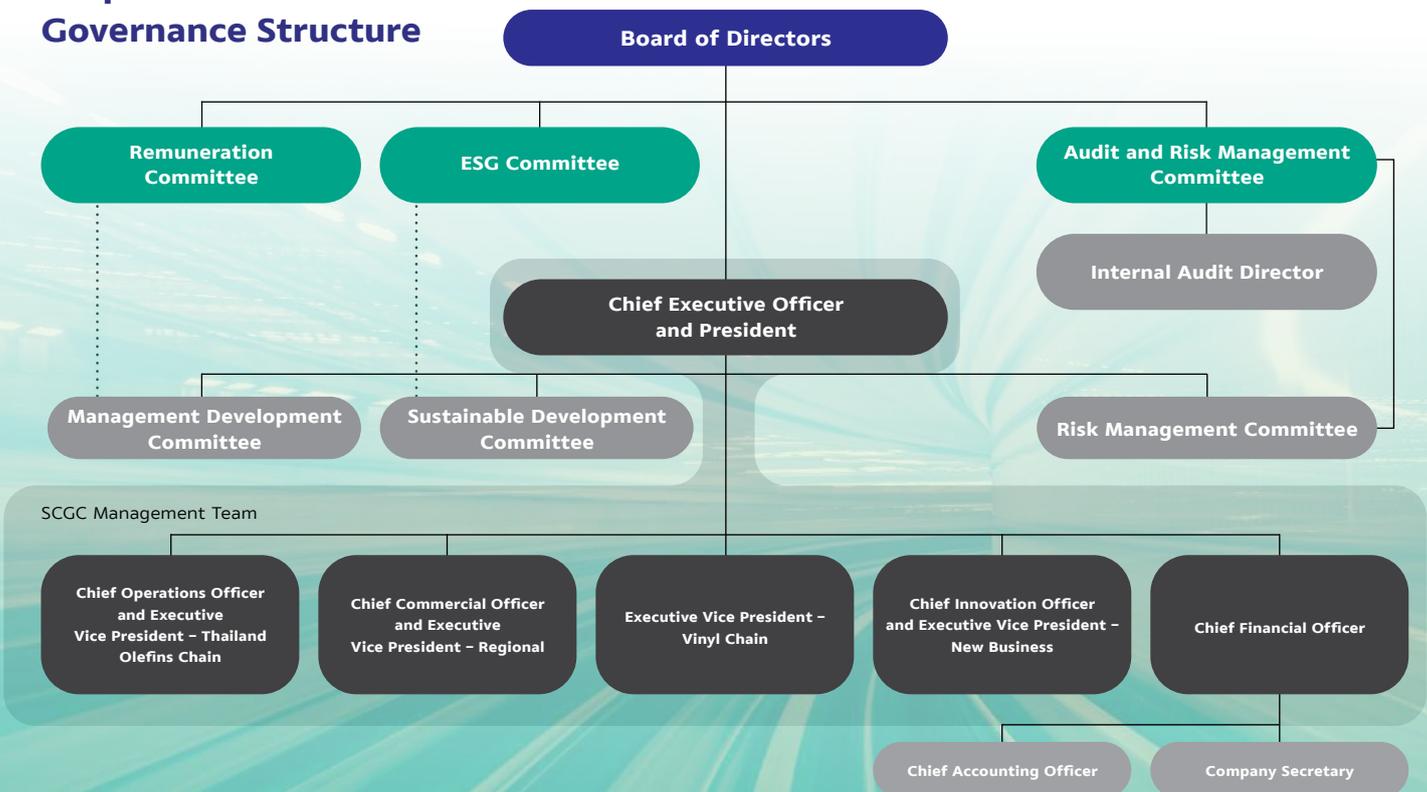
Good Corporate Governance

SCGC recognizes the significance of good corporate governance, the Company structured the organization to achieve effective management and placed a strong emphasis on implementing the criteria outlined in the SCGC Corporate Governance Policy as part of its business policies to generate returns, gain trust, create value for stakeholders, and contribute to sustained growth and long-term value creation.

SCGC conducts business with responsibility, transparency, and fairness, with the Board of Directors and executives upholding exemplary conduct in adhering to SCGC's good corporate governance principles and Code of Conduct. The Company assigned the ESG Committee to act as the corporate governance supervisor, covering the tasks of determining, reviewing, and providing feedback on the scope of corporate governance policies and guidelines for sustainable development following sound corporate governance principles both nationally and internationally, as well as monitoring and supervising the practices of the Board of Directors and executives to be in line with corporate governance policy and business strategies for corporate sustainability. It is also responsible for evaluating compliance with corporate governance policy and reviewing guidelines annually to ensure they are appropriate for business operations and in line with corporate governance practices at national and international levels.

Key Governance Activities

Board of Director Charter

SCGC Compliance Policy

Risk Management

SCGC Disclosure Policy

Corporate Governance Structure

- Board of Directors
  - Remuneration Committee
  - ESG Committee
  - Audit and Risk Management Committee
    - Internal Audit Director
  - Chief Executive Officer and President
    - Management Development Committee
    - Sustainable Development Committee
    - Risk Management Committee

SCGC Management Team

- Chief Operations Officer and Executive Vice President – Thailand Olefins Chain
- Chief Commercial Officer and Executive Vice President – Regional
- Executive Vice President – Vinyl Chain
- Chief Innovation Officer and Executive Vice President – New Business
- Chief Financial Officer
  - Chief Accounting Officer
  - Company Secretary

Structure of Board of Directors

SCGC's Board of Directors consists of persons with diverse abilities, expertise, professional skills, and experience related to business operations, without any limitation or restriction on other directors' qualifications on the grounds of gender, race, nationality, or religion. This will play a significant role in shaping the vision, mission, and business strategies to create sustainable value for SCGC and its stakeholders.

The current structure of the Board of Directors consists of fully qualified directors in accordance with the criteria for qualification of independent directors established by the Board of Directors, which is stricter than those outlined in the relevant notification of the Capital Market Supervisory Board and is considered part of the Board of Directors charter, with the term of office not exceeding nine consecutive years.

Mr. Chumpol Na Lamlieng
Chairman of the Board
and Independent Director

Mr. Roongrote Rangsiyopash
Vice Chairman of the Board and Chairman
of the Remuneration Committee

ACM Satitpong Sukvimol
Director

Mr. Winid Silamongkol
Independent Director and Chairman
of the Audit and Risk Management Committee

Mr. Rapee Sucharitakul
Independent Director and Member of
the Audit and Risk Management Committee

Mrs. Siriluck Rotchanakitumnuai
Independent Director and Member of
the Audit and Risk Management Committee

Mr. Tos Chirathivat
Independent Director and Member
of the Remuneration Committee

Mr. Suphachai Chearavanont
Independent Director and Member
of the Remuneration Committee

Mr. Cholanat Yanaranop
Director and Chairman
of the ESG Committee

Mr. Kitipong Urapeepatanapong
Independent Director and Member
of the ESG Committee

Mr. Thapana Sirivadhanabhakdi
Independent Director and Member
of the ESG Committee

Mr. Tanawong Areeratchakul
Director, Chief Executive Officer,
and President

Board Composition

Gender Diversity
1 / 11
- Male
- Female

Independence
4 / 8
- Independence
- Dependence

Executive
1 / 11
- Non-Executive *
- Executive
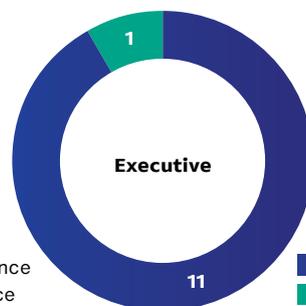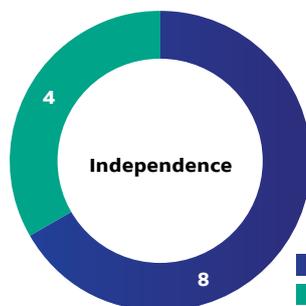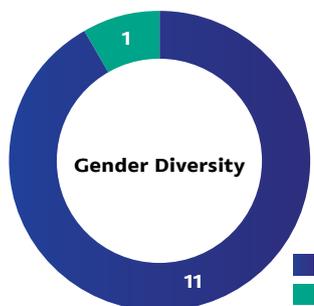
*As defined by the Securities and Exchange Commission's Notification Kor Jor. 17/2551 Re: Determination of Definitions in Notifications Relating to the Issuance and Sale of Securities (as amended)

Average Tenure of the Board of Director
2.6 years

Structure of Sustainability Operation

SCGC appointed the Sustainable Development Committee, which has CEO and President as the chairman, to be responsible for supervising the implementation of the Company's sustainable development goals through the Economic and Corporate Governance Committee and the Environment and Society Committee. Top managements are appointed to be the chairman of each committee. The subcommittees meet on a regular basis, approximately every 1-2 months, to monitor the action plan and performance of each sustainability issue. These subcommittees report to the Dimension Committees, which manage and monitor business and ESG related risks by following the WBCSD's guidelines to ensure effective, efficient, and timely management and report on the implementation status at the business level to the Risk Management Committee on a quarterly basis.

SCG Chemicals Sustainable Development Committee

Economic & Governance

- Customer Experience
- Tax Strategy
- Information and Cybersecurity
- Innovation Management
- Sustainable Supplier Development
- Corporate Governance
- Risk and Business Continuity Management
- Business Ethics and Compliance Management
- Product Stewardship
- Circular Economy

Environment & Social

- Environment
- Climate Change and Energy
- Safety
- Health Care and Occupational Health
- Human Capital Development
- Stakeholder Engagement and Human Rights

Management Approach

SCGC is committed to becoming a leading chemical player in ASEAN for sustainability, continuously increasing competitiveness to prepare for future crisis by setting goals for climate change adaptation, sustainable production and consumption, biodiversity conservation, collaboration through sustainable development, reducing inequality, and embracing the Sufficiency Economy Philosophy, which is crucial in Thailand's economic and social development. Furthermore, the Company has adopted the new economic model BCG (Bio-Circular-Green Economy) as part of Thailand's strategic plan for 2021-2026, guiding strategy and policy formulation to drive sustainable business operations in line with the United Nations' Sustainable Development Goals (UN SDGs).

The Sustainable Development Committee sets strategies for sustainability in three areas:

1. **Increase our products and solutions for a better world**
2. **Engage sustainable operations throughout business value chain**
3. **Enhance solutions for our society**

The key targets consist of the following:

- Increasing the total sales of products in the green polymer portfolio to 1 million tons annually by 2030,
- Reducing greenhouse gas emissions by 20% from a base year of 2021 by 2030,
- Achieving carbon neutrality by 2050.

This goal is a significant challenge for businesses. SCGC has established guidelines for ESG management in various dimensions, starting with the essential foundation of ensuring good corporate governance, conducting business with transparency, and fostering collaboration and trust within supply chain and business partners to create value for stakeholders.

Management Approach

Environmental Dimension

Setting strategies, guidelines, and goals for efficient resource use, energy management, and greenhouse gas emission reduction. SCGC has continuously invested in projects to increase energy efficiency and reduce greenhouse gas emissions. Currently, there are new challenges in reducing greenhouse gas emissions that require technology and collaboration with multiple sectors. As a result, SCGC has focused on increasing the proportion of alternative energy usage and using recycled raw materials which have low carbon footprint while accelerating the development of carbon capture innovations to produce new plastics and Natural Climate Solutions to achieve carbon neutrality goals in the future.

Applying circular economy principles to reduce waste generation and recycle or upcycle wastes. The Company has studied the biodiversity impacts resulting from business operations and established guidelines for the restoration, producing eco-friendly products and services, avoiding the use of chemicals harmful to humans and the environment, and minimizing the environmental impact throughout the life cycle of products.

Social Dimension

Setting strategies, policies, and guidelines for stakeholder engagement and promoting the fair and equitable treatment of employees while fostering a culture of accepting diversity and inclusion and establishing guidelines for employee caring, employee development, and employee talent attraction.

Setting strategies, policies, and goals for managing occupational health and safety to comply with international standards.

Developing society and communities by setting strategies and initiatives for community development, fostering occupations, reducing inequality, and empowering the community enterprises to be standard and sustainably independent.

Economic and Governance Dimension

Setting strategies, guidelines, and goals for creating sustainable products and solutions to meet consumers' diverse needs for environmentally friendly and low-carbon products. Integrating operations to create collaboration from suppliers to customers, applying innovations throughout the value chain to achieve the sales target of 1 million tons of Green Polymer annually by 2030. This includes promoting product stewardship to prevent risks to safety and the environment, effectively managing business risks and continuity (Business Continuity Management), promoting a risk management culture, and establishing policies and strategies for cyber threat prevention to ensure cybersecurity in using information technology within the organization and to enhance the capabilities of using digital technology to strive for operational excellence as well as ensuring business ethics and compliance with laws and regulations to build trust with all stakeholders.

SCGC adhered to SCG business philosophy by transparently disclosing its ESG performance along with completeness and up to date information to build trust for investors and create a positive image for its business to stakeholders and the society. SCGC engaged with partners both inside and outside the country to deliver sustainability to every society and community where we operate.

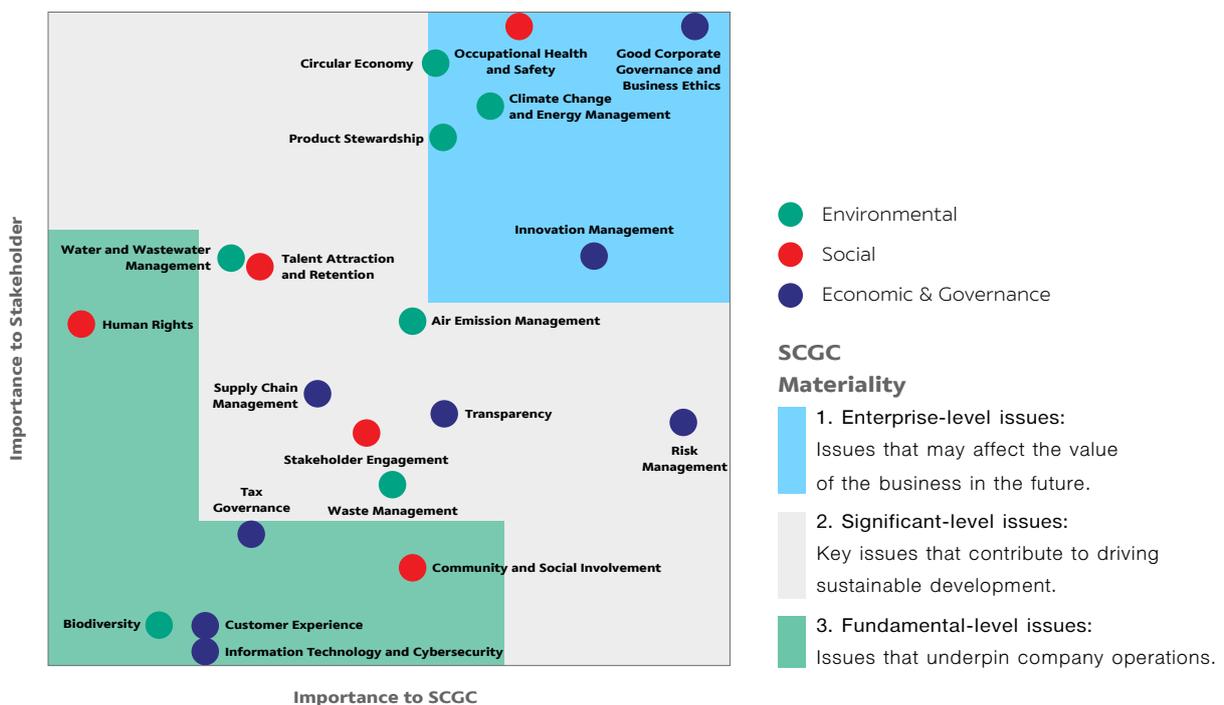# Advocating for Sustainability at the Committee Meetings in 2022

Committee	Number of Meetings (times/year)	Meeting Topic
SCGC Sustainable Development Committee	6 (every 2 months)	• Management of environmental, social, and governance (ESG) challenges throughout the sustainable supply chain. • Policy announcement aimed at achieving carbon neutrality. • Preparation of short-term and long-term plans to address critical concerns of sustainable development in accordance with the goals.
Economic & Governance Dimension Committee	6 (every 2 months)	• Supervision of economic and governance processes to be in compliance with the business's ESG and sustainable development directions.
• Business Ethics and Compliance Management	12 (every month)	• Supervision and development of a business plan to be in line with applicable laws and business ethics and to prevent of non-compliance. • Communication and oversight of legal concerns pertaining to the SCGC.
• Corporate Governance	12 (every month)	• Supervision of businesses to ensure adherence to corporate governance requirements.
• Innovation Management	4 (every 3 months)	• Establishment of Innovation management policies, strategies, indicators, and goals. • Development of product and solutions to increase portion of High Value Added (HVA), Process Innovation, and building collaboration and networks with partners to emphasize Open Innovation.
• Circular Economy	6 (every 2 months)	• Establishment of circular economy-based policies, strategies, indicators, and goals. • Development of circular economy-based products and services, establishing a network at the local and national levels.
• Product Stewardship	6 (every 2 months)	• Supervision of responsibilities in products and services across the supply chain.
• Customer Experience	6 (every 2 months)	• Customer relationship management across the supply chain, attentive customer service, and the identification of opportunities to increase corporate value.
• Sustainable Supplier Development	12 (every month)	• Establishment of business partnership and sustainable supply chain management.
• Information and Cybersecurity	12 (every month)	• Supervision of operational information security indexes, including leading and lagging indicators, and development of operational strategies to achieve the goals.
Environmental & Social Dimension Committee	6 (every 2 months)	• Supervision of Environmental & Social processes to be in compliance with the business's ESG and sustainable development.
• Climate Change and Energy	12 (every month)	• Supervision of issues related to climate change and energy • Management of input risk.
• Environment	12 (every month)	• Eco-Efficiency Evaluation. • Utilization of resources, water and wastewater management, waste management, and air quality. • Promote Environmental Management System.
• Safety	6 (every 2 months)	• Operational safety management encompasses safe work procedures, processes and facility risk management, transportation safety, and safety culture.
• Health Care and Occupational Health	12 (every month)	• Employee and contractors' health care includes the prevention of illness or illness at work and health promotion to lower the risk of off-duty factors.
• Stakeholder Engagement and Human Rights	6 (every 2 months)	• Management of stakeholders, employee care, business partners, community and social development, government agencies, media, and supervision of human rights activities.

Materiality

SCGC gathered and prioritized sustainability issues related to business operations in accordance with the Global Reporting Initiative (GRI) Framework which incorporates key issues and engages stakeholders in determining the priority of sustainability issues to formulate appropriate organizational strategies, goals, and operational plans.

Assessment and Prioritization Process of Sustainability Issues

SCGC reviews and identifies key issues at least once a year to be prepared to respond to potential impacts at any time.

Gather information and identify key issues	**Identify existing or potential implications arising from SCGC's business operations**	**Prioritize sustainability issues**	**Validate sustainability issues**	**Communicate key issues to stakeholders**
1	**2**	**3**	**4**	**5**
encompassing major change at the global and regional level, organizational vision and mission, corporate strategies, corporate-related activities, risks and opportunities, and opinion surveys among internal and external stakeholders.	regarding economic, social, and environmental aspects, including human rights issues, positive and negative impacts on stakeholders, and impacts on SCGC from external factors.	by examining issues that stakeholders concern directly or indirectly, external sustainability issues such as the United Nations Sustainable Development Goals, and the importance of impact on SCGC.	through workshops of the Sustainable Development Committee and approve the evaluation and prioritization by the Board of Directors.	for them to recognize the significance, strategies, goals, and management approaches of each issue.

Legend:
- ● Environmental
- ● Social
- ● Economic & Governance

SCGC Materiality

1. Enterprise-level issues: Issues that may affect the value of the business in the future.

2. Significant-level issues: Key issues that contribute to driving sustainable development.

3. Fundamental-level issues: Issues that underpin company operations.

Enterprise Materiality

Enterprise Materiality	Risks	Opportunities	Management Approach
Good Corporate Governance and Business Ethics	• Business damage posed by lack of good corporate governance. • Lack of investor confidence due to the absence of transparency in the disclosure of performance information.	• Improve investor and stakeholder confidence through the application of good corporate governance principles. • Access funding, raise reasonable capital. • Enhancement of economic, social, and environmental performance	Page 12, 54
Occupational Health and Safety	• Occupational accidents and chemical leaks. • Impacts of the pandemic that may cause business disruption. • Occupational diseases. • Compensation expenses	• Develop innovations to produce products and services that meet health needs. • Improve occupational health and safety management standards and serve as operational models for other organizations. • Treat employees and suppliers equally in accordance with human rights principles to enable employees and suppliers to reach their full potential.	Page 70
Climate Change and Energy Management	• Disasters in many areas, such as floods and droughts, etc. • Consumer behavior has evolved toward buying environmentally friendly products and services. • Rising production costs from investments and compensation. • Business credibility.	• Develop low-carbon products and services to increase competitiveness in the global market. • Adopt international standards and operational frameworks to establish the framework and prepare greenhouse gas emission reduction programs. • Strengthen sustainable supply chains through the process of engaging in the development of low-carbon products and services. • Create jobs for vulnerable communities and groups in carbon offset activities.	Page 38
Circular Economy	• Issues in plastic waste leakage into the environment, sparking anti-plastic campaigns. • Consumers have evolved toward using environmentally friendly products. • The plastic recycling process requires the cooperation of all sectors with higher costs.	• Add value to products and services based on circular economy (Green Polymer) to boost competitiveness on the global market. • Encourage participation with all sectors to advance the circular economy concept to promote plastic recycling.	Page 34
Product Stewardship	• Consumers are increasingly turning to more environmentally friendly products and services. • Non-standard product handling can compromise the safety of users, communities, and the environment. • Loss of business credibility and costs incurred to compensate for potential damages to stakeholders.	• Improve employee and technological capabilities to drive innovation that meets customer needs and ensures product and service stewardship. • Promote products that meet certified international standards to gain a competitive edge on the global market.	Page 62
Innovation Management	• With increased competition, industries without flexibility and adaptation may not be unable to survive.	• Develop innovations and technologies to create products and services that meet customer needs. • Improve resource and energy efficiency to maximize value, reduce waste to lower costs, and increase competitiveness.	Page 60

Commitment to Sustainable Development Goals

SCGC is committed to being a sustainable development model organization and a part of driving society toward the United Nations' Sustainable Development Goals (SDGs). SCGC has analyzed its operations throughout the value chain to prioritize the 17 main SDGs and 169 sub-targets, with 45 relevant sub-targets pertaining to the Company. These sub-targets are grouped based on the relevance level to the Company, as follows:

High-relevance goals

3 GOOD HEALTH AND WELL-BEING

3.4 3.6 3.9

Emphasize the importance of a total safety culture in the workplace to support creating a healthy and positive living environment for everyone of all ages.

8 DECENT WORK AND ECONOMIC GROWTH

8.2 8.3 8.5 8.7 8.8

Forster inclusive and sustainable economic growth by prioritizing the hiring of quality, fair, and valuable employment opportunities for everyone as well as production planning and continuous improvement of operations to limit the impact on the environment and global resources.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

9.4 9.5

Apply innovation and technology in all business activities, by increasing operational efficiency, business value, and competitive advantage. This will protect long-term business operations and promote sustainable and inclusive industrial development.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

12.2 12.4 12.5 12.7

Incorporate the principles of the circular economy into its operations to increase resource utilization efficiency, reduce the risk of future natural resource scarcity, and minimize environmental impact. This aligns with the goals of responsible consumption and production.

13 CLIMATE ACTION

13.1 13.3

Accelerate adaptation and taking action in various dimensions to reduce greenhouse gas emissions, including collaborating with all sectors to strengthen society and communities' capacity to adapt and cope with any potential impacts of climate change.

SUSTAINABLE DEVELOPMENT GOALS

Moderate-relevance goals

5 GENDER EQUALITY

Establish diversity and inclusion policy and human rights policy that promote and create opportunities for equal and fair treatment which is a crucial foundation for sustainable coexistence and growth.

5.5

6 CLEAN WATER AND SANITATION

Focus on efficient water management as well as considering the benefits to society and the environment through a systematic water management plan covering both inside and outside the organization.

6.3 6.4 6.6

7 AFFORDABLE AND CLEAN ENERGY

Develop manufacturing processes to increase energy efficiency and promote the use of renewable and alternative energy to reduce greenhouse gas emissions.

7.2 7.3

10 REDUCED INEQUALITIES

Develop communities and society, reduce inequality, and create opportunities and capabilities for communities to have a better quality of life by creating additional income based on the sufficiency economy principle. The SCGC innovations have been utilized to support and build collaborations with all sectors in continuously develop the potential of communities.

10.1 10.2 10.3

14 LIFE BELOW WATER

Conserve coastal marine resources by protecting, restoring, and preserving ecosystems by serving as a breeding ground and nursery for aquatic animals through the Fish Home project to retain abundance and biodiversity.

14.1 14.2 14.b

Other goals

1 NO POVERTY

Uplift the quality of life and reduce poverty. by providing necessary knowledge and skills for occupations and developing community products to add value, which helps to create sustainable and stable income and careers.

1.1 1.5

2 ZERO HUNGER

Participate in creating sustainable food security systems by collaborating with communities and the government agencies to manage water resources in the Khao Yai Da, which provides a water source to support year-round agricultural production.

2.3 2.4

4 QUALITY EDUCATION

Promote education at all levels by supporting scholarship for employees and youth. This includes promoting the development of necessary skills for their professions, which will encourage continual learning.

4.1 4.3 4.4 4.5

11 SUSTAINABLE CITIES AND COMMUNITIES

Develop and collaborate with community and society by promoting waste management in communities under the Waste Bank Project, Bang Sue Model, and the Waste-free Community Project. These initiatives have helped to reduce environmental impacts sustainably.

11.5 11.6

15 LIFE ON LAND

Contribute to reducing environmental impacts by increasing green areas to restore the ecosystem, promote biodiversity, and sustain the area's fertility.

15.1 15.2 15.4 15.5

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Respect and compile with the laws and regulations and is committed to overseeing business operations with transparency and integrity and taking responsibility for all stakeholders involved. The Company upholds the four core values and the SCGC Code of Conduct as fundamental values.

16.5

17 PARTNERSHIPS FOR THE GOALS

Collaborate with all stakeholders both within and outside the organization, to connect our activities at the community, national, and international levels to achieve sustainable goals.

17.1 17.17

Stakeholder Engagement

SCGC places importance on addressing the needs or expectations of all stakeholders in an appropriate manner by respecting their fundamental rights and engaging with stakeholders to incorporate their input to assess key sustainability issues including organization's decision making to enhance trust and create value between stakeholders and SCGC, which will contribute to the organization's sustainability and continuous growth. SCGC has announced the Stakeholder Engagement Policy, which has been regularly reviewed and updated, along with identifying indicators for stakeholder engagement and follow-up measures to enhance effectiveness.

SCGC has analyzed and determined eight key stakeholder groups: employee, supplier and contractor, investor, customer, community, and government agency, including the media, civil society sector, scholar, opinion leader, and international sustainability organizations.

Stakeholder Group	Objective of Engagement	Needs and Expectations	Engagement Approach and Frequency	Detail	Page
Employee	• Understand employee expectations and set guidelines for retaining and developing human resources to increase employee engagement. • Attract talent to join the organization. • Promote a culture of diversity and inclusion throughout the organization to foster productive collaborations. • Inform employees of information and changes in business operations and encourage their participation in management. • Promote collaboration with other stakeholders.	• Offer adequate benefits for the well-being of employees and their families. • Provide opportunities for career advancement, reskilling, and upskilling to enhance employee competence in response to company changes. • Treat employees appropriately and equitably, without discrimination based on age, gender, race, religion, or educational background. • Recognize the operational direction and adaptability guidelines of the organization to operate in line with the Company's strategy. • Ensure a safe and appropriate work environment.	• An annual survey of employee engagement undertaken by an external consultant. • Develop an annual strategy for employee engagement and conduct focus group interviews to determine the needs and expectations of each unit. • Organize activities to build engagement with the organization in various ways periodically throughout the year and organize positive experience programs such as the new on-boarding program to connect with young generation employees, transform the workplace into Smart Office, provide alternative benefits, and allow a variety of employee uniforms. • Quarterly leadership forum. • Quarterly meetings with the management team and communication channels for providing feedback to high-level executives. • Disseminate employee-related information and updates through several internal communication channels, including email, LINE Group, Employee Connect Application, and WeLink. • Organize quarterly forums to obtain opinions and recommendations to prepare materiality. • Establish work measures and allocate resources for work safety.	• Business Ethics and Compliance Management • Human Rights • Health and Safety • Employee Caring and Development	54 69 70 72

Stakeholder Group	Objective of Engagement	Needs and Expectations	Engagement Approach and Frequency	Detail	Page
Supplier/ Contractor	• Support knowledge and innovation to enhance suppliers and contractors' operations. • Promote and support workplace safety and transportation of suppliers and contractors along with the goal of achieving zero accidents. • Promote and support suppliers and contractors' compliance with applicable laws and human rights principles, particularly with regard to vulnerable groups, e.g. migrant workers. • Develop collaborative projects for business growth and expansion.	• Promote operational knowledge pertaining to environmental, social, and corporate governance (ESG) to improve the operations of suppliers and contractors while lowering operational risks and reputational concerns.	• Incorporate their input to assess organization's materiality. • Regularly visit suppliers and contractors to exchange ideas and listen to suggestions for improvement. • Share knowledge and new trends that may affect the operation of suppliers and contractors. • Raise awareness and promote safe work practices to create a safety culture and reduce environmental impacts by incorporating Circular Economy principles. • Enhance the transportation of suppliers and contractors by conducting annual evaluations and fostering development under the Sustainability Program.	• Business Ethics and Compliance Management • Sustainable Value towards Supplier • Human Rights • Health and Safety	54 56 69 70
Investor	• Enhance investor confidence by disclosing important and necessary information about operations. • Listen to opinions when making decisions on the organization's operations.	• Operate with sound corporate governance and disclose operating results in a timely and transparent manner so that investors can discern the direction of the Company's continuous development. • Define the organization's strategy and approach to enhance sustainable business competitiveness.	• Incorporate their input to assess organization's materiality • Organize executive activities to convey business strategies and direction, such as quarterly analyst conferences. • Disseminate operating results through the annual report, the sustainability report, and the website.	• SCGC Sustainability Report 2022	
Customer	• Deliver products and services that meet the needs of customers and consumers. • Co-develop products with business customers and foster collaboration with them to develop sustainable products and services. • Receive feedback, solicit consultations and solution suggestions for product and service development.	• Develop products and services that meet the needs of customers. • Enhance products to promote sustainability, strive for a low-carbon society, and ensure safety throughout the product lifecycle. • Collaboratively seek solutions for customers and brand owners to develop globally competitive, high-quality products.	• Incorporate their input to assess organization's materiality. • Conduct Customer Satisfaction Survey annually. • Co-develop products with customers through the i2P Center that helps create innovations that meet their needs and promote global sustainability. • Share knowledge and new trends that may affect the operation of customers through twice-yearly seminars. • Receive customers' complaints, advice, feedback through multiple channels 24 hours a day.	• Customer Experience Creation • Innovation Management • Product Stewardship	59 60 62

Stakeholder Group	Objective of Engagement	Needs and Expectations	Engagement Approach and Frequency	Detail	Page
Community	• Develop knowledge and understanding of SCGC's business and listen to the community's expectation to promote harmonious co-existence. • Develop participation through various collaborative projects to empower the community and benefit to society. • Respect the community's rights, reduce inequalities in communities, and care for vulnerable stakeholders such as the disabled, elderly, and children.	• Operate without impacting the environment and community safety. • Disclose operational information transparently, listen to feedback, and allow the community to participate in auditing the organization's operations. • Create a good quality of life for communities by using capabilities and the Company's innovations to enhance their well-being while creating jobs and generating incomes for them to become self-reliant. • Respect the community's rights without discrimination.	• Incorporate their input to assess organization's materiality • Management team and employees joining the monthly dialogue with the local community to listen to suggestions, feedback, and their needs. • Annual community satisfaction and engagement survey. • Organize activities to stimulate ideas so that opinions gathered in the community can be translated into social initiatives that genuinely address the community's needs. • Give advice to develop community projects in economic, social, and environmental dimensions. • Disclose the Company's operations information and organize an annual Open House. • Provides 24-hour channels for receiving concerns and suggestion from the community. • Listen to the community's input prior to project execution (EIA). • Establish a tripartite committee to involve the community in reviewing and submitting feedback to the organization at least once a year.	• Biodiversity and Ecosystem • Community and Social Involvement	68 74
Government Agency	• Conduct business activities in strict compliance with applicable law and regulations. • Provide feedback and comments to the government for policy formulation and plans at the national level to drive the development and competitiveness of the industry in the country.	• Cooperate and support government agencies in academic view and organize activities that benefit society. • Serve as an exemplary model in management transparency and excellence in implementing sustainable development guidelines in the economic, societal, and environmental areas. • Enhance operations and participate in government programs to achieve sustainability goals based on the SDGs.	• Incorporate their input to assess organization's materiality • Serve on a panel or a working group to propose recommendations for government policies, regulations, and practices. • Foster engagement and share good practices with the government sector to expand adoption in other industries.	• Business Ethics and Compliance Management • Water and Wastewater Management • Waste Management • Air Quality Management • Community and Social Involvement	54 65 66 67 74

Stakeholder Group	Objective of Engagement	Needs and Expectations	Engagement Approach and Frequency	Detail	Page
Media	• Communicate corporate news by conducting in-depth interviews and online surveys (media empathy) to prepare accurate and transparent information that meets the needs of the media. • Establish online channels for communicating news and updates, to ensure information is disclosed fully, accurately, and timely. • Foster engagement and good relations with the media.	• Serve as an exemplary model in management transparency and excellence in implementing sustainable development guidelines in the economic, societal, and environmental areas. • Disclose information about the organization's operations transparently and in a timely manner.	• Incorporate their input to assess organization's materiality. • Establish online communication channels for disseminating accurate and timely information. • Regularly disclose organization information in various aspects, such as quarterly operating result announcements and press conferences. • Support press activities beneficial to society and consistent with SCGC's guidelines. • Listen to the media's suggestions and opinions once every month.	• SCGC Sustainability Report 2022	
Civil Society Sector, Scholars, Opinion Leaders, and International Sustainability Organization	• Disclose information completely and transparently. • Listen to opinions and suggestions from the civil society sector. • Seek opportunities to create the partnership and drive issues related to sustainability. • Foster public awareness and understanding of key sustainable development issues. • Leverage the expertise of specialists to support collaborative projects.	• Serve as a role model and a mentor on sustainable development for medium and small organization. • Collaborate with large organizations to create value to society and communities, including SCGC's supply chain. • Cooperate with government agencies and propose good practices for sustainable development.	• Incorporate their input to assess organization's materiality and the development of the organization's operations. • Participate in projects that promote social sustainability. • Foster engagement and share good practices with the government sector to expand their adoption, e.g., transportation safety, health management.	• SCGC Sustainability Report 2022	

Risk Management

SCGC has established systematic risk management in accordance with international standards and integrated into business operations to identify risks or find business opportunities appropriately and in a timely manner, able to manage risks to accpetable level based on organizational risk appetite or find opportunities to add the organization value to achieve the established goals, meet the expectations of stakeholders, promote sustainable Business Operations, and comply with the good corporate governance principles. The risk management structure is established with clear roles and responsibilities, consisting of the Audit and Risk Management Committee, the Risk Management Committee, and the Internal Audit Office and the Risk Management Policy is published on the website: www.scgchemicals.com.

Risk Management Process

The risk management framework applies to three primary areas: strategic risk management (Medium to Long-Term), operational risk management (Short to Medium-Term) and investment project risk management. Four risk management processes comprise as follows:

Risk Management

1 Risk/opportunity identification.

2 Risk assessment.

3 Risk response including defining the key risk indicators which are the leading indicators, in order to anticipate risk events and to control risk mitigation activities to be at the level in line with the targets.

4 Risk reporting to the Risk Management Committee prior to presenting to the Audit and Risk Management Committee on a quarterly basis.

The possibility of risks and impacts are prioritized as high level, medium level, or low level.

Building a Corporate Risk Culture

1 Assigned top executives to communicate the significance of risk management and be role models in risk management. This includes establishing practical guidelines on the common risk language, risk appetite, common risk assessment systems.

2 Assigned and accountability of each risk owner.

3 Encouraged each company in SCGC to include risk management as part of the agenda in major meetings.

4 Designated risk management as a component of training and development programs for employees.

5 Encouraged experience sharing across departments and companies to continually communicate the benefits of risk management.

Risks and Opportunities

Key Risks in 2022	Risk Management
Occupational Safety Risks • The complexity of the petrochemical productio process involves hazardous activities from upstream to the downstream, including transportation, which may affect the goal of accident-free and illness-free workplace.	• Broaden the implementation of safety culture and encourage employees at all levels to be leaders in safety. • Enhance the implementation of occupational health and safety standards to be on par with international standards in the work place, production process, service, travel and transportation. • Apply digital technology to increase efficiency in reducing risk from accidents, injuries, illnesses and occupational diseases.
Climate-related Physical Risks • Supply chain stakeholders are key players in driving the transition to a low-carbon business, which may affect a business operations.	• Monitor and assess risks from disaster impacts and predict various situations to plan for response and business continuity management plan (BCP) as well as long-term response plan. • Create a collaborative network with all sectors to be a part of disaster management, both at the local and national level. • Develop an information network system to analyze the situation and alert to prepare for risk impact management.
Human Rights Risks • Trade unions in abroad countries, such as Vietnam and Indonesia, may go on strike, delaying work, which may affect business operations including rising labor costs and other labor problems.	• Conduct human rights due-diligence in accordance with SCGC's human rights policy. • Establish guidelines to prevent human rights violations in all SCGC business activities, including business partners in the value chain. • Improve fair employment, use of clear employment contracts and determine appropriate working hours, rest time in accordance with best practice and/or local laws in the country where the business operates.
Cyber Threat Risks from Digitization of Business Operations and Increased Reliance on Advanced Technology Developments • Unauthorized access of data, inference and burden on network traffic or resources, or other cyber security attacks may cause business information systems to fail or disrupt. • Disclosure of confidential or protected information and data corruption affects business credibility and reputation.	• Prepare SCGC e-Policy in accordance with ISO 27001 and require all employees to comply with and pass the test annually. • Encourage employees to understand and be aware of the correct and safe use of technology, such as phishing simulation tests. • Install Web Application Firewall (WAF), protection tools, such as Endpoint Detection and Response (EDR) and cyber threat surveillance system through Security Operation Center (SOC). • Prepare disaster recovery plan (DRP) or system recovery plan to respond to emergencies.
Risk from the Impact of Changes in Regulations Laws and Regulations • Failure to comply with changes in the law, government regulations, and international economic and trade measures may affect SCGC's operations, reputation, and business opportunities.	• Monitor and report changes in policies, standards, laws, and regulations relating to business, including communicating information to relevant agencies. Evaluate and prepare action plans to mitigate risks and consider adopting the requirements of laws and regulations as working standards. • Manage licenses as required by law through the e-Compliance system. • Establish policies to demonstrate commitment to governance and establish clear guidelines, such as anti-trust policy, sanction policy in accordance with international principles and guidelines.

Sustainable Development Strategy

SCGC is committed to become the leader in Chemicals Business for Sustainability by integrating sustainability and ESG principles into every aspect of its operations throughout the value chain. The Company actively engages with stakeholders from all groups to achieve the United Nations' Sustainable Development Goals (SDGs), conducting its business following good governance principles and applying the circular economy concept to produce low-carbon, environmentally friendly products and services. This approach enhances its competitive advantage in the global market and promotes sustainable business growth.

SCGC ESG Approach

Follow up and monitor the impact of business operations in the dimension of corporate governance. environment and society in a proactive and real-time manner to formulate strategies and mitigation.

Assurance data reporting by external parties to enhance stakeholders' trust.

Utilize technology and AI systems to monitor and analyze performance, adjust work plans, and allocate necessary resources to achieve objectives.

Consider business activities that align with SDGs to define strategies, action plans, and operational objectives.

Identify key sustainability issues by considering megatrends and ongoing changes, allowing it to effectively manage key sustainability aspects in response to the evolving landscape

Setting goals and performance indicators, incorporating ESG performance into executive compensation considerations.

Listen to the stakeholders' opinion and establish engagement mechanism, incorporating stakeholder expectations into decision-making and business direction.

Controversy Management

Governance

Third-Party Assurance

Materiality

Data Strategy

Targets and Indicators Setting

Stakeholder Engagement

SCGC Integrates ESG Operations as a Guiding Principle in Its Business to Create Value for the World and Society

with ESG strategies aimed at becoming a leader in Chemicals Business for Sustainability:

Collaboration

Disclosure

1. Increase Our Products and Solutions for a Better World

- Increasing the total sales of products in the green polymer line to 1 million tons annually by 2030.

- Accelerate the development of low-carbon footprint products.

- Develop HVA product to meet customer's need according to megatrends (Health care and aging society, automotive, urbanization and infrastructure, and renewable energy).

- Increase proportion of eco-friendly product in terms of climate resilience, circularity, and well-being to 67% by 2030.

3. Enhance Solutions for Our Society

- Promote job creation in communities by applying circular economy principles to close the loop for plastic and move towards a low-carbon society.

- Create a safe society and reduce inequality through SCGC's CSR projects.

- Enhance community self-reliance through the development of community enterprises.

- Utilize SCGC's expertise and experience to create lasting value for society.

2. Engage Sustainable Operations throughout Business Value Chain

Conduct business with consideration for the environment and society throughout the value chain.

- Reduce greenhouse gas emissions, aiming for carbon neutrality by 2050, and increase the proportion of low-carbon energy use.

- Choose low-carbon, environmentally friendly raw materials.

- Improve eco-efficiency through various environmental projects, such as reducing water consumption, waste generation, and air pollution.

- Create a safe and happy workplace for employees and suppliers.

- Promote respect for human rights throughout the value chain.

Highlight Sustainability Progress in 2022

Increase Our Products and Solutions for a Better World

- **Developed Innovation Management Process (IMP) and operated the i2P Center** to develop products with customers continuously. As a result, more than 100 product and solution projects were launched to the market, making an average of 20-25 items per year. It is expected to generate a profit of more than 426 million baht.

- **Developed eco-friendly packaging for leading brands,** such as bottle packaging with High Quality Odorless PCR for Lion, making it the first time in Thailand that PCR is used in personal care products that require specific fragrances without the presence of foreign odors.

- **Created and developed "Barrier Coating Technology"** that facilitates flexible mono-material packaging, replacing multi-material packaging to make packaging recyclable efficiently, and certified by RecyClass as ASIA's 1st Recyclable Barrier Coating Technology for PE Flexible.

Engage Sustainable Operations throughout Business Value Chain

- **Implemented an AI supervisory system** to provide real-time guidance for plant operators, enabling them to operate and control machines most efficiently at all times. It helped reduce 17 million baht a year without investing in machinery changes. In addition, it lowered greenhouse gas emissions by up to 1,600 tons per year or the equivalent of planting up to 160,000 trees per year.

- **Acquired a stake in Sirplaste,** a leader in Portugal's recycled plastics manufacturing industry, and invested in new technologies and machinery to expand the production capacity of High Quality PCR by 2023, totaling more than 45,000 tons per year.

- **Circular Plas and TOYO Engineering Corporation,** a leading international engineering company, signed a memorandum of understanding to study the feasibility of expanding the manufacturing capacity using advanced recycling technology that turns recycled feedstock into virgin plastic resins while maintaining quality according to international standards.

Enhance Solutions for Our Society

- **Promoted waste recycling in the community through the "KoomKah" web application** for improved efficiency of waste bank data management and encouraged communities to sort waste more. Its membership base expanded to 15,467, with 335 waste banks in its network. Over 5,328 tons of recyclable waste were sorted, reducing greenhouse gases by 4,487 tons of CO_2 equivalent.

- **The project "KoomKah × Unilever: Sorting for the Better (Yak Dee Mee Tae Dai)"** was piloted in Mueang Mai's Bang Bua Thong Municipality in Nonthaburi province. The initiative achieved the goal of sorting more than 6,000 kilograms of used plastic from households within a year. Collected used plastic included 100,000 HDPE plastics and 77,900 pieces of multilayer plastic packaging, reducing carbon dioxide emissions by 5,750 $kgCO_2e$. In addition, it has engaged 17,000 people in the community and generated additional income for people in Mueang Mai's Bang Bua Thong Municipality in the amount of 49,970 baht.

- **A total of 20,500 trees were planted in and outside the factory area,** comprising 18,000 land trees and 2,500 mangrove trees, which can absorb 369 tons of CO_2 equivalent.

Sustainability Performance in 2022

Environmental

GHG Emissions Reduced as a Direct Result of Reduction Initiatives

52,987　**1.23%**

tons of CO_2e compared with base year of 2021

1. Total GHG emission reduction 1.1 million tons of CO_2 compared with base year 2021.
2. In 2022, there were shutdown activities in some plants, resulting in lower GHG emission than normal operation.

Use of Renewable Energy

2,511

megawatt hours

Water Withdrawal Reduction

2.97　**11%**

million cubic meters compared with BAU at the base year of 2014

Recycled Material

31,500

tons

Waste to Landfill (Hazardous/Non-hazardous)

0/0%

(Thailand operations only)

Reduction of Waste to Dispose

95.3%

compared with base year of 2014

Environmental Expense and Investment

1,050

million baht

0.44%

of revenue from sales

Social

Number of Fatality Work-related Injury

Employee/Contractor

0/0

case

Lost Time Injury Frequency Rate

Employee/Contractor

0.000/0.096

case/1,000,000 hours worked

Occupational Illness Frequency Rate

Employee

0 case/1,000,000 hours worked

Females in all Management Positions　**25%**

Human Rights Violation

0 case

Number of Fish Homes

2,230 fish homes

SROI of Fish Homes Project

5.69

Social Contribution

20

million bath

Community Engagement

93%

Plastics Returned, Reused and Recycled

3,000 tons

Economic and Governance

Green Polymer Sales Volume

137,125 tons

SCG Green Choice Products and Services

56%

of revenue from sales

High Value Added Products and Services

36%

of revenue from sales

Green Procurement Purchased

1,780 million bath

17%

of procurement spend

Suppliers Processed through Environmental Social and Governance Risk Assessments

100%

of supplier with procurement spend over million baht

Research and Innovation Spending

1,572 million bath

0.66%

of revenue from sales

Contributions to Organizations

17.3

million bath

Accreditation and Achievements in 2022

- **ISCC PLUS** SCGC is the first in the Thai industry to receive "ISCC PLUS" certification throughout the supply chain. Given by International Sustainability and Carbon Certification (ISCC), four certified companies are Circular Plas Company Limited, RIL 1996 Company Limited, Map Ta Phut Olefins Company Limited, and Thai Polyethylene Company Limited.

- **RecyClass** SCGC was the first in ASEAN to be awarded international standard certification for "Barrier Coating Technology" that enhances the recycling efficiency of plastic packaging for sustainability.

- **CIRCULAR MARK** SCGC has been certified as Thailand's first group of eco-friendly plastic innovations under SCGC GREEN POLYMER™ comprising HDPE resins developed using SMX™ technology and High Quality Post-Consumer Resin (PCR).

- **Eco Industrial Estate-World Class (Eco-World Class)** RIL 1996 Company Limited is Thailand's first to receive the highest certification tier from the Industrial Estate Authority of Thailand (IEAT). And in 2022, it received the certification for the 4th consecutive year.

- **I-EA-T Sustainable Business Awards 2022** SCGC received ISB Excellence Award and ISB DNA Award for integrating sustainability into its business operations in five areas: governance, community, environment, employee and partner cares, and customer and economic development of the country.

- **Sustainable Disclosure Award from Thaipat Institute** SCGC received the Sustainability Disclosure Award for 2022 in recognition of its public disclosure of company performances and coverage of its Environmental, Social, and Governance (ESG) aspects which benefit stakeholders and all groups and respond to the Sustainable Development Goals (SDGs).

- **Marketing Award of Thailand 2022 (MAT AWARD 2022) from the Marketing Association of Thailand (MAT)** SCGC won the Gold Award in Sustainable Marketing and the Bronze Award in Brand Experience & Communication from the campaign "Upcycling Milk Pouches Project".

- **Prime Minister's Industry Award 2022** Thai MMA Company Limited won Prime Minister's Industry Award for outstanding energy management from raising energy management standards in the production process concretely with technology and digital systems.

- **Excellent Award for Safety, Occupational Health, and Work Environment: National Level 2022, presented by the Department of Labour Protection and Welfare, Ministry of Labour** Nine companies under SCGC won the awards.

- **CSR-DIW Continuous Award 2022 from the Department of Industrial Works, Ministry of Industry** Five awards were given to companies under SCGC, namely Rayong Olefins Company Limited, Map Ta Phut Olefins Company Limited, Thai MFC Company Limited, Map Ta Phut Tank Terminal Company Limited, and Rayong Terminal Company Limited.

- **IEAT Environmental Governance and Safety Award 2022** The Industrial Estate Authority of Thailand presented SCGC with the White-Flag-Gold-Star Award and the White-Flag-Green-Star Award for promoting public participation in environmental and safety compliance.

FEATURE STORIES
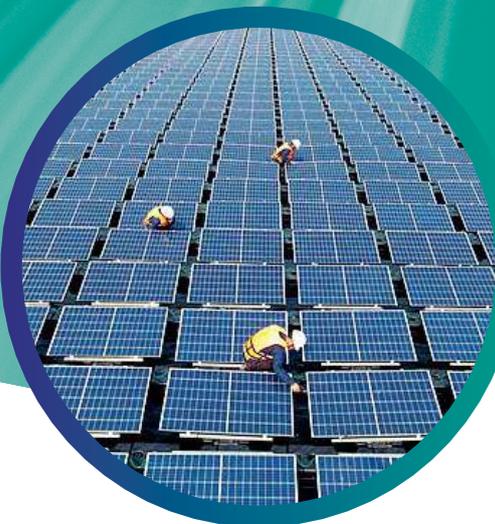
Innovation for Circular Economy

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

17 PARTNERSHIPS FOR THE GOALS

9.4   **12.5**   **13.1**   **17.17**

Targets

- Green Polymer Sale Volume 1,000,000 tons in 2030
- Plastics returned, reused and recycled 50,000 tons accumulation in 2025

2022

- 137,125 tons, reducing 59,000 tons of CO_2e emissions
- 3,000 tons

Circular Economy is a crucial concept in addressing waste management, ocean waste, global resource scarcity, and climate change. SCGC places great importance on the circular economy principles, making it an enterprise materiality of SCGC's sustainable development. SCGC reinforces the success factors of the circular economy through the ABC strategy across the entire supply chain.

Strategies

A: Awareness—Create awareness of the value of resources among stakeholders to promote recycling waste materials for beneficial purposes.

B: Business—Innovate and develop solutions to promote the circular economy.

C: Collaboration—Establish collaboration and networks within the circular economy.

Plastic Innovation for a Better World

SCGC has conducted business in the chemicals industry for a long time, with continuous awareness of environmental issues. SCGC is committed to developing innovative plastics under the SCGC GREEN POLYMER™ brand based on circular economy principles. These solutions provide innovative plastics that meet functional requirements while promoting environmental care, replacing conventional plastics to produce high quality, environmentally friendly plastic products. The Company also strives to create an end-to-end circular system for plastic products through various awareness-building activities, both internally and externally.

SCG Circular Way:
A product lifecycle practice guideline founded on the principles of the circular economy.

Resource Input:
Increase the proportion of renewable and recycled raw material and sourcing renewable energy for production process.

Design:
Design products to be durable, extend their lifespan, recyclability, using fewer resources in production while maintaining or improving quality.

Make:
Maximize resource efficiency with high efficiency machinery, reduce energy consumption, and minimize waste from the manufacturing process.

Sale and Distribution:
Utilize environmentally friendly transportation systems, leasing systems, sharing platforms and increase operational efficiency by digital technology.

Product Use:
Choose environmentally friendly and durable products for maximum value and benefit in use.

Collect & Recycle:
Reintroduce expired products as raw materials, reuse, recycle, or turn to alternative energy to reduce waste disposal through landfilling.

Increasing the Proportion of Circular Resources and Recycled Materials

One of the key principles of the circular economy is to minimize waste, maximize resource utilization, and use renewable raw materials for the production of products and services. SCGC GREEN POLYMER™ is committed to developing high-quality recycled plastic resins and researching the use of renewable feedstock for environmentally friendly plastic production.

Recycle

SCGC has developed High Quality Post-Consumer Recycled Resin (High Quality PCR Resin), starting with the sorting and proper cleaning of household plastic waste. The plastic is then crushed into small pieces, melted, and transformed into new High Quality PCR Resin. Packaging or products made from these resins conform to quality standard when replace virgin plastic resins with PCR in appropriate proportions.

In addition, High Quality PCR have lower carbon emissions throughout the product life cycle than virgin ones. SCGC's PCR have 70% less carbon footprint of product than virgin HDPE plastic resins.

SCGC's meticulous attention to detail in every step of the process has resulted in the High Quality PCR resin being certified by the Global Recycled Standard (GRS) for the sources of raw materials for the production of recycled plastic resins. In 2022, the High Quality PCR also received the environmental label, CIRCULAR MARK, becoming the first in Thailand to achieve such certification. This helps to build customer confidence that SCGC's chemical innovations are environmentally friendly and sustainable according to the circular economy principles.

Expanding PCR production capacity in Europe to meet the growing PCR market

SCGC has acquired more than 70% of shares in Sirplaste-Sociedade Industrial de Recuperados de Plástico, S.A. (Sirplaste), investing in expanding the production capacity of High Quality Post-Consumer Recycled HDPE Resin (PCR) by 9,000 tons per year, or a 25% increase in total production capacity. As a result, by the second quarter of 2023, SCGC will have a total PCR production capacity of more than 45,000 tons per annum. Additionally, SCGC has acquired Recycling Holding Volendam BV (Kras), a leading post-consumer waste management company in the Netherlands. This acquisition reinforces SCGC's ongoing commitment to driving resource efficiency and adopting the circular economy principles.

Renewable

SCGC has developed a special formula for bio-compostable plastics, which have been certified as compostable by leading global institutions such as DIN CERTCO in Germany. Another solution to reduce the use of fossil-based feedstock in plastic production is replacing by renewable raw material, such plants (bio-based), that can help reduce greenhouse gas emissions. SCGC has partnered with Braskem, a global leader in bioplastics from Brazil, to explore the feasibility of joint investment in a bio-ethylene production plant for bioplastics in Thailand.

Design – Designing Product for Reducing Resource Usage and Recycling

Every day, a tremendous number of plastic products and packaging are consumed and discarded, often ending up in landfills and lasting for centuries in the environment. Designing products that use fewer resources, are easy to separate for recycling, and are lightweight can help mitigate these problems.
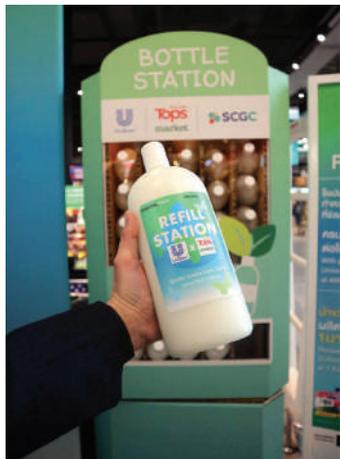
Reduce – Reducing resource usage

The solution that SCGC has developed is SMX™ technology for producing High Quality HDPE Resins, which can maintain a balance between high strength and stiffness. The innovative material can help reduce the wall thickness in a product while retaining its functional properties. It can be used to produce various grades of polyethylene resins, catering to diverse product requirements. Moreover, SCGC's SMX™ technology for HDPE resins have also received the CIRCULAR MARK certification.

Collaboration between Betagro and SCGC in developing heavy duty plastic bag for transferring raw chicken parts in processing plants has led to the development of SCGC GREEN POLYMER™ S111F-HDPE for High Impact Film, a special-grade resin with higher impact strength and toughness.

Resource usage is minimized by reducing the thickness of the product from 35 microns to 25 microns.

In 2022, SCGC developed a 1-liter HDPE refillable bottles made from High Quality PCR and resins manufactured with SCGC's SMX™ technology for a refill station project with Unilever and Tops Market. This encourages consumers to refill their bottles instead of using new packaging, reducing costs and resource usage.

"Throughout the 53 years since LION was established, we have had a policy of doing business while caring for the environment from the beginning. We have announced a policy that by 2050, the company will reduce net greenhouse gas emissions to zero, along with using recyclable packaging and using recycled polymer in producing packaging, replacing the use of virgin resins in 100% of LION's products."

Somsak Srisaardrak

SPC Business Executive Manager, Marketing Department of Lion Corporation (Thailand) Limited

Collaborating with Customers and Product Owners to Promote the Use of Environmentally Friendly Plastic Resins

In collaboration with LION, a leading consumer household goods business that prioritizes the policy of "Technology for Health in All Policies", focusing on developing products and innovations that consider the well-being of consumers, employees, society, and the environment. The packaging was developed for three products under the concept of Reduce-Recyclable-Recycle:

1. Reduce: Developed bottle packaging for the Shokubutsu brand using SCGC GREEN POLYMER™ S411B-HDPE for Lightweight Container, produced with SMX™ technology, reducing the amount of plastic used in bottle production by 12% compared to conventional plastic grades while maintaining the same strength and reducing the product's carbon footprint by 7%.

2. Recyclable: SCGC collaborated with Dow Chemical Thailand to create an innovation using Recyclable Packaging Solution, changing the Shokobutsu pouch packaging from multi-material packaging that was difficult to recycle, into a mono-material packaging while maintaining the product's quality protection properties within the packaging, enabling efficient recycling, and reducing greenhouse gas emissions throughout the packaging lifecycle by up to 73%.

3. Recycle: SCGC partnered with Teamplas Chemical Co., Ltd. to develop packaging innovation from High Quality Odorless PCR HDPE Resin for the "Pao" bottle packaging, which requires maintaining fragrant properties.

Recyclable – Design for recyclability

Design solutions that make packaging recyclable, transforming flexible packaging types such as frozen food packaging and various refill pouches, which consist of layers of different materials (multi-material), into packaging made from a single type of plastic like PE or PP (mono-material). This allows for efficient recycling while maintaining the usability and aesthetic properties desired by the brand owners.

SCGC believes that innovations under the SCGC GREEN POLYMER™ will help create a new pathway for eco-friendly plastic products.

Collection: Collecting End-of-life Products and Reintroducing them into the System, Reducing Leakage Outside the System

A single organization cannot close the loop on plastic waste. Thus, raising awareness and making everyone understand the importance of waste sorting and maximizing the benefits of plastics through various flagship projects that are easily accessible in everyday life is a priority for SCGC.

Upcycling Milk Pouches Project: A successful example of raising awareness from an early age

Packaging for milk consumed by students for their health in schools has become single-use plastic waste. A large number of milk pouch waste is generated. SCGC sees the importance of recycling milk pouches, so it has collaborated with the government, including the Department of Environmental Quality Promotion (DEQP) and the Office of the Basic Education Commission (OBEC), to implement the "Upcycling Milk Pouches Project" as a model for waste management in schools under the concept of a circular economy.

The "Upcycling Milk Pouches Project" encourages students to be aware of separating plastic waste from the source and collecting school milk pouches for recycling. This is done by setting up a waste bank in schools managed by the "KoomKah" application developed by SCGC. The collected milk pouch waste is then recycled by SCGC using innovation and technology to create new, useful plastic products such as chairs and plant pots, which are then donated back to the participating schools to encourage recycling with tangible results. Currently, 1,700 schools in 50 provinces have joined the project.

The project's success has led to the expansion of collaboration between SCGC and other private sector organizations, helping to spread awareness of waste management under the circular economy concept more widely.

An example of collaboration is the one between SCGC and the "Rak Pan Suk Junior" project by Bangchak Corporation Limited, which aims to create understanding and knowledge in waste management in schools and communities based on circular economy principles in 18 provinces, 35 schools, and nearby communities. Students participating in the project will learn about sustainable waste management through various knowledge stations. The project could recycle up to 6,000 kilograms of waste, equivalent to reducing greenhouse gas emissions by 1,600 kilograms of carbon dioxide.

In addition, SCGC and SCGP (SCG Packaging) have partnered with CP All Public Company Limited to expand the "Upcycling Milk Pouches Project" by SCGC and the "Ton Kla Rai Tang" project by CP All. This is in conjunction with the development of the Green Learning Network, expanding the network partners to CONNEXT ED schools in 5,567 locations nationwide.

Creating an efficient resource recycling system

Drop Point is a crucial tool contributing to the resource recycling close loop, making it easier for people in society to participate in recycling plastics.

SCGC has collaborated with the "Change Plastic into Merit" project, a recycling initiative under the collaboration of Magic Hands x Won, expanding Drop Points to more than 350 locations. In 2022, SCGC collaborated with Ying Charoen Market and the Department of Environmental Quality Promotion to expand Drop Points for used plastics in Ying Charoen Market, another significant Drop Point due to being a place that welcomes the large number of market users each day.

By the end of 2022, this collaborative project collected more than 7,800 tons of plastic waste.

Creating opportunities for plastic recycling

SCGC has collaborated with network tourism and service business operators and public and private sector partners in Samut Songkhram Province to organize the "Amphawa Narak" event under the "Amphawa Model of Sustainable Tourism Following Circular Economy Principles" project. This project provides knowledge on circular economy and waste sorting to raise awareness among communities and tourists. This has reduced the amount of waste generated from tourist activities by 1.4 kilograms and reduce greenhouse gas emission 0.5 kilogram carbon dioxide equivalent per tourist.

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From the starting point within SCGC, which is committed to developing plastic innovations with SCGC GREEN POLYMER™, today, we have received strong support from customers, government agencies, and civil society to join hands in promoting the main principle of circular economy which are maximization of resources usage and reduction of wastes with SCGC's innovation which can solve environmental problems and create sustainable collaboration.

Innovation for Carbon Neutrality

7 AFFORDABLE AND CLEAN ENERGY

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

15 LIFE ON LAND

7.2   7.3   9.4   12.5   13.3   15.1   15.2

Targets

● Reduce greenhouse gas emissions by 20% compared to the base year 2021 by 2030.

● Aim for carbon neutrality by 2050.

2022

1.23%

From 2022 until 2050, it covers a span of 28 years.

What will be the state of the world in the latter part of the 21st century? How dire or deteriorating will the quality of life be for people in the next 28 years due to the disasters of global warming and climate change?

From our current standpoint, making predictions may be challenging. Still, there is a global awareness that the situation is undeniably clear if we do not act now to prevent the damage expected to occur in the latter half of the 21st century. This is supported by a wealth of scientific evidence forecasting the future in such a way that no one dares to challenge it.

SCG Chemicals, or SCGC, as a key leader in the chemicals business, aims to grow sustainably alongside all sectors of society and provides a good environment and quality of life for people of all generations and ages, with the goal of:

Strategy for Transitioning to Carbon Neutrality

SCGC's core business is chemical products and comprehensive services in the chemicals industry, assisting customers in the development of products that fulfill consumer needs, such as good quality of life, environmental friendliness, and the transition to a low-carbon society. The key lies in managing products throughout the value chain, from upstream, midstream, to downstream.

SCGC has established the following three strategies to attain carbon neutrality by 2050:

1. Decarbonization
2. Low Carbon Supply Chain
3. Product Portfolio Adjustment

Carbon Management Platform
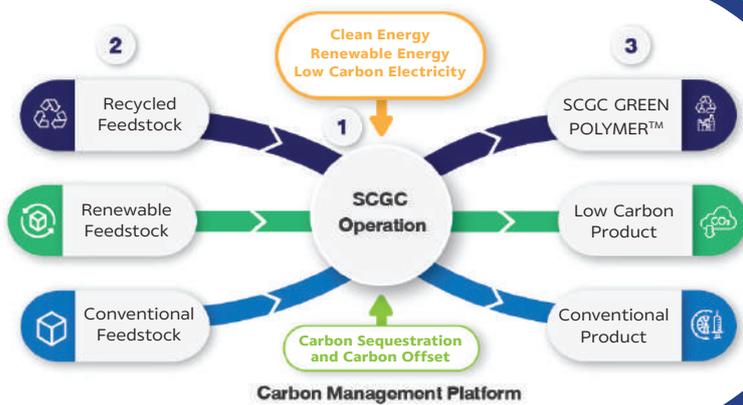
1. Decarbonization

SCGC has been continuously investing to increase production efficiency and reduce fossil fuel consumption through research and development, as well as the use of advanced technologies to control operations. This includes changing the proportion of externally sourced electricity, which is produced using fossil fuels, to self-generated electricity within the plant using solar energy. Additionally, the Company is working on the development of new technologies to capture and utilized carbon dioxide, as well as applying concept of natural climate solutions (NCS).

Improved Energy Efficiency

In 2022, SCGC developed projects to improve energy efficiency in key plants, such as upgrading the cooling water system in cooling tower, which helps reduce both the consumption of cooling water and energy usage by 65,700 gigajoules per year,

equivalent to a reduction of 8,184 tons of CO_2 equivalent emissions per year. Another project involved reusing flash steam in the dryer machine after used for heating the primary equipment, helping to reduce steam consumption, and lowering greenhouse gas emissions by 2,359 tons of CO_2 equivalent per year. Furthermore, the Company also implemented a project to reduce energy consumption at the Dilution Steam Generator (DSG), a high-energy-consuming equipment, reducing 3,000 tons of CO_2 equivalent emissions per year. Additionally, petrochemical plants are large and have complex production processes, therefore SCGC has implemented Artificial Intelligence technology (AI) to help analyze data and control steam consumption in the plant (Smart Steam Optimization) using a real-time automatic control program that is highly accurate. This increases energy efficiency and can reduce greenhouse gas emissions by more than 3,800 tons of CO_2 equivalent per year.

Increased Proportion of Renewable Energy Usage

For solar energy, SCGC has installed ground-mounted solar farms, solar rooftop systems on office buildings and plants, and floating solar farms, totaling more than 5.8 megawatts. This helps reduce greenhouse gas emissions by more than 4,000 tons of CO_2 equivalent per year.

In 2022, Map Ta Phut Olefins Co., Ltd. implemented a project to install a floating solar farm in the water pond area in the RIL industrial estate, located near the Company's plant. With a production capacity of 2 megawatts, it helps reduce greenhouse gas emissions by 1,200 tons of CO_2 equivalent per year. Leveraging SCGC's expertise, the Company has expanded its business to offer floating solar farm installation services to both internal and external clients totaling more than 55.1 megawatts, aiming to promote sustainable solar energy usage and collectively reduce greenhouse gas emissions as much as possible.

Carbon Credits and Carbon Sequestration

SCGC has also implemented projects to store carbon through natural methods and the use of technology to achieve the target goal of carbon neutrality. SCGC has studied the feasibility of installing a system to capture carbon dioxide from production processes and bring it back for beneficial use (Carbon Capture, Utilization, and Storage: CCUS). The main project, called PYROCO2, has received support from the European Commission under the Horizon 2020 program, amounting to 43 million euros. The research institute SINTEF from Norway, along with 18 other partner organizations, have been collaborating to develop the technology and establish a pilot plant for converting captured carbon dioxide back into chemicals that can be used as a precursor for producing plastics. This helps to reduce greenhouse gas emissions and develop environmentally friendly chemical products.

In addition, in 2022, SCGC applied for registration of the Thailand Voluntary Emission Reduction Program (T-VER) with the Thailand Greenhouse Gas Management Organization (Public Organization). This is done to register the validated carbon credits which involved replacing two diesel-engine buses with electric ones. This will help to reduce greenhouse gas emissions by a total of 210 tons of CO_2 equivalent over the project's 7-year duration.

Another project involved collaboration with the Department of Marine and Coastal Resources to restore degraded forest areas and aim to increase mangrove forest coverage to 1,100 rai of land for carbon sequestration in 2023. This project will collaborate with experts, local communities, and government agencies. The project will be registered under the Thailand Voluntary Emission Reduction Program (T-VER) for carbon credits and will be part of the Plant-Cultivate-Protect Campaign, which aims to plant one million trees. From 2017 to 2022, a total of 191,889 trees were planted, covering an area of 592 rai of land, which absorbed 2,867 tons of CO_2 equivalent and created community engagement with 3,400 people.

SCGC has set a target to reduce greenhouse gas emissions by 20% from the base year 2021 baseline by the year 2030 for both domestic and overseas businesses. In 2022, greenhouse gas emissions were reduced by 52,987 tons of CO_2 equivalent from various projects.

Greenhouse Gas Emission Reduction

Thousand Ton CO_2e

Year	Value
2019	18.02
2020	29.78
2021	46.21
2022	52.99
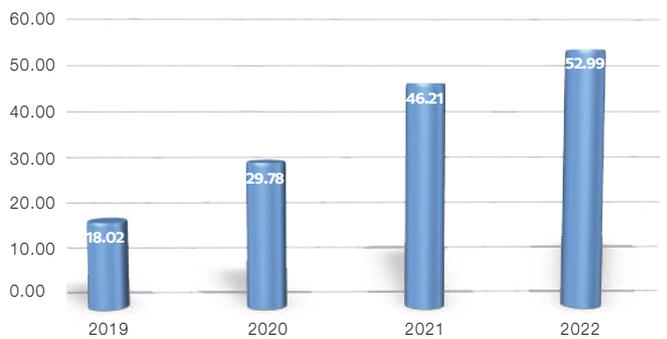
Greenhouse Gas Intensity

Ton CO_2e / Ton Product

Year	Value
2019	0.52
2020	0.51
2021	0.50
2022	0.48
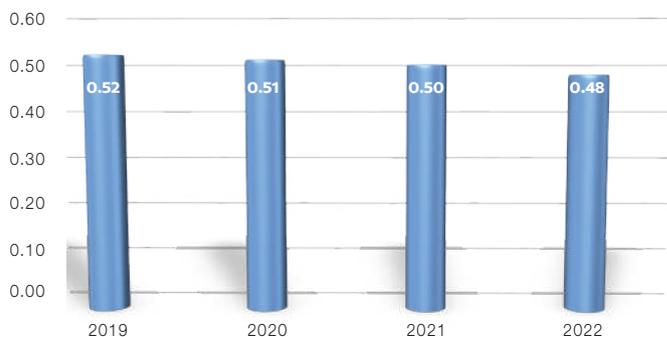
2. Low Carbon Supply Chain

In addition to the commitment to managing the production process, which is the middle of the value chain, SCGC also pays attention to the upstream part of the chain by sourcing low carbon footprint feedstock. This is achieved through collaboration with suppliers, who share the vision of reducing greenhouse gas emissions, to encourage suppliers to sell products with lower carbon footprints to SCGC. This approach will ultimately lead to a reduction of the carbon footprints of products throughout the value chain.

Due to the fact that the petrochemical industry heavily relies on fossil feedstock, its reduction is an absolute necessity for SCGC's business in the future. Accordingly, recycled feedstock, particularly plastic waste, is

introduced as a substitute of fossil feedstock and plans to be increased its portion to achieve the lower carbon footprint. Plastic waste typically undergoes Mechanical Recycling processing, where it is crushed into small pieces and then transformed into High Quality PCR Resin. Whilst the other plastic waste is difficult to recycle, SCGC has developed its own Advanced Recycling technology to convert it into high-quality raw materials that are equivalent characteristic to fossil-based raw materials. After that, the resulting resins are further processed in downstream petrochemical plants to produce recycled plastic resins with the same properties as virgin ones, which helps reduce the resulting products' carbon footprint.

3. Product Portfolio Adjustment

Low-carbon Products throughout Lifecycle

SCGC has products that have been certified under the SCG Green Choice program in the climate resilience category in 16 product groups, covering both upstream and downstream products. The upstream products include ethylene, propylene, benzene, and toluene, which reduce greenhouse gas emissions from production processes. The downstream products include plastic resins, such as LDPE grade D388C, LLDPE grade D682PC, and D477C, which have improved properties that reduce energy consumption and greenhouse gas emissions during fabrication processing, as well as emisspro®, coating products for industrial furnaces, which help reduce fuel consumption. These products generated 113.11 billion baht in sales revenue or 48% of the total revenue from sales. In addition, products of

SCGC GREEN POLYMER™, such as High Quality Post-Consumer Recycled HDPE Resin (PCR), can also reduce greenhouse gas emissions throughout the product lifecycle up to 70% by using recycled raw material.

Promoting Carbon Footprint Certification

SCGC has developed a digital system to manage production data, track energy usage, and monitor real-time organizational carbon emissions. This enables quick and responsive assessment of carbon emission data according to international standards. The system allows for appropriate business planning to meet market demand for low-carbon products.

In 2022, SCGC's subsidiaries received carbon footprint product (CFP) labels, which encompass subsidiaries that produce polyolefins, olefins, PVC, PP compound, melamine compound, film products, MMA, and acrylic sheet. Each company received CFP labels for all their products, totaling 255 product grades.

SCGC sets a target to obtain carbon footprint product labels for all subsidiaries by 2025 and to renew the certifications every three years. Additionally, in 2022, SCGC and all of its subsidiaries received the Carbon Footprint of Organization (CFO) certification, resulting from the assessment of greenhouse gas emissions throughout the value chain of the companies.

Promoting Community Greenhouse Gas Reduction

SCGC continuously supports the Waste-free Community Project through collaboration with communities and various sectors to facilitate the collection and sorting of waste through a waste bank system. This system is managed through SCGC's innovative application, "KoomKah".

In addition to generating income for communities and reducing waste sent to landfills, the Waste-free Community Project also helps reduce greenhouse gas emissions. In 2022, SCGC expanded the project by assessing the amount of greenhouse gas emissions reduced through waste separation activities. This assessment was conducted according to the "Low Emission Support Scheme (LESS)" requirements, which are certified by the Greenhouse Gas Management Organization (a public organization). This is intended to promote the awarding of certificates of appreciation to communities for their actions in reducing greenhouse gas emissions and fostering sustainable participation in greenhouse gas reduction efforts.

Greenhouse gas reduction is calculated using the LESS approach (tons of CO_2 equivalent):

Khao Pai Community Enterprise
89

Nern Payom Community Waste Bank Enterprise
25

Khod Hin 2 Community Enterprise
6

Innovation for Smart Factory

8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION
8.2	9.4	12.2	13.1

Target	2022
● Zero Breakdown	0 case

Industry 4.0, or the fourth industrial revolution, has brought about significant changes in the last ten years, particularly for factories that demand the utmost precision. The key is to connect the world of manufacturing with smart digital technology through network devices in the form of IoT (Internet of Things), as well as to elevate work processes through the application of digital technology for the management and control of machinery, equipment, and processes in industrial plants, including planning, marketing, and other aspects.

All of this requires preparedness in both human resources and up-to-date technology.

Ten years ago, SCGC began studying and laying the foundation for organizational development in preparation for change. We not only applied digital technology but also intended to elevate the industry to be safe, reduce environmental impact in the event of breakdowns, and increase efficiency by expanding knowledge and expertise accumulated over 30 years.

"At first, we invested heavily in people because digital work was new. We studied and searched for the right technology, then tested them with the plant's issues by applying data science techniques to create an analytics model to see if the plant's problems could be solved. We have accumulated knowledge and success cases in problem-solving until we saw the real results that could help." said Wee Chabthanom, Digital Asset Solution Manager, recalling the beginning of the transformation.

In the past, digital technology was considered new and challenging for many teams, and developing personnel capability was the first thing that management saw as important. Dozens of engineers were sent to learn about the artificial intelligence (AI) development in all areas related to plant operations, including mechanical engineering, IoT sensors, reliability engineering, data science, etc.

Five years later, SCGC employees were able to develop a smart factory management system by integrating digital technology, such as creating predictive models for detecting anomalies in advance in the plant's machinery and equipment; creating a 3D virtual plant that is nearly identical to reality; and accelerating the production of Digital Twin that can accurately predict the future. On the work site, supervisory AI is deployed to help make decisions.

Smart Factory: The Use of Digital Twin to Oversee the Plants

Errors in petrochemical plants can result in damages of at least tens of millions of baht and a recovery period of at least six months. All of these have a wide-ranging and prolonged effect.

The key to operations is always based on "prevention" before "correction".

Digital Twin is a virtual model or simulation in the digital world, which has physical characteristics and capabilities similar to real-world machinery in every aspect. For example, in a plant, there is a pump that generates pressure to transport fluids, and this pump will also exist in the 3D virtual plant. In the digital world, it can display the status of work and environmental conditions, such as temperature, pressure, and real-time energy usage, allowing data to be analyzed and to determine suitable operating conditions for production at that time. Additionally, this helps the Company plan for maintenance of machinery quickly, accurately, and precisely to cope with emergencies and to create confidence in terms of safety for employees, customers, and surrounding communities.
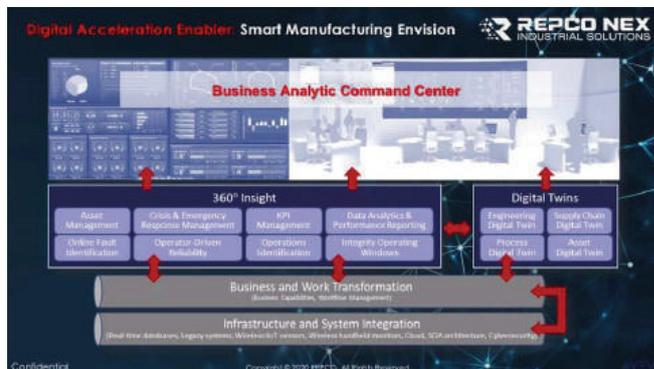
3D Virtual Plant

A digital 3D virtual plant with nearly identical machine data is created to help efficiently plan operations and maintenance and implement safety measures and emergency response management.
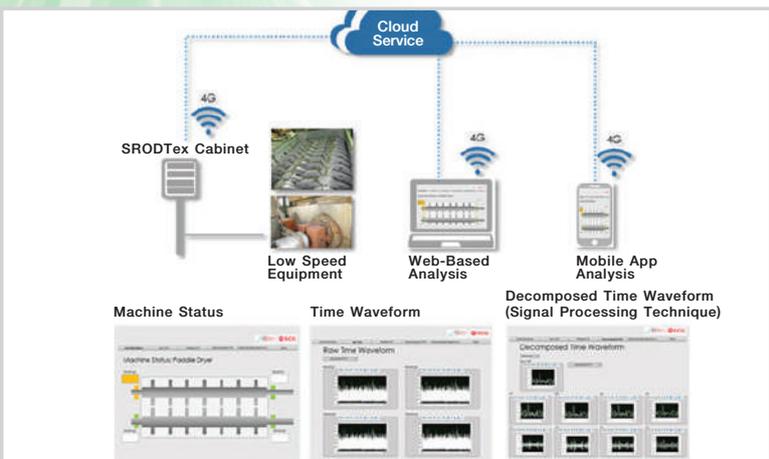
The notification system, known as Smart OFA™ (Smart Online Fault Analysis) or Predictive Analytics, applies data science principles to manage large data within the plant. The system was designed to analyze and identify abnormalities in machinery in advance, issue alerts before the damage occurs, and suggest management approaches in anticipation of any potential damage. This ensures that decisions are accurate, complete, and precise, allowing for prompt corrective action and reducing the risk of impact or potential danger. It promotes continuous production processes and elevates to the level of comprehensive Prescriptive Analytics.

"AI helps us see the data we can't see with our own eyes. In the past, engineers had to analyze the relationships between 6-7 data points, and sometimes the relationships were too complex, with 30-40 parameters that humans couldn't fully comprehend. But AI can use analytics algorithms that are more efficient than humans and notify us immediately. For example, suppose a plant is run under certain conditions repeatedly, in that case, the system will analyze the status that could lead to damage, predict the duration before the incident occurs, and suggest ways to prevent it. The result of this is an improvement in the plant's efficiency, a decrease in waste, and more efficient use of energy."

- **Wee Chabthanom** explained the capabilities of **the 3D Virtual Plant.**
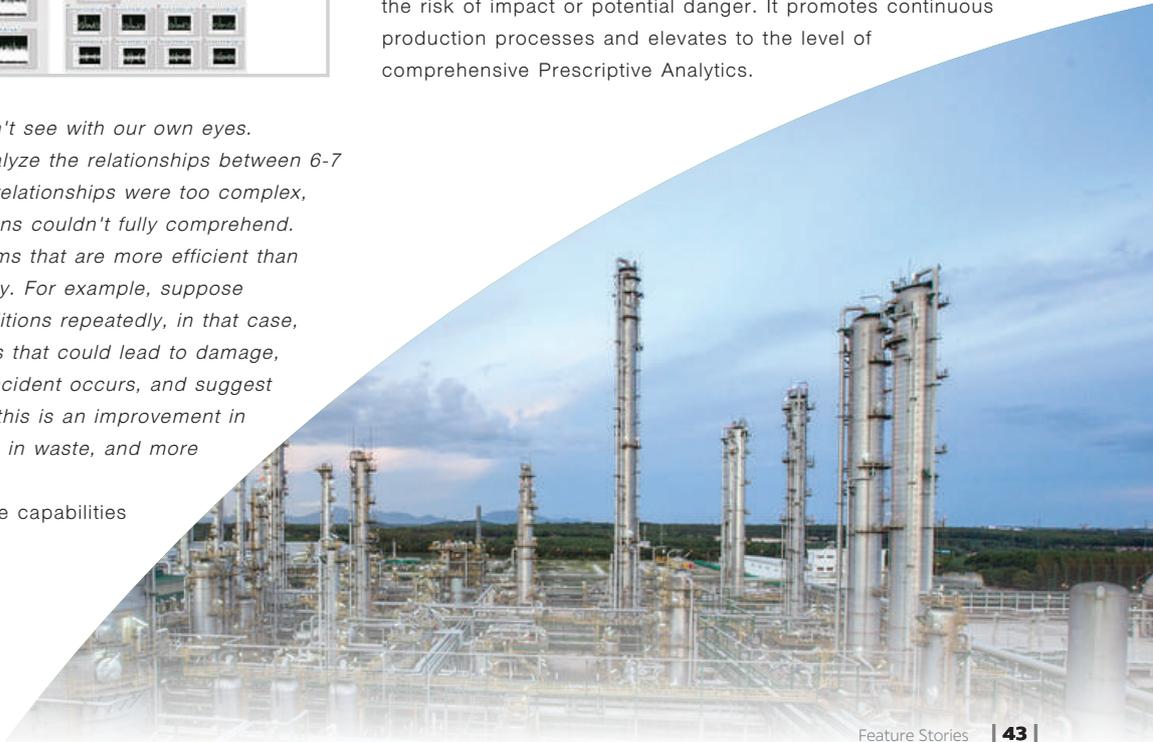
The Foundation is the Understanding of the Nature of Machinery

Although keeping up with the constantly evolving technological changes in artificial intelligence is crucial, SCGC does not forget the heart of industrial plant operations as the following principle says:

"The nature of machinery is never less important than numerical data."

The creation of the Asset Process Digital Twin system consists of two important components:

1. **Operation Technology (OT)** - This is the knowledge gained from the actual experience of professional plant workers, such as machine repair and maintenance experience, combined with engineering knowledge that can precisely assess the possibility of damage occurring. This is the expertise in machine operation called "Domain Expert". With over 30 years of experience in machinery maintenance, this knowledge has been accumulated within the organization, in both employees and the system in place. This allows for the effective development of simulation models, as SCGC has a team that understands the nature of the plant's machinery.

2. **Information Technology (IT)** - This is knowledge of processing, storage, and management through multiple network systems within the plant, to support the use of digital technology for data management.

The model development process starts with defining the model's objectives and analyzing the causes of the problem to be addressed by the model. The OT and IT teams then create a prototype model to test with the same database to experiment with whether it can accurately predict data and situations. The model must meet clear and specific accuracy criteria, and it is improved until it passes the testing phase before being integrated into the plant's real-time operating data for actual use.

Since implementing the Smart OFA (Smart Online Fault Analysis) or Predictive Analytics system, SCGC has not experienced major unexpected machine breakdowns or had to shut down the plant for the past five years.

"We've tested it all, and generally, people tend to use data without engineering knowledge. This enables the AI to learn how to judge what is normal or abnormal based solely on data analysis, which is an approach called Data Driven that is suited for models that do not have engineering knowledge, such as consumer behavior. But our system incorporates engineering knowledge first and then develops the model using the combination of engineering knowledge and data." This is the uniqueness and difference of the system that SCGC has learned through real-world experience.

Studying the nature of machinery before creating models or Digital Twin that reflects the health of the machinery is important and necessary. This is something that SCGC has excelled in for over 30 years.

Smart Workforce: The Ultimate Plant Assistant

"We're not replacing people with digital, but rather helping people work better, more accurately, and faster."

"Complex and time-consuming" is a good description of the work nature of data recording staff in the petrochemical plant.

Every day, their working hours consist of inspecting machinery at the work site, recording data, and writing reports to the plant's engineers for process evaluation. Sometimes, they may also have to navigate plant data documents, machine specifications, and data sheets to check for abnormalities.

In normal circumstances, the time required to collect data may not pose a problem. Nevertheless, when they meet distorted numerical values that deviate from the norm, it is unlikely that they will be able to wait patiently for these operations to be finished.

The presence of an **AI Supervisory** assistant brings about a great sense of ease and security.

Smart Workforce is a system that assists operational-level staff by leveraging digital technology to enhance work methods to increase work efficiency. It incorporates the use of Smart Tablets to aid in data collection and recording, as well as AI Supervisory to record, store, analyze data, and provide real-time recommendations on machinery control. This helps reduce errors that may arise from manual data recording or data transfer. The operational staff will use a tablet as a device to store work data in the system immediately, reducing the process of recording on paper and entering it into the system again. In addition, it is possible to view historical data, both operation data and past anomalies, to analyze the performance of machinery efficiently. If assistance from experts is needed while on the job, it is possible to call for help through the Smart Tablet immediately. This makes it more convenient and efficient to solve problems, reducing the risk of errors that could potentially harm the business.

"The frontline workers need to have data and tools to facilitate their decision-making process. However, before this, it would take a considerable amount of time to record the machinery data and write a report to engineers. In the event of any abnormalities, engineers would have to analyze all the data before reporting to the management level on the best course of action. In contrast, Smart Workforce provides a platform that consolidates all the necessary data onto a tablet. Once the data is entered, the values are immediately transmitted to the Unified Operations Center and presented as an abnormality report, significantly shortening the time."

The key point is that the Smart Workforce system creates data transparency and enables systematic and single-platform data storage. This allows the entire organization to view the same data set, making operations and decision-making faster and more efficient.

Currently, SCGC operates its petrochemical plants in Thailand and Vietnam with a Digital Twin system that integrates 500 AI assistants. The Company has also extended its knowledge to other industries that utilize technologies similar to the petrochemical industry, such as power plants, where 200 AI assistants are deployed.

SCGC plans to expand its operations by incorporating digital technology for continuous plant management, aiming to improve safety standards and move towards becoming the Smart Plant that the manufacturing process is sustainable and environmentally friendly. The Company also seeks to create possibilities for innovation to ensure long-term sustainability for both the business and the world.

AI Supervisory

The system provides real-time guidance to operators in the plant and helps them understand the efficiency of machine control. If the control is not optimal, the AI supervisory system will provide recommendations to operators for optimal machine control at all times.

Unified Operations Center

A real-time monitoring and tracking center for machinery, equipment, and plants, which connects data of production and maintenance activities, both online and offline, utilizing principles of Big Data management and integrating platforms. AI and machine learning technologies are also applied to provide a comprehensive and easily understandable display of operational data, reducing the time needed for data analysis and facilitating decision-making. It elevates the efficiency of production and maintenance data management.

Innovation for Society

A 10-year Collaboration of Marine Habitat

1 NO POVERTY	2 ZERO HUNGER	10 REDUCED INEQUALITIES	14 LIFE BELOW WATER	17 PARTNERSHIPS FOR THE GOALS
1.1	2.3	10.1	14.2	17.1
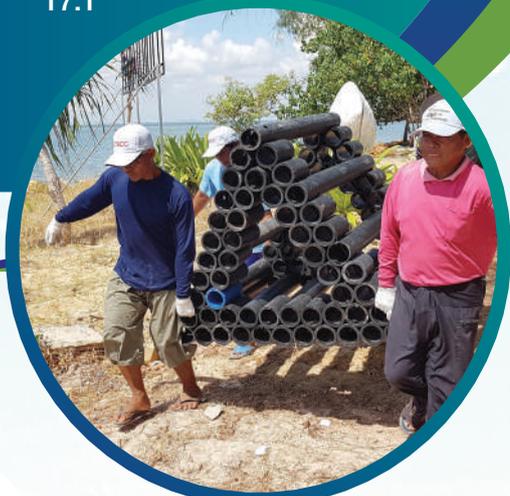
Innovation for Society - SCGC is committed to conducting business to attain the goal of Chemicals Business for Sustainability, alongside caring for the environment and society, particularly the communities surrounding where we operated. With consistent engagement from the corporate social responsibility team and executives at all levels of SCGC, this approach enables understanding and awareness of various issues arising within the communities, and the Company strives to collaboratively find solutions to address these problems. This is achieved by applying the **"Sustainable Development Concept"** and **"Innovation for Society"** to produce tangible and positive results.

One exemplary community is the **"local fishing community"**, whose livelihood relies on venturing out to sea before dawn to catch aquatic animals for sale directly to consumers daily. The income of this occupation depends on the abundance of marine resources. This way of life has been passed down from generation to generation for a long time and has become a local occupation in provinces with coastal areas.

However, if we go back a decade or so, the local fishing community in Rayong province faced the problem of deteriorating coastal resources. The main causes were shrimp farming and some commercial fishing practices that were not appropriate, leading to a significant decline in aquatic animals along the coast. Fishers had to go further out to sea and spend more time fishing, resulting in fewer catches but higher expenses due to increased fuel consumption for their boats. Moreover, sometimes they encountered harsh waves and winds, causing damage to their boats and fishing equipment.

Mission to Restore
the Abundance of the Thai Ocean

Concerned about community and marine ecosystem issues, **SCGC has collaborated with the Marine and Coastal Resources Office 1 (Rayong) and the local fishing communities in Rayong province** to find solutions. Collectively, they have created the **"Fish Home"** as habitats for marine life along the coast, aiming to rehabilitate the natural environment and aquatic animals.

By incorporating the Waste to Value concept based on circular economy principles and innovations from SCGC combined with local wisdom, they have developed the "SCGC Fish Home" Project—an innovation for society to restore the abundance of the Thai ocean. The Fish Home is made from high-quality PE100 plastic pipes, which are leftovers from the testing process at SCGC's plants. PE100 is an environmentally friendly, high quality, high strength, and UV-resistant plastic material used to produce large drinking water pipes. After experimentation, testing, and shape adjustments to make them suitable for underwater placement, they have created a triangular-shaped Fish Home similar to the current design. A number of Fish Homes have been installed at various locations, and data has been collected for further research and study.

Since the first Fish Home installation at the mouth of the Klaeng River in Rayong province in 2012, SCGC and its network of partners have steadily expanded the placement of Fish Home every year. The marine environment has gradually recovered, improving the livelihood of the local fishing community. Fishers can now catch more fish near the coast without venturing far out to sea, generating enough income to support their families.

Over the past decade, SCGC has never stopped moving forward and developing the Fish Home project to create balance in marine ecosystems. These Fish Homes serve as a sanctuary for local fishing communities, ensuring the continuity of their profession from generation to generation and providing fresh seafood for Thai people to consume daily. The success of the Fish Home project in Rayong has led to widespread acceptance and expansion into other fishing communities in provinces facing similar issues in the eastern region, such as Chonburi, Trat, Chanthaburi, and southern provinces like Ranong. This has also encouraged collective efforts among various sectors, including government agencies, university researchers, and volunteers from all over the country, to work on restoring the Thai ocean's richness.

Return of Marine Life
Boosts Biodiversity in the Ocean

After continuously placing Fish Homes for over ten years, coupled with the proper care of the area by local fishing communities, the group has established a rule to prohibit fishing within approximately 1 square kilometer around the Fish Home area. This allows young marine animals living in the Fish Homes to grow to their full potential. Regular research and data collection have revealed that not only has the number of marine animals increased significantly, but marine biodiversity has also continuously improved.

In 2018, marine scientists from Kasetsart University conducted an underwater survey of the Fish Home area in Rayong province and found 76 species of marine life, including plankton, fauna, fish, other aquatic animals, and plants. In 2019, another underwater survey was carried out, and the number of marine species increased to 139.

Location of Fish Home Installation

△ Number of Fish Home

👥 Number of Fishing Group joined collaboration

🧍 Number of Volunteers

Chonburi
△ 660 Fish Homes
👥 14 Fishing Groups
🧍 8,310 Volunteers

Chanthaburi
△ 50 Fish Homes
👥 1 Fishing Group
🧍 300 Volunteers

Trat
△ 60 Fish Homes
👥 3 Fishing Groups
🧍 850 Volunteers

Ranong
△ 40 Fish Homes
👥 2 Fishing Groups
🧍 340 Volunteers

Rayong
△ 1,420 Fish Homes
👥 23 Fishing Groups
🧍 31,570 Volunteers

In the latest survey conducted in 2022, the biodiversity had increased to 177 species. The reintroduced species include:

> **Economic marine animals**, such as yellowstripes, groupers, talang queenfish, sardinellas, streaked spinefoot, sea basses, red squirrel fish, spiny rock crabs, mussels, mantis shrimps, etc.

> **Ornamental fish**, such as platax, diamond trevallies, etc.

> **Juvenile aquatic animals**, such as crab larvae, shrimp larvae, shellfish larvae, young fish, jellyfish larvae, planula, etc.

> **Fauna**, such as pyura chilensis, sponges, bivalves, gorgonians, seaweeds, etc.

> **Plankton**, such as phytoplankton, zooplankton, which serve as food for other groups of organisms, etc.

The survey results reflect the appropriate placement of Fish Homes and their structures. The structures provide various cavities for diverse marine animals to rest, live, and breed, ranging from juvenile animals, such as barnacles attaching to the surface of the Fish Home materials, to various fish species coming to breed and lay eggs. This becomes a nursery ground for juveniles to grow, attracting different types of fish, especially predators, to search for prey. The number of living organisms in the Fish Home area has increased in both quantity and diversity of species.

Asst. Prof. Suchai Worachananant

Head of Department of Marine Science, Faculty of Fisheries, Kasetsart University.

"The biodiversity survey in the area where Fish Homes were placed was first conducted in 2018 and 2019, and the latest in 2022, involving repeated surveys in the same six areas along the Map Ta Put coastline. The results showed an increase in the number of marine animals in several areas compared to previous surveys. We found both food groups for young marine animals, such as phytoplankton, plankton, and benthic organisms, including sea worms. Many areas have relatively high biodiversity values, which, if there is a large number of food sources for marine animals, young fish, and adult fish will also be abundant.

"Placing Fish Homes provides shelter for marine life, especially juveniles, while adults can find food from other organisms in the area. The more diverse types of organisms there are in various trophic levels, such as herbivorous fish, carnivorous fish, and predator fish, the more complete the ecosystem will be. This will benefit local fishers who can catch more fish and shellfish.

"The environmental impact depends on the materials used to build the Fish Home. For example, tires have been found to release toxins over time, and their use is no longer recommended. Materials made from metal, such as train compartments, boats, and trash containers, must be cleaned to remove residues on the surface, such as oil; otherwise, they can become sources of pollution. As for the Fish Home made by SCGC, which are PE100 pipes, we have checked whether they release toxins before placing them in the sea. We found that they are quite durable, do not corrode, and no microplastics were detected from the PE pipes in the Fish Home and the surrounding areas after installation."
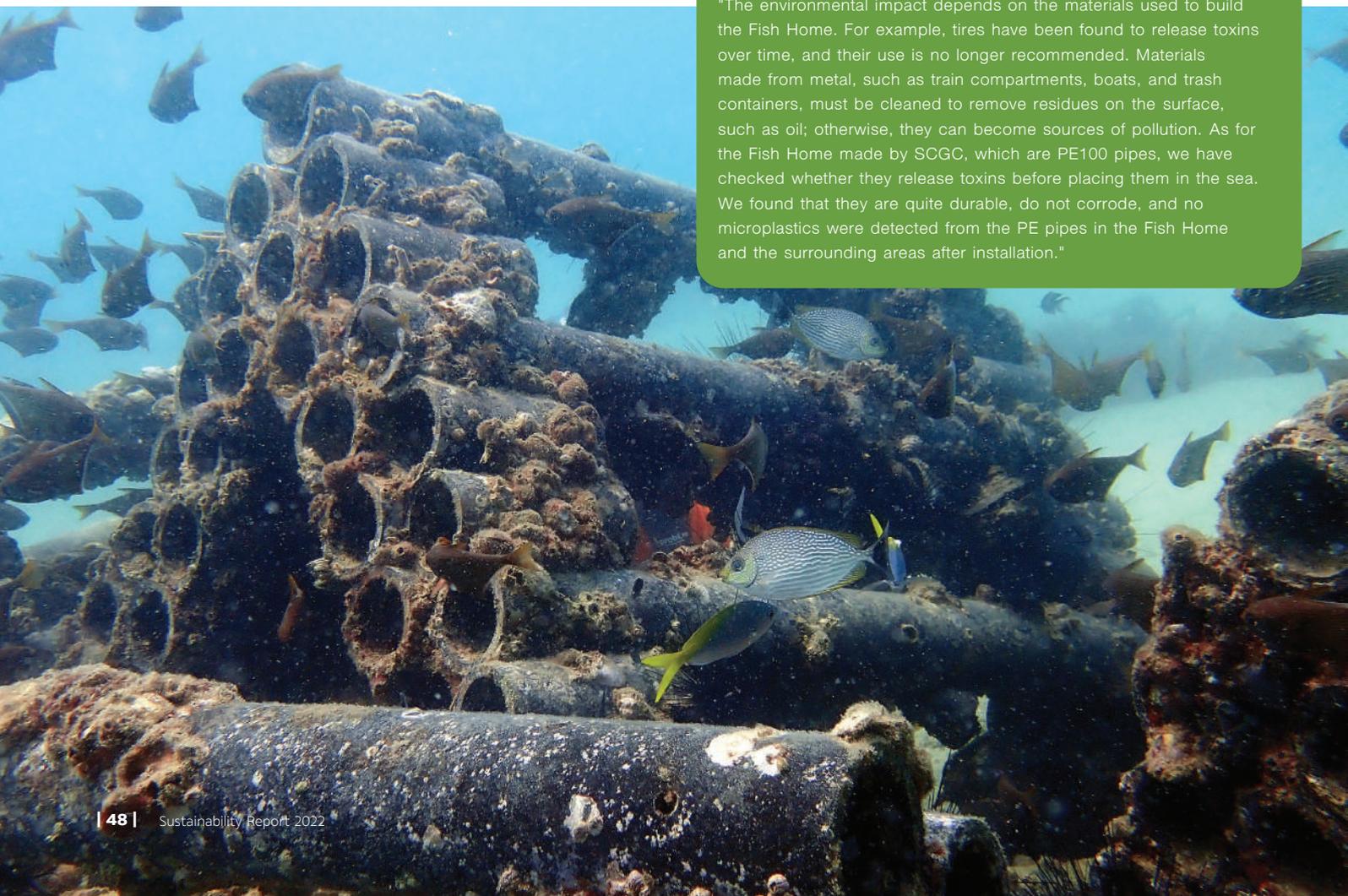
The Joy of Sustainability: A Smile That Lasts

To date, SCGC has installed more than 2,230 Fish Homes, creating over 50 square kilometers of marine conservation areas. It has led to collaborations with 43 local fishing groups, helping increase income for over 930 small-scale fishers in the Rayong coastal area and generating more than 9 million baht in annual community income.

Fish Homes not only connect local communities but also invite all stakeholders to volunteer to restore the Thai marine ecosystem. So far, over 41,000 volunteers from across the country have joined the project.

In addition to the community's positive environmental and economic changes, the SCGC Fish Home project also brings about positive social changes in local fishing communities by fostering unity and cooperation in fishing practices. The Fish Home areas are designated as conservation areas for young fish to grow, and fishing is allowed only in more distant areas.

From leftover materials, the project creates unexpected benefits and values, including the richness of the coastal marine ecosystem and the resilience of communities with a strong sense of local pride. The success of this 10-year collaboration among all stakeholders serves as an example of a project that can bring about sustainable change in the world. SCGC remains committed to expanding the project's impact and fostering participation from all parties, using a circular economy and innovative approaches for sustainability to deliver better outcomes for society and the environment, both now and in the future.

Outcome : SROI = 5.69*

Increase 177 species of aquatic animals in 2022

Better Environment

Better Economy

Increase fishing communities' income 9 million baht per year

More than 41,000 volunteers

Social Engagement

Food Security

Increase number of aquatic animals to sufficient for consumption

* Data from the SROI survey of 10 local fishing groups in Rayong in 2022.

Key Success Factors

1. Efficient, eco-friendly fish homes innovation

2. Good attitude of fishing communities in problem solving and solid agreement

3. Collaboration between related parties such as government agencies and volunteers

4. Research and data collection performing on a regular basis

Samak Ong-laor

Chairman of Had Saeng Ngern
Local Small-scale Fisher Group, Rayong Province

"In the past, the fishing community only focused on catching fish without considering conservation, which led to a decline in resources. The beachfront area of Had Saeng Ngern used to be just sandy with no coral reefs or rocky habitats for marine life. When the local small-scale fishing group of Had Saeng Ngern joined the Fish Home project with SCGC, they tried installing one Fish Home in 2014. After about three months, they found that large fish, such as barracudas, as well as small fish, had started to gather around the Fish Home, indicating the project was effective. That's when they decided to continue the project with SCGC.

"In some years, they installed 30-40 Fish Homes, which attracted a diverse range of marine life, including large grouper weighing 2-3 kilograms, barracudas, and blue crabs. The most surprising outcome was the appearance of rare fish like coral grouper (Plectropomus). The Fish Homes provided a habitat for various marine animals to live and lay eggs, and their offspring would inhabit the Fish Homes' tubes. As the juveniles grew stronger, they would naturally venture out to find food.

"These changes have positively impacted the local small-scale fishing community. They no longer need to sail far from the shore, risking storms or maritime accidents, and they save on fuel costs and time-reducing fishing trips from 4-5 hours to just one hour. In the future, they hope SCGC will expand the Fish Home project to benefit fishers along all 22 shorelines in the Gulf of Thailand, as the project has proven to be truly beneficial."

Duangkamon Romruen

Chairman of Kao Yod Local Small-scale Fisher Group, Rayong Province

"Our fishing group was facing a problem with the decreasing number of marine animals, so we joined the Fish Home project with SCGC in 2016 by installing 10 Fish Homes. This was a learning experience for us as we encountered issues, such as the Fish Home being scattered by waves during storms when installed individually. We discussed the problem with SCGC and came up with a solution together: tying the Fish Home together in groups of 10 underwater, which also provided better habitat for marine life.

"As the Fish Homes began to show positive results, we reached an agreement within our fishing community to designate the area around the Fish Homes as a conservation zone for marine species and a nursery for juvenile marine life. All fishers understood not to fish near the conservation area.

"The most noticeable change since we started consistently installing Fish Homes is the increase in marine life. We rarely saw schools of fish near the shore before, but now we see many more fish, such as yellow snapper, green rough-backed pufferfish, and even larger fish we never caught near the shore, like Spanish mackerels and batoids. This has improved the lives of the villagers, reducing expenses as they no longer have to travel far from the shore to catch marine animals."

Collaboration throughout the Value Chain

SCGC recognizes the global crisis that the world is facing, from climate change to waste management, and understands that no single organization or entity can solve these issues alone. As a result, the Company is committed to creating collaborations and networks with all sectors to jointly address these problems and conduct business in a balanced way, considering the economy, society, and environment based on sustainable development principles.

Increase our Products and Solutions for a Better World

Creating innovative green packaging solutions to achieve the Company's strategic sustainability goals in collaboration with partners and brand owners using SCGC GREEN POLYMER™. Some examples include:

> Collaborating with LION to use High Quality Odorless PCR in the packaging of liquid detergent products, "Pao", for the first time in Thailand. In addition, it has developed shower cream packaging for "Shokubutsu" in which the bottle created from REDUCE solution, reducing the amount of materials used, and the refill pouch created from RECYCLABLE solution, easy to be recycled.

> Partnering with Braskem, a global leader in bio-based plastics from Brazil, to study the feasibility of investing in a bio-plastic production facility in Thailand, aiming to become an ASEAN BIO HUB in the future.

Innovative Solutions Development

> REPCO NEX has collaborated with Critical Facility to develop advanced lightning protection solutions to enhance safety for workers in industrial plants and prevent damage to equipment and machinery, which can result in factory downtime.

Enhance Solutions for Our Society

Partnering with business sectors and communities to address waste issues sustainably.

> Launching the "Sorting for the Better (Yak Dee Mee Tae Dai)" project with Unilever to promote community-based waste management, collecting used plastics from households for recycling.

> Introducing the "Refill Station" project with Unilever and Tops Market to encourage consumers to reuse their plastic containers.

> Initiating the "Upcycling Milk Pouches" project with the Ministry of Education and private sector organizations like Bangchak Corporation and CP All to promote waste management among school children and youth.

Establishing Networks with Leading Organizations

to address ocean plastic waste issues through public-private-people partnerships, such as PPP Plastics and Alliances to End Plastic Waste (AEPW).

Engage Sustainable Operations throughout Business Value Chain

> Participating in the launch of the PYROCO2 project at SINTEF in Norway, which captures and utilizes carbon dioxide to transforms into propylene, a chemical that SCGC can use as a material in its production processes.

> Collaborating with the Eastern Coast River Basin Committee, the Water Situation Analysis and Monitoring Sub-committee, and the Water and Environment Institute for Sustainability, Federation of Thai Industries, to ensure water security and mitigate risks in water management. This collaboration involves stakeholders from the government, agriculture, public, and industrial sectors.
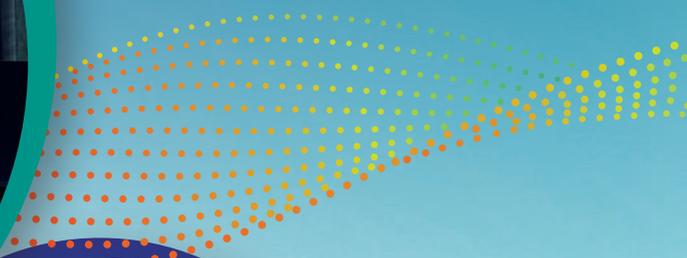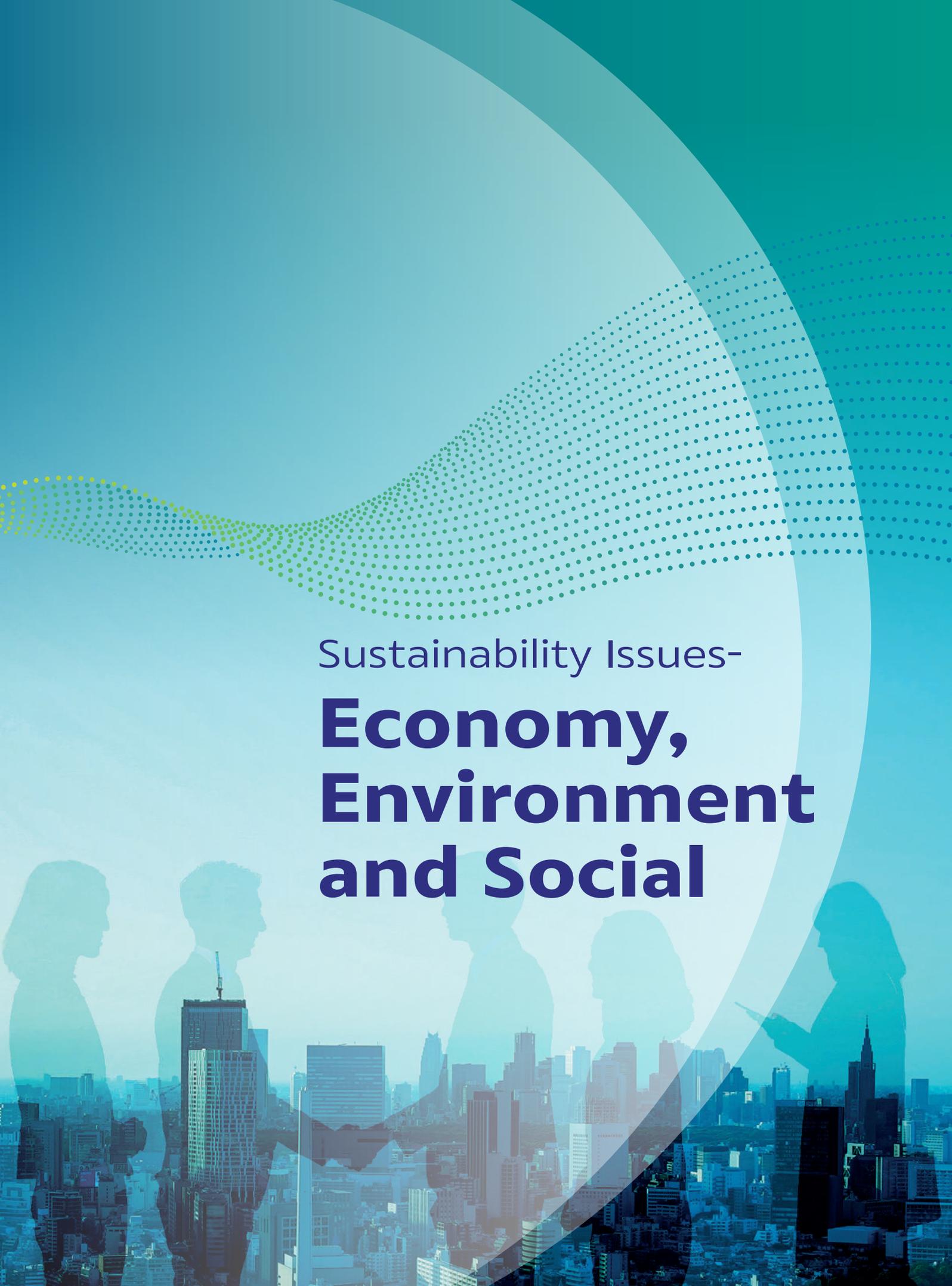
Sustainability Issues-
Economy, Environment and Social

Business Ethics and Compliance Management

10.3 **16.5**

SCGC conducts business with transparency, ethic, and responsibility for all stakeholders. The Company fundamentally adheres to four core values and a Code of Conduct in which the Board of Directors and executives are role models and build confidence among relevant stakeholders, as well as bringing good governance practices in business operations under GRC (Governance, Risk Management and Compliance) framework so that the business can grow sustainably and respond effectively to changes. In the meantime, employees at all levels can carry out their business activities in line with Company's Code of Conduct, and obligations of laws and regulations for Thailand and overseas businesses.

Targets

- Employees learned and achieved 100% scores in Ethics e-Testing and Policy e-Testing

- Zero case of non-compliance with the relevant laws and regulations

2022

100%

0 issue

Strategies

1. *Promote good corporate governance with integrated GRC framework by enhancing risk assessment efficiency and strictly complying with the laws.*

2. *Encourage employees at all levels to understand and act in accordance with the Code of Conduct.*

3. *Strengthen the compliance management system.*

Promote Good Corporate Governance with Integrated GRC

SCGC continues to grow by expanding its Thailand and oversea businesses, which may be exposed to risks associated with different management approaches. Hence, SCGC has adopted integrated GRC (Governance, Risk Management and Compliance) framework to increase the efficiency and effectiveness of corporate governance, risk management, and operational supervision by encouraging employees at all levels to understand and comply with integrated GRC framework through a variety of methods, including:

- **Provided GRC Management Guidebook** as guidelines for management-level employees in Thailand and oversea operations, comprising laws and regulations, internal control, accounting, financial management, and business continuity management.

- **Provided the GRC e-Rulebook** to use as key basic concepts, operation guidelines including decision makings under GRC framework for employees at all levels while regularly communicating via internal email, e-books, videos, and infographics.

- **Implemented the GRC Helpline,** a system that provides professional guidance on how to operate in compliance with the Code of Conduct, with a video demonstrating how to use the GRC Helpline, engaging with employees to ensure they understand and enable instant access from anywhere.

Governance

GRC

Risk Management

Compliance

- **Expanded GRC to overseas businesses.** SCGC has consistently grown its overseas operations, currently more than 59 overseas companies, especially in the ASEAN countries, namely Vietnam and Indonesia, which are key strategic bases. In 2022, SCGC upgraded risk management in line with GRC framework by incorporating country-level risk consideration. A focal point reports the risks to the Country Director and each country's executives.

Raise awareness of the Code of Conduct

The Company has established the SCGC Code of Conduct in accordance with good corporate governance principles. It was also included as training course for all new employees in orientation program. All SCGC employees must understand the principles and guidelines following good corporate governance principles to ensure appropriate, transparent, and accountable practices. The **"SCGC Supplier Code of Conduct"** was established for the suppliers to follow as a shared standard.

In 2022, the Company administered Ethics e-Testing for the eighth consecutive year and Policy e-Testing for the sixth consecutive year to employees at all levels who must pass the tests 100%. In addition, the answers completed by employees have also been analyzed to rectify common misunderstandings among employees. This is to ensure that employees at all levels can perform in accordance with the SCGC Code of Conduct.

Anti-corruption

SCGC has established the anti-corruption policy and determined operational procedures for effective execution for the Board of Directors, executives, and employees. This includes requiring all representatives, contractors, and other individuals operating on behalf of SCGC to be aware of this policy.
A corruption-related risk assessment encompassing company operations has been conducted, and preventative measures against possible risks have been established by performing routine audits of the internal control system.

SCGC communicated and trained employees to have awareness, knowledge, and understanding of the policy and correct practices, as well as to have a whistleblowing system in line with international standards in the languages used in the countries in which SCGC operates.

Whistleblower channels
https://whistleblowing.scg.com/external/chm

Enhance Compliance Management System

SCGC has established a compliance management system in line with risk management principles to ensure that the business operates in compliance with the obligations of relevant laws and regulations and results in solid and sustainable business growth while being consistent with good governance.

The compliance management system consists of the following:

- **Acknowledging and assessing the compliance with their obligations.** It is applied for both existing laws and the amended or additional sections pertaining to the business operations of routine work and project work.

- **Bringing legal obligations for execution in business operations.** Developing legal obligations into operational work standards is also considered for strengthening compliance in preventive approach.

- **Compliance Audit** to ensure that the businesses operate in compliance with the obligations of relevant laws and regulations under good corporate governance.

- **Regular compliance communications** to raise awareness and knowledge of laws and regulations adequate for relevant parties to fulfill their responsibilities.

In addition, the Company has continuously improved the development of digital solutions in applying the compliance management system efficiently and effectively by establishing a legal database related to business, compliance assessment, mitigation plan monitoring, advance warning system on related compliance activities, and compliance reporting.

For overseas operations, the compliance management system implementation has been rolled-out in Vietnam, particularly at Long Son Petrochemicals (LSP), SCGC's new key production base. The Company prepared a handbook of compliance management system to increase employees' awareness and understanding of compliance management system collected and evaluated the relevant business-related laws, followed up the updated laws, assessed the compliance of business activities with the legal obligations, monitored and reported compliance results to the Company's Compliance Committee, including established the plan to implement e-Compliance system which is the same platform of Thailand in 2023.

Sustainable Value towards Supplier

8 DECENT WORK AND ECONOMIC GROWTH
8.2

10 REDUCED INEQUALITIES
10.2

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
12.7

13 CLIMATE ACTION
13.3

Target   **2022**

- Develop and promote green procurement to achieve 14% of total purchased volume of SCGC

17%

SCGC's operations rely on significant partnerships with suppliers for sustainable operations. SCGC has a system for selecting suppliers with the potential to develop and enhance their capabilities to meet the demands and rapid changes of the new era alongside SCGC. This includes assessing and reviewing suppliers regarding environmental, social, and governance aspects. Since 2019, SCGC has been certified ISO 20400 for sustainable procurement.

Strategies

1. Select and assess potential suppliers for sustainable operations.

2. Evaluate risks, categorize suppliers to define strategies, and develop plans aligned with risks.

3. Develop and enhance the potential of suppliers toward sustainability, encompassing environmental, social, and governance (ESG) aspects.

4. Raise awareness, knowledge, and capabilities of employees in sustainable procurement and purchasing.

Develop and Enhance the Potential of Suppliers towards Sustainability and ESG Standardization.

- **Reviewed and updated SCGC's Supplier Code of Conduct** to align with the current situation, covering regulations and practices towards stakeholders in accordance with relevant policies, international standards, and current sustainable business practices following SCGC's ESG (Environmental, Social, and Governance) guidelines. It serves as an approach for suppliers to practice good citizenship alongside responsible business operations that consider society, human rights, the environment, and tangible climate change actions, as well as setting the standard for joint business operations.

- **Increased the proportion of green procurement:** SCGC selected suppliers with potential for environmental development where evaluations were conducted with guidance and support provided until they met selection criteria. In 2022, SCGC collaborated with seven suppliers to expand the development of environmentally

friendly products and services, such as forklifts, plastic pallets, wooden pallets, chemicals, packaging, and industrial waste disposal services. This increased green procurement from 14% to 17% of total SCGC procurements. Future efforts will focus on continuously reassessing environmentally friendly suppliers' performance to ensure that the Company continues to achieve green procurement targets.

- **Studied reducing greenhouse gas emissions in the supply chain (GHG Emission Scope 3):** SCGC raised awareness and communicated organizational climate change goals to suppliers to prepare for collecting GHG emission data in their products used in SCGC's production processes through questionnaires and business seminars. In 2022, this effort began with suppliers supplying more than 80% of chemical products and packaging by purchase value, involving 128 suppliers. The obtained data will enable the selection of suppliers with the potential for collaborative projects to reduce GHG emissions Scope 3.

PROCUREMENT

Supply Chain Risk Management

In 2022, SCGC faced the impact of global crises, such as the Russia-Ukraine war and the COVID-19 pandemic. By systematically and effectively managing risks, SCGC overcame these situations by:

- **Increasing the number of long-term strategic suppliers** to create confidence in raw material procurement by adding five more long-term suppliers in the raw materials and chemicals group, resulting in SCGC having over 200 long-term suppliers.

- **Diversifying sourcing across multiple regions** to reduce risks if a situation arises in one particular region, which could affect both production and transportation. This was achieved by expanding sourcing from European countries to Asian countries such as South Korea and China.

- **Collaborating on joint procurement planning** by fostering collaboration between different departments to assess situations and plan procurements, such as production, sales, and maintenance departments, to make procurement more appropriate and efficient.

- **Supporting work with digital technology** by providing platforms to enhance work efficiency. In 2022, SCGC adopted the online platform Zupports to source suppliers for international transportation services, resulting in quality suppliers at reasonable prices.

Raise Supplier Management Standards

- **Developed automatic business matching system:** Developed the Arch system powered by Artificial Intelligence to match suppliers with potential into the tender process, reducing the time in the selection process by more than 20%.

- **Developed business management standards:** Developed business supplier selection processes, improved performance evaluation and standardized safety and environmental regulations for various subsidiaries within SCGC. This ensured that suppliers could effectively follow SCGC's ESG goals and guidelines. In 2022, a high-risk service provider group consisting of 249 partners was compiled for 17 SCGC subsidiaries, with plans to expand coverage to other types of registered suppliers in the future.

Information and Cybersecurity

9.4   16.5

SCGC is committed to maintain the security of information technology and cyber systems which we will ensure the continuity of business operations amidst increasing cyber threats. SCGC also implemented Management guidelines and information technology policies (e-Policy) which are established in accordance with international standards ISO 27001. Moreover, SCGC has assessed and improved production control systems based on the IEC62443 standard. The Company has raised awareness and developed develop employees' capabilities to address cyber threats. Furthermore, new standard and technologies are conducted to increase efficiency of security levels.

Targets   **2022**

- Zero case of cyber threat   **0** case

- Zero case of personal data leakage incidents in the information system   **0** case

Strategies

1. Implement global standards for cybersecurity, following the NIST Framework, which includes:

2. Manage information and cybersecurity across three levels: Governance Level, Management Level, and Operation Level, including policy formulation, management guidelines, prevention measures, monitoring, and performance assessment.

Identify
Conduct on the continuous risk asessment and planing to mitigate risks

Protect
Employ highly security technology and also enhance employee awareness in cybersecurity

Detect
Regularly monitor cyber threats through the Security Operation Center (SOC)

Response
Rehearse cyber incident response drills at least once a year.

Recover
Conducted scheduled emergency plan drills for critical system in order to ensure business continuity management (BCM).

Enhance Cyberthreat Protection according to the NIST Framework

Identify: Collaborated with leading global Cloud Computing service companies to assess and audit Clound service security to ensure strengthened the Company's system security.

Protect:

- Developed a flexible and highly secure InformationTechnology infrastructure to equip employees with efficiency collabotarion platform for Hybrid Workplace by deploying Multi-Factor Authentication (MFA) for Authentication

- Improved the architecture and security of IoT (Internet of Things) systems due to using growth

- Increased strengthen employees immunity to cyber threats by providing practical knowledge and developing skills on four main projects: Phishing Simulation Testing, Cyber Hero Campaign, e-Learning, and e-Policy Testing, with more than 7,000 employees participating and six hours of training per person per year.

Detect and Response: Implement Security Information and Events Management (SIEM), Security Orchestration, Automation and Response (SOAR) including Artificial Intelligence (AI) to monitor malfunction of interconnected systems and alerting relevant parties.

Implementation with Overseas Businesses

The Company has applied policies, processes, and knowledge to its subsidiaries located abroad, such as in the Long Son Petrochemicals (LSP) project in Vietnam and the Sirplaste project in Portugal, to ensure consistent management and information technology security in accordance with standards and best practices. This includes assessing information technology risks before aquisition, conducting regular audits, and strictly adhering to policies.

Cybersecurity Resilience Survey

SCGC passed Cybersecurity Resilience Survey 2022 based on the NIST Framework, organized by the Stock Exchange of Thailand.

Customer Experience Creation

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

8.2   9.4 9.5

SCGC is confident in fostering collaboration with customers to achieve success by meeting market demands and changes through creative and environmentally friendly innovation design and development. Additionally, SCGC focuses on building close relationships to deeply understand customers and seek solutions that efficiently and quickly address their needs.

Strategies

1. Collaborate with business customers to develop innovative solutions for end consumers (B2B2C) with the i2P center to assist in finding solutions.

2. Deliver high-quality, convenient, and fast products and services that elevate customer businesses through digital technology.

3. Build deep customer loyalty through various activities such as training and assistance during crises.
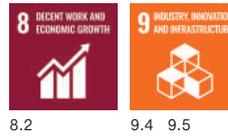
Collaborate with Customers in Managing Profile Products

SCGC manufactures and supplies high vinyl products for decorating purposes such as vinyl windows and doors, under "WINDSOR" brand. Customers are required to purchase profiles in full-length form to cut and drill holes following interior design. This operation necessitates the investment in highly precise machinery and generates waste after cutting. As a result, Nawa Plastic Industries Co., Ltd. offers a solution to this problem with the Precut project, which cuts profiles and drills holes according to the customer's design at the plant. This allows customers to save time, streamline work processes, and reduce machinery maintenance while still obtaining the desired profile sizes without investing in machinery. Furthermore, the waste from the cutting process were collected and recycled at Nawa Plastic Industries, amounting to 42 tons in 2022.

Assist Customers to Elevate Business with Digital Technology

SCGC established the Digital Enabler for End Customer Benefit (DNB) team to proactively advise customers in developing competitive capabilities through digital solutions by exploring and discussing with customers. After identifying the problems and pain points in the operation, the DNB team presented Quick Win Solutions to address customer issues using digital platforms from SCG's startup businesses and SCGC's solutions. These solutions are integrated into various operational processes, such as sourcing platforms, machinery maintenance platforms, and digital marketing online platforms. The DNB team collaborated closely with customers to develop main platforms to address key customer issues. In 2022, the DNB team advised the first group of 14 pilot customers to simultaneously enhance the growth capabilities of customers and industries.

Unveil Polymer Innovations at K2022

SCGC participated in the K2022, a global plastic and rubber industry exhibition, held in Düsseldorf, Germany. The Company showcased products under the concept of "Innovation that's real" with environmentally friendly plastic innovations, SCGC GREEN POLYMER™, which attracted more than 1,600 customers, including product manufacturers, designers, and brand owners from various industries, ranging from packaging to infrastructure.
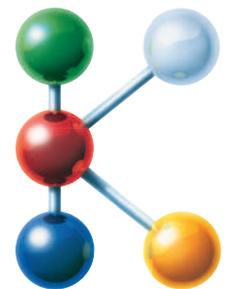
Update Industry Trends for Customers

SCGC organized activities to keep customers up to date with the industry's changing landscape by providing weekly news summaries and hosting webinars, as well as SCGC Digest events with over 400 participants attending. The event covered essential topics such as innovation in mono-material packaging coatings, basic carbon footprint knowledge, and sustainable packaging solutions.

Innovation Management

8.2   9.5   12.2

SCGC is committed to enhancing the ability to develop new products that are high-quality and meet the market's needs. This is achieve through investment in research and development of innovation, as well as the adoption of digital technology to manage plant production processes to ensure the maximum efficient use of resources and prevent machine damage while being timely responsive to external fluctuations such as raw material quality and prices, as well as rising energy costs. According to the strategy, these efforts result in developing new S-Curve business prospects for SCGC through investments in technology.

Product Innovation

The efficiency of the innovation development process has been strengthened to elevate the innovation creation capability of the organization, ranging from the process's speed, adaptability, to responsiveness to market or customer demands (Market Back Approach) in terms of fostering strength, reducing material usage, increasing production efficiency, and promoting environmental friendliness. Others efforts include enhancing capabilities in various aspects such as increasing knowledge, investing in machinery and equipment for research and development, production, and testing.

In addition, SCGC has an i2P Center, a hub for collaboration with customers to better understand market demands and customer input (Voice of Customer), which is a good starting point for developing new products.

- **The i2P Center (Idea to Product Center)** operates with a Design Thinking approach, integrating the work of the Material team, who researches and develops plastic or polymer formulas; the Processing team, who oversees and produces prototype products; and the Design team develops products for industrial-level use. The center collaborates with customers and a network of over 50 government agencies, research institutions, and experts to develop more than 100 innovations annually. On average, 20-25 products are launched to the market annually.

- **Examples of innovative products developed to meet market demands:**
  - **PE112 pipe** with greater durability and strength than standard PE100 plastic pipes on the market, capable of withstanding a 10% increase in internal and external pipe

Targets

- High Added Value products & service accounting for 39% of revenue

- SCG Investment in research and innovation accounting

2022

36%

0.66%
1,572 million baht

Strategies

1. Product Innovation: Develop high-quality plastic resin properties that meet customer needs.

2. Process Innovation: Utilize digital technology to manage plant operations efficiently.

3. Open Innovation: Collaborate with startups with interesting technology and partners and embrace innovation research and development collaboration with public and private sectors and educational institutions worldwide to drive innovation toward practical applications and business expansion.

pressure resistance and a 50% increase in scratch resistance, resulting in a longer lifetime service.

- **LD Coating for food packaging,** which improves quality by reducing chemical residue to below industry standards, ensuring consumer safety.

- **Ultra High Impact Polypropylene P765J,** a polypropylene with exceptional high-impact resistance, suitable for producing car parts that require high-impact resistance both inside and outside the cabin. It has greater elasticity, strength, and durability, reducing driver and passenger injury in case of accidents.

Process Innovation

Digital technologies such as Big Data, the Internet of Things (IoT), Digital Twin, and Artificial Intelligence (AI) have been implemented to manage plant operations. Data is gathered, analyzed, processed, and reported on the performance of the machines to improve plant management and maintenance, reduce severe machinery damage and emergency downtime, and maximize resource utilization. With over 30 years of experience and competence in machinery maintenance, a digital solution has been developed for machinery care, making it the world's first comprehensive digital solution.

- **The Smart OFA™** (Smart Online Fault Analysis) uses Big Data and Machine Learning to analyze and alert engineers of abnormal machine signals, allowing immediate intervention before damage or emergencies occur.
- **The AI Supervisory System** employs Machine Learning to analyze and provide control recommendations to maximize machinery performance at all times.
- **The Smart Workforce** utilizes AI technology to store, record, and analyze data to improve work efficiency.

Open Innovation

The emphasis is on building collaboration and networks with partners both within Thailand and abroad to leverage the capabilities and expertise of partners to accelerate innovation and technology development and to increase competitiveness through Corporate Venture Capital investment to access technologies aligned with SCGC's growth strategy, such as decarbonization and battery technology, under the supervision of the management of benefits and intellectual property assets for maximum benefit.

- **PYROCO2.** A collaboration between SCG and research company SINTEF has developed technology to recovery carbon dioxide into chemical substances that can be used as a material for plastic production. This will help reduce greenhouse gas emissions and develop environmentally friendly plastics.

- **SCG-Oxford Center of Excellence (COE).** A collaboration with leading research institutions in the United Kingdom to develop new knowledge about materials and their application in the petrochemical industry. The partnership also aims to enhance personnel capabilities through researcher exchanges. In addition, COE is a crucial player in establishing the SCGC Fund for Innovation and Research in Sustainability and Technology (SCGC-FIRST), which aims to create sustainable technologies and innovations.

- **SENFI Ventures.** The Corporate Venture Capital has been established by SCGC to invest in Deep Tech Startups with technologies aligned with the company's long-term strategy.

Product Stewardship

3.9   9.4 9.5   12.2 12.5

The problem of climate change and pollution from plastic waste has prompted consumers worldwide to prioritize environmentally friendly products. Many countries have begun implementing stricter measures to prevent products that have a high impact on the environment, such as the Carbon Border Adjustment Mechanism (CBAM) and sustainable packaging laws, as well as setting carbon neutrality targets by 2050. SCGC is committed to developing products with safe and environmentally friendly raw materials and manufacturing technologies. Environmental impact assessments are conducted throughout the product lifecycle to meet the demands of environmentally conscious consumers and improve quality of life.

Targets

- By 2025, all companies will receive carbon footprint product labels.
- By 2030, SCG Green Choice revenue will reach 67% of total revenue.

2022

8 companies
255 products

56%

Strategies

1. Develop a product stewardship management system for all companies to ensure product safety and environmental friendliness.

2. Evaluate the carbon footprint of products by assessing greenhouse gas emissions and registering carbon footprints product label with the Thailand Greenhouse Gas Management Organization (Public Organization).

3. Develop green products that are environmentally friendly and certified as SCG Green Choice.

Product Stewardship

A system was developed to ensure product safety and environmental friendliness and integrated into the process of developing and creating new product innovations in line with the International Council of Chemical Associations (ICCA) guidelines and evaluate the impact on the safety and environment of the product throughout its life cycle. In 2022, the Product Stewardship Management System was expanded to cover polyolefin, vinyl, PVC, and PP compound production plants.

- **Conducted product stewardship training programs** to raise awareness and develop the knowledge and skills of employees in managing product safety and environmental friendliness. Employees also received training in product design, manufacturing, and production control, marketing, and emergency response for product safety situations.

- **Reduced and discontinued the use of hazardous chemicals.** SCGC's downstream products are not contain any chemicals that are unsafe for humans and the environment according to REACH and RoHS standards, with plans to reduce the use of lead compounds in PVC pipes and fittings by 0.06% by 2023. SCGC has managed the safety of working with chemicals and in the production process according to international standards and prevents incidents that may pose risks to health.

Carbon Footprint

In 2022, eight companies received carbon footprint labels for a total of 255 products, covering the categories of polyolefins, olefins, PVC, PP compounds, melamine compounds, LLDPE films, methyl methacrylate products, and acrylic sheets.

- **Organized training on the carbon footprint of products** for the staff of the marketing, research, product development, production, and production control divisions. In addition, customers were trained about carbon footprint calculations, plastic packaging. Speakers from the Thailand Greenhouse Gas Management Organization (Public Organization) joined to provide knowledge.

Green Product

The SCG Green Choice label was increased from 16 to 36 product categories, which helps reduce energy consumption and greenhouse gas emissions, as well as reducing the use of new resources and utilize them more efficiently while also improving the quality of life and safety. SCG Green Choice products account for 56% of total sales revenue (exceeding the target of 55%).

Examples of Products Certified by SCG Green Choice:

Climate Resilience

Circularity

Well-Being

emisspro®

Innovative product, energy-saving coating for industrial furnaces. When coated on the inner wall of an industrial furnace, emisspro® can help increase the furnace's thermal efficiency by absorbing heat and gradually releasing it, reducing the use of fuel, energy consumption, and greenhouse gas emissions.

SMX™ Technology

It is a technology that produces polyethylene resins with greater strength, resulting in innovative materials that reduce the thickness of the product while maintaining the same level of strength. It helps reduce the use of plastic resins and makes the product lighter, resulting in energy savings in transportation and a reduction in carbon dioxide emissions. This technology can produce various grades of polyethylene resins to fulfill the diverse requirements of a variety of products, including:

- SMX551BU for Intermediate Bulk Container (IBC) production
- S111F and S199F for film extrusion
- S411B for blow molding
- SX002J and SX002JA for producing carbonated beverage caps.

elixir,

the polymer innovation for water tanks, specifically designed to be safe for health and free from heavy metal hazards for users, which has been certified by the US Food and Drug Administration (FDA) for its safety, allowing it to come into contact with food and drinking water safely.

"SCGC is strongly committed to producing better products that meet future demand. We found that using S199F in our production process resulted in a significant reduction in electricity consumption."

Wattana Krisnavarin
Deputy Managing Director
of Thai Nam Poly Pack Co., Ltd.

Environment Management System

6.4 6.6   9.4   12.2 12.5   13.1

SCGC operates a diverse range of businesses and expand businesses both domestically and internationally. To ensure alignment with the organization's strategy, SCGC has developed an Environmental Management System (EMS) to effectively oversee various aspects of environmental operations. The focus is on controlling and reducing potential impacts on the environment and society, as well as enhancing the capabilities of environmental personnel through engagement with all stakeholders, from upstream to downstream. This approach aims to establish SCGC as a "leader in integrated Chemical Business for Sustainability", promoting business growth alongside environmental and social stewardship and embracing Environmental, Social, and Governance (ESG) practices.

Target

- All companies are certified environmental management systems.

2022

100%

Strategies

1. Establish a clear framework for Environmental Management System (EMS) and effectively communicate the guidelines to all relevant parties.

2. Encourage employee participation at all levels to follow the guidelines for maximum efficiency and effectiveness.

3. Develop tools to measure operational performance, monitor outcomes, and foster continuous improvement in accordance with the PDCA principle.

Development of the EMS Framework Model

SCGC has established an EMS Model framework consisting of four measures. SCGC sets medium-term goals for all domestic and international plants to correctly and comprehensively implement the EMS Model. This is done to create environmental performance standards and position SCGC as a global sustainable business leader with world-class environmental management systems.

EPAP Self-Declaration: Best practices
Evaluate the effectiveness of environmental operations to align with the Environmental Management Framework of SCG to improve performance efficiency.

Envi Portfolio: Gathering issues
Analyze data from environmental operations to develop, improve, and plan long-term activities to align with the organization's goals.

EMS Model

Capability Building: Strengthening the capabilities of practitioners
Organize effective training courses to continuously enhance knowledge, understanding, and skills in environmental operations for staff to establish performance standards and keep pace with global environmental trends.

Corporate Standard: Raising standards to the world-class level
Gather best practices from various domestic and international standards and exemplary operations (Best Practices) from each company to establish the operational standards for future projects.

Water and Wastewater Management

6.3 6.4   9.4   12.2

Strategies

1. Reduce water-related risks by implementing integrated water management.

2. Reduce water withdrawal from external sources by increasing water use efficiency in production processes and products.

3. Treat wastewater to meet established quality standards

and reuse treated wastewater; monitor quantity and quality, report incidents, investigate causes, mitigate, and reduce wastewater discharge.

4. Restore ecosystems related to water sources, and support water supply for communities and agriculture.

Climate change has led to natural disasters, such as floods and droughts, which can severely impact water users in all sectors. SCG Chemicals, or SCGC, prioritizes water management to mitigate risks from water-related situations. The water management task force was established to implement integrated management and collaborate with external agencies to monitor water situations and set directions for water management in the Eastern region. Additionally, the water risks were assessed by the international tool WRI AQUEDUCT. The Company also aims to reduce water usage in production processes, treat wastewater to meet quality standards, install continuous wastewater quality monitoring systems, and reuse treated wastewater through reverse osmosis systems.
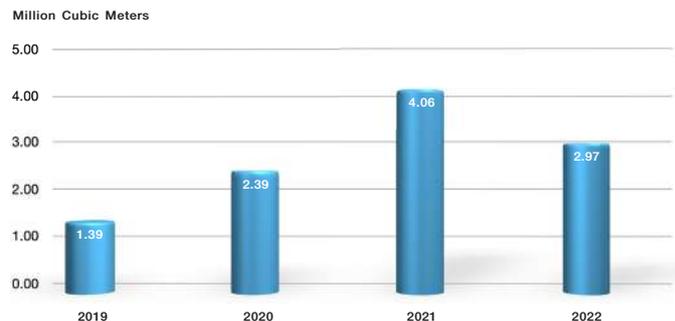
Reduce Water Withdrawal into Cooling Tower

Thai MMA Co., Ltd., in Rayong province, has implemented a water reduction policy based on the 3Rs approach (Reduce, Reuse, Recycle). After analyzing water usage in the manufacturing process, it was found that the main source of water usage comes from the cooling tower. As a result, a project, "Cooling Water Blowdown Reduction", was introduced by studying the expansion of control limits for chloride (Cl) and calcium (Ca) levels, which affect scaling and corrosion, leading to reduced machine efficiency. Chemical substances were added to adjust water quality together with monitor and control chloride and calcium levels to prevent scaling or any effects on machinery. With this method, the water discharge volume from the cooling towers of Factory 1 and Factory 2 was reduced by a total of 94,608 cubic meters, accounting for 26% of the total water usage of the plant. This resulted in a cost savings of 2.2 million baht per year.

Water withdrawal reduction compared with business as usual at the base year of 2014

Million Cubic Meters

Year	Value
2019	1.39
2020	2.39
2021	4.06
2022	2.97

Collaborate with External Organizations to Establish Integrated Water Management Direction in the Eastern Region

SCGC has collaborated with the government sector, industry, and related stakeholders by serving as an industry representative in the Eastern Coast River Basin Committee to determine the direction of water management, allocation, and prioritization of water use, maintenance, restoration, and conservation of water resources, as well as drought and flood management in the eastern coast river basin. This area includes Chonburi, Rayong, Chanthaburi, and Trat province. In addition, the Company engaged as an industry representative to manage risks in the working group examining the guidelines for water resource management systems in the major water supply pipelines of the Eastern region, ensuring no adverse effects on the region's water users.
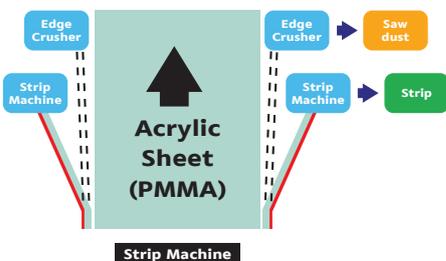
Waste Management

9.4   11.6   12.2 12.5

Inefficient waste management can negatively impact communities and the environment, leading to consequences on business reputation and acceptance and unnecessary costs associated with disposals. SCGC is responsible for governing and promoting efficient and environmentally friendly waste and chemical management practices in conformity with international cooperation frameworks. This includes assessing waste disposal suppliers to ensure they comply with the law and best practices. Additionally, research and development on waste recycling practices are undertaken following the principles of circular economy to reduce costs and minimize the use of virgin materials.

Targets   2022

- Zero landfill disposal for industrial waste (applicable only to companies in Thailand)

- By 2025, reduce waste disposal volume per ton of production by 75% compared to the volume at the base year 2014

0

95.3%

Strategies

1. Reduce the amount of waste generated at the source.

2. Manage industrial waste according to the principles of the 3Rs and circular economy, both hazardous and non-hazardous, to the greatest extent possible within SCGC.

3. Research and develop innovations to reuse and recycle waste, including adding value to waste (R&D).

4. Zero landfill disposal for industrial waste.

5. Reduce waste disposal by incineration.

Circular Economy-Based Waste Management

- **Soil amendment made from raw water sludge.** Rayong Olefins Co., Ltd. and Map Ta Phut Olefins Co., Ltd. managed raw water sludge, the largest portion of waste in the plant (40% of total waste). The study found that it has suitable properties for use as a "soil amendment", recognized by the Department of Land Development and the Department of Agriculture. The results from the experimental use in some parts of the plant's plantation (from June-September 2022) found that it could replace chemical fertilizers up to 400 kilograms, reducing fertilizer costs by up to 22,000 baht. As a result, 2,300 tons of raw water sludge per year can be used as a soil amendment by 100% and reduces the cost of waste disposal by 5.75 million baht.

- **Transformed acrylic scrap into new products.** Thai MMA Co., Ltd. changes the production process of the acrylic sheet (PMMA) from using a discarded acrylic sheet edge cutter and grinding the debris into small acrylic pieces (Saw Dust), which is a waste of no value, to a small cutting machine that can cut the edges of acrylic sheets into strips. As a result, the output becomes a new product worth up to 500,000 baht per year, reducing the amount of waste disposed about 44 tons per year.

Treatment of Plant's Oil-contaminated Wastewater

Rayong Olefins Co., Ltd. has maintenance activity by cleaning the distillation tower, which generates approximately 2,500 cubic meters of oil-contaminated wastewater per time. The plant improved the wastewater treatment system to separate the oil layer from the water before disposing of the oil and treating the remaining wastewater with its treatment system. In 2022, after performing the maintenance activity, the plant managed to reduce the external disposal of oil-contaminated wastewater by 1,200 cubic meters, resulting in a cost reduction of 3.6 million baht for waste disposal.

Air Quality Management

9.4   11.6

The laws regarding air quality control have become increasingly stringent, coupled with increased expectations of stakeholders in managing air quality with the higher standards, have driven SCGC to conduct businesses with a strong commitment to ESG principles and compliance with regulations, laws, and international standards. Efforts have been made to control the emissions of NO_x, SO_x, dust, and VOCs from the manufacturing process by installing cutting-edge and high-performance technologies, from design to continuous development, to instill confidence for the community and stakeholders.

Strategies

1. Control air pollution at its source by applying best practices and adhering to procedures or guidelines to strictly control the production process and increase energy efficiency to prevent exceeding the specified standards.

2. Select world-class high-performance technology.

3. Apply the principles of circular economy to reduce the use of natural resources and reduce air pollution emissions.

4. Continuously monitor air pollution through automated continuous emission monitoring system (CEMs).

5. Engage with government agencies and external organizations.

Implement Best Practices to Manage VOCs from their Sources

SCGC aims to excellently manage VOCs to control and minimize emissions and recover them based on circular economy principles. VOCs inventory is prepared to assess and analyze the emissions of each source and continuously search for areas for improvement.

- **Process Vent/ Stack:** Recovered excess hydrocarbon from the production process of the polyethylene and olefins plants, amounting to 11,900 tons per year.

- **Flare:** Reduced the emissions of excess hydrocarbon by using it as a substitute raw material at the olefins plant during major turnaround activities, amounting to 1,200 tons per time.

- **Wastewater Treatment Units:** Covered equalization pit and installed volatile organic compound control system in olefins plants.

- **Storage Tank and Loading:** Installed a Vapor Recovery Unit (VRU) to recover and reuse VOCs and Carbon Canister system to control VOCs during loading and unloading activities.

- **Fugitive Source:** Inspected equipment at least once a year and repaired and maintained it to prevent leaks.

Management of NO_x, SO_x, Dust

SCGC has controlled air pollution emissions from the source by utilizing high-efficiency technologies and continuous monitoring, such as ultra-low NO_x burners in the cracking furnaces, which can reduce NO_x emissions more than conventional burners, and use automated continuous emission monitoring system (CEMs) in real-time 24 hours a day. The results were reported to government agencies. In addition, cleaner fuels such as fuel gas were opted over fuel oil in most cases, which results in better control of NO_x, SO_x, and dust emissions than the standard limits.

Flare

Process Vent

Storage Tank
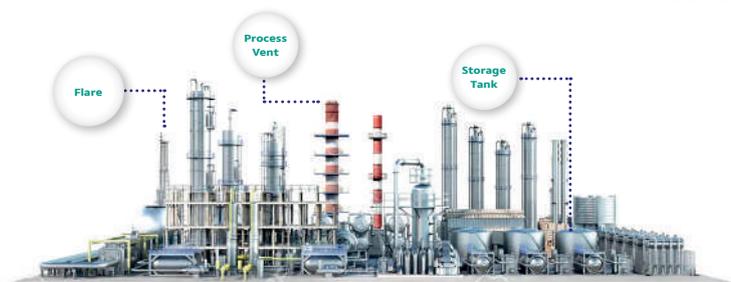
Collaboration for Pollution Control

SCGC has collaborated with government and private organizations in Map Ta Phut to push the pilot project of the benzene 1,3-butadiene management and VOCs with proactive maintenance activities.

In addition, operators in Map Ta Put have been encouraged to share best practices to improve and develop continuous performance.

Biodiversity and Ecosystem

14 LIFE BELOW WATER
15 LIFE ON LAND

14.1 14.2 15.5

SCGC, strives to restore the abundance of terrestrial and marine ecosystems to boost biodiversity in compliance with international standards that consider net positive impact (NPI), no net loss (NNL), and no deforestation in biodiversity-critical areas at the national and international levels. The Company collaborates with various sectors, including the government, the public, and relevant educational institutions' researchers, to continuously monitor and assess the health of the ecosystems and biodiversity.

Targets

- Increase the number of fish homes
- Increase the quantity of food plants for wildlife and native tree

2022

2,230 fish homes

14,000 plants

Strategies

1. *Manage ecological balance based on the principles of mitigation hierarchy, ranging from conservation, restoration, to compensation of habitat resources to maintain their richness.*

2. *Engage with communities and stakeholders to enhance knowledge and understanding of ecosystem conservation and biodiversity.*

3. *Serve as a model for biodiversity conservation to expand the implementation to other areas.*

A 10-Year Effort of Fish Home Initiative to Restore Marine Diversity

SCGC has carried out the fish home initiative since 2012, using the innovative artificial fish habitat made from PE100 leftover pipes from the testing processes to create value addition based on circular economy principles. Each year, the fish homes are placed along the coastline. As a result, a total of 2,230 fish homes have been placed in the coastal areas of Rayong, Chonburi, Chanthaburi, Trat, and Ranong province, covering a conservation area of 52 square kilometers of local coastal fisheries. These fish homes have helped restore marine habitats and increase the biodiversity of marine life; thereby rebalancing ecosystems that have been disturbed by human activities. During 2018-2019, the marine scientists from Kasetsart University surveyed the area where fish homes were placed in Rayong province and found living organisms, including plankton, fauna, fish, other aquatic animals and 76 species of plants.

- The latest fish home study in 2022, conducted in collaboration with the Department of Marine Science at Kasetsart University, showed that more than 177 marine species were found, an increase from 139 species found in 2019. The newly-reintroduced species include economically important species, fancy fish, juvenile fish, fauna, and plankton.

- Collaboration was established, and income was generated for 43 groups of local fishermen along the coastline, and a volunteer network was created to build fish homes, with more than 41,000 people participating nationwide.

Promote Participation to Expand Khao Yai Da Restoration and Reforestation Efforts to Achieve Low-carbon Society

Since 2007, SCGC has collaborated with communities around the Khao Yai Da mountain area in Rayong province, covering 7 subdistricts and 2 districts, to restore the upstream forest area and on the Khao Yai Da mountain by building check dams and reforesting until the area has regained its full fertility. With such initiatives, upstream, middle, and downstream water supplies could be preserved to prevent forest fires. Agriculture output in the community grew, consistent with SCGC's management strategy to restore ecosystems and support community water, which can be expanded into eco-tourism. The community is resilient and self-reliant, resulting in a sustainable water management model of "Good Water Community: Good Water Storage, Sufficient Water Use with 2 Cultivate 2 Collect" project. In 2022, the implementation of the Plant-Cultivate-Protect campaign was broadened as follows

- Planted over 20,500 trees, including 18,000 terrestrial trees and 2,500 mangrove trees.

- Surveyed and found over 123 species of wildlife, including birds, mammals, reptiles, and amphibians, and over 120 species of plants, including large trees, understory trees, and different kinds of shrubs.

- Set a goal to increase biodiversity by collaborating with local communities to cultivate more than 14,000 seedlings of local food plants and trees, such as wild jackfruit, wild lychees, Burmese grape, santol, and others. This aims to increase sustainable food sources for wildlife and prepare for planting in the Khao Yai Da mountain area by 2023.
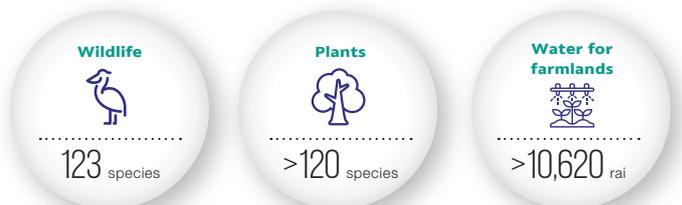
Wildlife
123 species

Plants
>120 species

Water for farmlands
>10,620 rai

Human Rights

5 GENDER EQUALITY

8 DECENT WORK AND ECONOMIC GROWTH

10 REDUCED INEQUALITIES

5.5   8.5   10.2 10.3

SCGC operates its business with a strong emphasis on human rights and respect for diversity. As such, the Company has announced a human rights policy that aligns with the Universal Declaration of Human Rights (UDHR), the United Nations Global Compact (UNGC), the United Nations Guiding Principles on Business and Human Rights (UNGP), the Fundamental Principles and Rights at Work of the International Labour Organization (ILO), and the Organization for Economic Co-operation and Development (OECD). SCGC continuously works to elevate its human rights practices and creates awareness, knowledge, and understanding for all employees at every level through annual Ethics e-Testing.

Strategies

1. Integrate human rights operations, management of diversity and inclusion as part of business operations throughout the value chain, both Thailand and oversea businesses.

2. Strengthen value, develop, and expand the project of inclusiveness that upholds the principle of respecting human rights for all stakeholders throughout the value chain and society as a whole.

Develop Human Rights Framework

SCGC has integrated international standards and related requirements and prepared a **"Human Rights Framework"** that covers all stakeholders throughout the value chain. The framework includes plans for correcting and preventing human rights violations and providing remedies in the event of such violations. Additionally, the Company has developed a **"Human Rights Due Diligence Process Guideline"** and conducted assessments of human rights risks throughout the Company's operations and its value chain, including suppliers. This is achieved through the participation of relevant stakeholders in identifying and assessing risks, establishing mitigation measures, and monitoring the effectiveness of the measures, which can be used to develop a continuous development plan. This includes employment conditions, occupational health and safety, forced labor, and the protection of the rights of migrant workers.

Integrate Actions throughout the Value Chain

Employee: Respect for fundamental rights and promote diversity and inclusion within the organization

- **Establish diversity and inclusion policy,** which serves as the guideline for collaboration among employees at all levels.

- **Promote gender equality** by following the Women's Empowerment Principles (WEPs) in collaboration with SCG.

- **Arrange the Human Rights Empathizing Project** to understand the deep-seated needs of vulnerable employees, such as women, persons with disabilities, and those who identify as LGBTQIA+. The project involves

conducting interviews and conversations with employees with understanding and empathy and using the information obtained to develop new practices, plans, and communication strategies that are appropriate and effective moving forward.

- **Establish the GRC Helpline system** to allow all employees to seek advices on any concerns related to human rights in the workplace and provides channels for timely and efficient reporting of complaints from both employees and external parties. The reporting process was designed to ensure fairness and protection of individuals who report incidents of human rights violations related to SCGC, with measures to safeguard whistleblowers and anyone who provides information on such incidents, as set out in the SCGC Whistleblower Policy.

Whistleblower Channels

https://whistleblowing.scg.com/external/chm
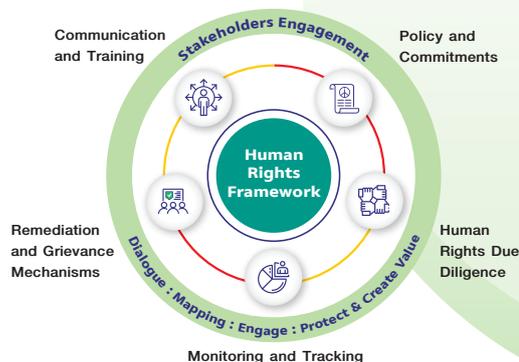
Suppliers, Business partners: Elevate the process of managing human rights risks that may impact the value chain.

- **Promote suppliers, business partners to comply with the SCGC Supplier Code of Conduct** to cover human rights aspects that are consistent with international standard practices.

Communication and Training · Stakeholders Engagement · Policy and Commitments · **Human Rights Framework** · Human Rights Due Diligence · Monitoring and Tracking · Remediation and Grievance Mechanisms · Dialogue : Mapping : Engage : Protect & Create Value

Health and Safety

3.4 3.6 3.9   8.8
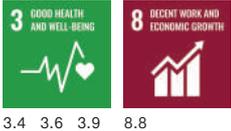
SCGC regards its employees and contractors as the most valuable asset. The Company aims to work towards an injury and illness-free operation for both its domestic and international operations by adhering to international standards for occupational health and safety management and developing digital technologies to enhance supervision. In 2022, SCGC expanded and enhanced its safety culture in the workplace by strengthening safety measures in many areas, including safety at the workplace, transportation, and logistics.

Targets | 2022

- Zero work-related fatalities among employees and contractors in Thailand and overseas operations

  0 case

- Zero work-related injuries resulting in lost workdays among employees and contractors

  0.055 cases/1,000,000 hours worked.

- Zero work-related injuries requiring record-keeping among employees and contractors (0 case/1,000,000 hours worked) in Thailand and overseas operations

  0.082 cases/1,000,000 hours worked.

Strategies

1. Expand the safety culture, empower all employees to be leaders in safety with operational discipline and observation in all operations.

2. Enhance the execution of the occupational health and safety management system and lifesaving rules in both production and service operations.

3. Introduce digital technologies to enhance efficiency to reduce risks of accidents, injuries, illnesses, and occupational diseases.

4. Enhance the execution of road and distribution safety standard.

Expand the Safety Culture to Achieve the Goal of the Incident Free Operation

SCGC emphasizes building a safety culture towards an interdependent stage to prevent unsafe actions and conditions. This begins with conducting Safety Observation Tours (SOT) that focus on observing work conditions and having discussions to adjust behavior for safety. This then develops into Quality SOT (QSOT), which aims to cover risks in every dimension, allowing employees to care for themselves and their colleagues. This leads to a reduction in unsafe reports. SCGC further enhance its safety culture by creating a safety network.

Safety Network is an open space for shop floor-level employees to voluntarily participate as safety leaders and take full responsibility for making their workplace safe in all aspects, including preparing preventive measures, and addressing visible risks, allowing employees to have open conversations about safety with their colleagues, experts, and supervisors, with shift meetings enabling employees to lead activities in their shifts with support from their supervisors. Safety network meetings also provide a platform for representatives from various units, including department managers, to exchange ideas, leading to the effective sharing of information from top to bottom, bottom to top, and at the same level.

SCGC began implementing the Safety Network in 2017 at the Thai Polyethylene plant and expanded its implementation to all SCGC subsidiaries in 2019. The process has been continuously developed and currently includes the Winning Mindset, which involves managing risks by forecasting potential risks, monitoring, implementing control measures, and conducting follow-up inspections. As a result, the Safety Network team plays a significant role in improving workplace safety. In 2022, more than 1,600 various measures were carried out.

Natural Instinct — Supervision — Self — Teams

Injury Rate

Reactive | Dependent | Independent | Interdependent

Relative Culture Strength
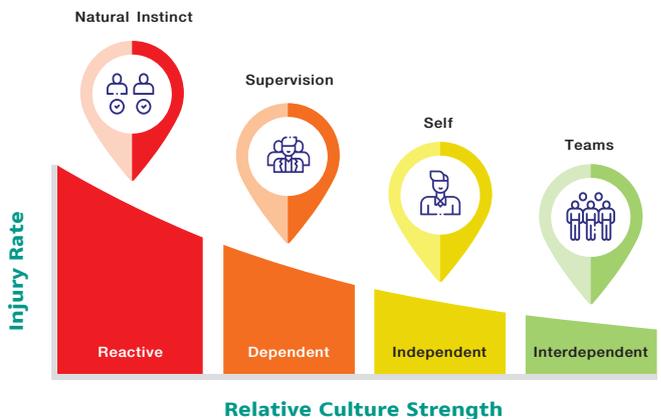
Enhance Process Safety Management

Developed catastrophic accident simulation model in the plant and assessed quantitative risks to evaluate the impact on employees, equipment, and buildings to determine measures to mitigate the impact. In 2022, there was continuous assessment from the previous year at the location of plant site 1 and site 3 until completion. Measures were taken to reduce the impact by adjusting the use of space in various plant areas, installing safety films on building windows to mitigate the risk of shattering, and strengthening the buildings. This resulted in a 52% reduction in the number of employees in high-risk areas and an 80% reduction in the number of employees in medium-risk areas. As a result, there was a 15-fold increase in the number of employees working in acceptable risk areas, totaling 812 people. SCGC is expanding the development of catastrophic accident simulation models and quantitative risk assessments in other plants to cover all sites by 2024.

Utilize Digital Technology to Improve Risk Reduction Efficiency

ePTW

SCGC is committed to continuously developing safety standards, along with assessment and monitoring, to ensure the system's efficiency. Nonetheless, risks associated with work operations and worker decisions still persist. As a result, the ePTW digital platform was developed to help mitigate risks related to work practices, with a digital workflow to reduce human errors, integration with the contractor supervision system to ensure that workers are fully qualified and registered, and real-time visualization of high-risk work permit requests. This enables the immediate identification and management of issues and the use of data analysis to improve work efficiency in the future.

My Health Application

Plant staff are exposed to risks from chemicals, heat, intense light, and even working posture, which could lead to illnesses or work-related diseases. SCGC realizes the importance of proactive preventive measures before problems occur. It developed an application called "My Health" to facilitate health risk assessment leading to improve the work environment to reduce health risks by 87% (20 projects). This led to the collection of health data to analyze indicators of abnormal health conditions from work-related activities of more than 5,500 SCGC employees. As a result of the project's surveillance and disease prevention efforts, there were no employees with work-related health abnormality issue.

RISK

Enhance the Execution of Road and Distribution Safety Standard

SCGC has established the Driving Policy and continuously implements transportation safety standards while utilizing digital technology to monitor drivers' driving behavior. This includes transportation of raw materials and products and company vehicles, such as monitoring and controlling parking on the roadside and ensuring sufficient rest periods for drivers. In 2022, the Company expanded the requirements for transportation activities in customer locations and strengthened management to enhance safety performance, with the goal of achieving zero accidents related to transportation within the year.

- **The Truck Driver Fatigue Management system:** Enhances the efficiency of transport planning through the continuous and rigorous use of digital technology, the Smart Delivery Application (SDA). It involves communication, control, and monitoring to reduce the risk of accidents caused by driver fatigue. This allows the transport drivers to have at least 10 hours of rest before accepting the next day's assignment in compliance with regulations.

- **The assessment of transportation-related risks in customer sites:** Expand risk assessment and control measures that have been implemented to enhance safety in transportation activities in SCGC areas, apply in customer sites to ensure the safety of transportation activities such as loading and unloading of goods, movement of goods, and tarping.

- **Promoting Operational Discipline (OD):** In addition to having a good control program, one crucial factor in reducing accidents is operational discipline, which means employees commit to work safely all the time with knowledge and understanding of the risks involved. Therefore, SCGC has communicated and provided training workshop to promote safe operational discipline in transportation to their transportation partners of Thai Polyethylene Company as a pilot project. The goal is to ensure that all drivers receive OD training.

Expansion of Occupational Health and Safety Management (OHS) to overseas businesses. SCGC has extended the implementation of its Process Safety Management (PSM) standards to its overseas businesses, particularly for the Long Son Petrochemicals (LSP) project in Vietnam. This includes utilizing the findings of risk assessments for the production process throughout the design phase for controlling construction activities, conducting pre-start up safety review before commissioning, preparing operating procedures and readiness of worker to ensure that production operations will not cause occupational health and safety impacts on all stakeholders.

Employee Caring and Development

3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	8 DECENT WORK AND ECONOMIC GROWTH	10 REDUCED INEQUALITIES
3.4	4.4	5.5	8.5 8.8	10.3

Target — **2022**
- Employee engagement rate exceeds 70%

65%

The global economic fluctuations and the post-COVID-19 situation, along with the expansion of business overseas, have compelled SCGC to adjust its operational structure and strategy. This entails encouraging employee self-development and adaptability to changes and accepting diversity in terms of age, gender, language, culture, thinking, and work styles. In addition, this also includes establishing an inclusive work environment and fostering organizational engagement to ensure that employees remain a crucial driving force in the growth of the business. The Job and Career Development Committee is tasked to oversee and support the implementation of job design and career advancement of employees, both within and across professions.

Strategies

1. *Improve Human Resources management to attract talents and capable candidates to join the Company.*

2. *Treat employees equitably and fairly to foster employee engagement.*

3. *Promote an organizational culture that accepts and values the diversity of individuals.*

4. *Develop employees' capabilities and integrate learning that connects to their career paths to meet business competition demands.*

5. *Advance career management policies and develop process, systems and platforms to offer employees opportunities to choose jobs that they are interested in and are suitable in a transparent manner.*

Prioritize Employee Mental Health and Well-being during Post-COVID-19

After the easing of the COVID-19 situations, caring for the well-being and mental health of employees in the workplace is a priority at SCGC. The Company has taken steps to adjust work arrangements and provide support to employees in key areas, including:

- **Workplace:** Implemented a hybrid workplace policy and designed a new smart workplace with a reservation system for seats and meeting rooms through the Employee Connect application. Additionally, the Company prepared facilities for vulnerable groups, such as parking spaces for pregnant women and people with disabilities, restrooms for people with disabilities, and prayer rooms.

- **Physical health:** Provided care boxes and telemedicine consultation services for employees with mild COVID-19 symptoms undergoing home

isolation and physical therapy services by physiotherapists at the Company's Health Care Center for those caused from office syndrome or other illnesses.

- **Mental health:** Offered online counseling services by psychologists and psychiatrists through the "OOCA" and "Doctor Anywhere" platforms to care for employees' mental health. In addition, employees can also make appointments to meet with psychiatrists in person at the Company's Health Care Center.

Build Awareness and Understanding on SCGC Diversity and Inclusion

SCGC announced the Diversity and Inclusion Policy, pledging to treat everyone equally and create an inclusive work environment that encourages open communication and listening and promotes the expression of diverse opinions of individuals. This will help attracting potential and talent candidates to join the organization and retaining employees who are valuable resources to the organization with a sense of belonging. In 2022, a series of actions were carried out, such as:

- **New Employee Recruitment:** Removed gender and age limitations in job applications and diversified interview panels by including representatives from various departments with different genders, ages, and levels of expertise to provide a wider perspective in decision-making.

- **On-boarding Program Training:** Integrated the importance and essence of diversity and inclusion to prepare new employees for working with teams that are diverse.

- **New employee uniforms and ID cards** were launched under the concept of diversity and inclusion with the campaign "Your Style Your Choice", allowing employees to choose their own uniform style and their picture poses to showcase their unique personalities on their ID card photos.

- **The leadership competency** was upgraded by communicating the importance of non-discrimination and providing equal opportunities for everyone to the executives, managers and supervisors. To do so, SCGC added behaviors that demonstrate support for diversity and inclusion and helping teams to understand and embrace differences, listen, exchange knowledge, and build on each other's strengths.

- **International Communication.** SCGC Communication organized a campaign called "Say Hi" to connect with SCGC people working abroad to raise awareness among employees about the importance of accepting different cultures. The Company also celebrated International Women's Day on March 8th and Vietnamese Women's Day on October 20th, which was held at Long Son Petrochemicals' Ho Chi Minh office to honor Vietnamese culture and promote gender equality for women.

Develop Employees and Create better Employee Experiences

SCGC creates supportive factors to develop employees' capabilities to provide a positive experience starting from the beginning as new employee map out their career path with freedom based on their interests.

- **Learning through gamification in the on-boarding program for new employees.** A 5-day on-boarding program was designed for new employees with the concept of gamification to learn through conquering levels with fun and excitement. Employees would receive on-boarding kits, which include a reusable eco-bag, important document folders, a welcome card for their first day, necessary information in the Employee Passport, and a board game called "Snakes and Ladders". A mentor would be assigned to support learning and adaptation, emphasizing an experience that will create a sense of pride for the employees to be a part of the organization.

- **Launched Spark course by Harvard Business School.** As the course was transformed into a digital learning format, allowing employees to learn at their convenient time and place, SCGC has introduced the Spark platform by the Harvard Business School, which includes research articles and courses covering various topics such as Business Management, Digital Transformation, Soft-Side Skills, that are globally recognized to enable employees to develop themselves. In 2022, SCGC employees enrolled 590 courses in the Spark platform.

Employee career management named "Your Career Your Choice"

SCGC has designed and enhanced career development and career advancement for employees within and across professions, encompassing 16 professions. This enables employees to plan their career paths and apply for positions of interest. Additionally, the Company develops the STAR Career platform to support employees' aspiration-based career planning.

Community and Social Involvement

1.1   2.3 2.4   8.3   14.2 14.b   15.1 15.4
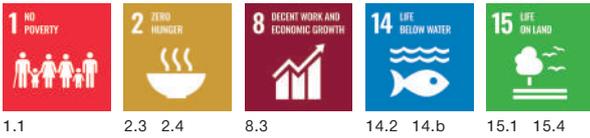
SCGC aims to develop communities and society in line with ESG principles by creating a better environment by restoring nature's richness, establishing an integrated waste management system based on circular economy principles, reducing water related-risks, and moving towards a low-carbon society. The Company also aims to boost community safety and reduce inequality by providing income-generating opportunities based on the sufficiency economy principles, utilizing SCGC's innovations and promoting collaboration with all sectors to continuously develop community potential.

Targets

- Employees participation in CSR activities 1 time/year
- Community engagement score 85%

2022

At least **1** time/ employee/year

93%

Strategies

1. Listen to the community's opinions to promote participation and awareness of issues that are important to the community.

2. Assess the environmental and social risks to the surrounding communities and develop plans to prevent and mitigate the impact.

3. Develop projects integrating the circular economy approach, aiming towards a low-carbon society, creating a better environment, and reducing inequality.

4. Apply innovation in the development of projects with communities.

5. Foster participation among all employees of SCGC in social activities, from top management to all staff.

Waste Recycling for Circular Economy

SCGC expands the **"Waste-free Community"** project to comprehensively manage waste in Rayong province, covering 65 communities, 10 temples, 11 schools, 2 hospitals, 1 hotel, and 3 fishing groups. The project utilizes the "KoomKah" application developed by SCGC to help communities manage waste banks. Currently, there are 13 waste banks with a total of 3,785 accounts, accumulating over 240 tons of recycled waste in the system, helping to reduce landfill waste and the equivalent of reducing greenhouse gas emissions by more than 480 tons of carbon dioxide equivalent. The project has also expanded to students with the **"Upcycling Milk Pouches"** initiative, aiming to change the younger generation's behavior to use resources wisely by collecting school milk pouches for recycling into new plastic products such as chairs and plant pots. More than 1,700 schools have joined the project and have collected over 4,200 kilograms of milk pouches for recycling.

Plant-Cultivate-Protect Campaign Towards Low Carbon Society.

SCGC has partnered with government agencies, local organizations, private sector, educational institutions, youth, communities, and volunteers to promote climate change mitigation through tree planting. The target is to plant 1 million trees and distribute seedlings to employees and the general public for propagation and planting. Activities to maintain and protect forest areas were also organized in collaboration with local volunteer networks to build a network of 200 volunteers.

Reducing Inequality, Strengthening Communities

Social Return on Investment (SROI)

5.69*

Net social impact value

2,047* million baht

*Data from the SROI survey of 10 local fishing groups in Rayong in 2022

- **Enhancing fish home efficiency, increasing community income.** SCGC has utilized the principle of circular economy to develop innovation in Fish Home using PE100 pipe material, which was leftover from testing processes. The project has been continuously implemented for 10 years to restore the richness of aquatic animals as a source of income for local fishing communities and promote ocean biodiversity. In 2022, the Fish Home construction was improved to be more robust and convenient, reducing construction time from 3 hours to 1.5 hours and changing the layout to a group of 10 homes. This helped reduce costs and increase accuracy in house placement. The Fish Home project has helped promote biodiversity and increase income by 63 million baht per year for more than 930 local fishers and support community enterprises by generating around 400,000 baht per year from fish home production.

- **"Good Water Community: Good Water Storage, Sufficient Water Use with 2 Cultivate 2 Collect" project** SCGC has collaborated with local communities in the Khao Yai da area in Rayong province to restore degraded forests since 2007 by constructing more than 1,200 check dams and reforesting the area, increasing water storage for community consumption and agricultural use, and generating additional income from agricultural products. SCGC has built on the project by implementing a sustainable water management system, the "2 Cultivate 2 Collect Model" model-cultivating human potential and cultivating rules, collecting water resources, and collecting data. This collaboration with local communities, government agencies, and water experts has increased agricultural output by over 79 million kilograms annually and expanded into eco-tourism through agro-tourism and homestays, generating 539 baht per rai per year from tourism.

- **Developed community enterprise networks.** SCGC has developed community enterprise networks by implementing the BCG (Bio-Economy, Circular Economy, Green Economy) model in 12 community enterprises in Rayong province, such as Thapma Stingless Beekeeping Community Enterprise, Zalacca in Syrup and Dried Zalacca Community Enterprise. These community enterprises generate a total income of over 6.2 million baht.

- **Promoting skills and capability** through the training provided by experts from government agencies and educational institutions, ranging from product design and innovation to online and offline marketing, with 1,000 participants per year.

- **Promoting product distribution channels** by encouraging product distribution channels and public relations to make community products widely known, such as opening the Facebook page "Rayong Shop Hi Marketplace-A Collection of Rayong Specialties" generating income for more than 16,000 small-scale retailers in Rayong province, totaling over 1.6 million baht per year. Additionally, SCGC supports community products and services with more than 20 million baht per year.

- Since 2017-2022, SCGC has planted and propagated 191,889 trees on a total area of 592 rai of land, absorbing 2,867 tons of carbon dioxide equivalent and engaging a total of 3,400 participants.

| Mangrove Forests (trees)	Terrestrial/Community Forests (trees)	Seedling Cultivation (trees)
154,600	20,689	16,600
Amount of carbon absorption (Ton of CO_2 equivalent)	**Amount of carbon absorption** (Ton of CO_2 equivalent)	**Amount of carbon absorption** (Ton of CO_2 equivalent)
1,924	786	157
Number of participants	**Number of participants**	**Number of participants**
1,300	1,000	1,100

Sustainability Performance
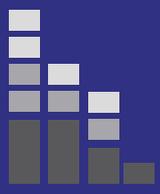
About This Report

SCGC has published annual sustainability report since 2021. Sustainability performance in this Report is SCGC's information which the top management deems relevant and of value to stakeholders.

Reporting Scope

Economic information covers performance of SCGC's subsidiaries, joint ventures, associates and other companies located in Thailand and abroad, in line with SCGC Annual Report.

Environment and Social Performance Data herein cove those from subsidiary companies over which SCGC has controlling in Thailand and abroad, as listed in page 96-97, for the period of 1 January to 31 December 2022.

The report is compiled and prepared in accordance with Global Reporting Initiatives (GRI Standards 2021) shown in page 100-105 and incorporating performance reporting prescribed by relevant international standards including: Task Force on Climate-related Financial Disclosures (TCFD) in page 108, Sustainable Development Goals (SDGs) in page 20-21, and Sustainability Accounting Standards Board (SASB) in page 106-107.

Sustainability Management System

SCGC applied the management system according to various international standards in operations such as quality management system standards, environmental management system standards, occupational health and safety management system standards, etc. To ensure that SCGC has a sustainable management system covering the entire organization, SCGC has established Sustainable Development guidelines, Environmental Management Guidelines, and Occupational Health and Safety Management Guidelines. Subsidiaries under business units of SCGC have been certified international management standards, i.e. ISO 9001 - Quality Management System, ISO 14001 - Environmental Management System, OHSAS/TIS 18001/ISO 45001 - Occupational Health and Safety Management System, and ISO 50001 - Energy Management System. In 2022, 100% subsidiaries have been certified for Quality Management System, Environmental Management System and Occupational Health and Safety Management System.

Reporting Assurance

Financial data in this report are from similar sources as in SCGC Annual Report and verified by certified public accountants. Environment and Social Performance Data are verified as accurate and compatible substantively with GRI Standards 2021 by third party as detailed in page 98-99.

Environment

Environment data presented here are from activities deemed to have significant impact, reported by companies with production processes, excluding reports with no significant impact from entities such as sales offices, R&D laboratories, services and holding companies.

Data sources, i.e., accounting evidence, meter reading, production process data, evidence-based estimation are presented in absolute value. For specific consumption/emission, disclosure since 2016 has been improved for clarity, by comparing the year performance with that of Business As Usual (BAU) of base year. We use 2014 for water withdrawal, and 2020 for air emission.

For climate actions, targets are set in absolute terms, with Carbon Neutral target in 2050, and targeting at least 20% emission reductions in 2030 compared with 2021 base year.

Energy

Total energy consumption includes thermal energy and electricity used in the companies/factories' areas. Volume and share of alternative energy are incorporated in the thermal energy portion. As well as renewable energy and non-renewable energy are captured.

Thermal energy consumption = fuel weight or steam volume (estimated from volume purchased or stockpile variance) x heat value of fuel type (lab test results or supplier's data)

Greenhouse Gas Emissions (GHGs)

GHGs data in this report represent emissions from operations calculated according to guidelines in WRI/ WBCSD GHG Emissions Protocol:

1. Reporting Scope

1.1 Direct Scope 1 are emissions from manufacturing processes and activities that are owned and controlled by SCGC. Examples include combustion of coal or natural gas in boilers, furnaces, vehicles.

1.2 Indirect Scope 2 are emissions from purchased energy such as electricity and steam.

1.3 Other indirect emissions (Scope 3) are generated from various activities that are not specified in Scope 1 and Scope 2, such as Purchased goods and services, Waste generated and operations, Business travel, Employee commuting, Downstream transportation and distribution, and Investment etc.

2. GHG Inventory

2.1 Direct Scope 1 emissions are calculated from

- Combustion

    - Reporting of fuel use (weight or volume) such as amount of oil or natural gas x emission factor referenced to TGO (Thailand Greenhouse Gas Management Organization, Public Organization, and outside of TGO's either IPCC 2006.

    - Fuel consumption (based on heating value) for instance amount of coal x heating value x TGO emission factor; otherwise, IPCCC 2006.

    - Carbon mass balance from fuel consumption.

2.2 Indirect Scope 2 emissions are calculated on the basis of purchased electricity or steam consumption x GHG emission factors based on TGO, manufacturers or suppliers.

3. Types of GHG emissions reported

include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PCFs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3) which are converted and reported as CO_2 equivalent by Global Warming Potential (GWP) referenced with IPCC-defined GWP factors.

Air Emissions

Air emissions are the quantity of air pollution such as NO_X, SO_X and particulate matter from combustion and are part of the production process. Types of air pollutants depend upon each production process in which chemical substances are produced. Results and measurement method conform to the law requirements such as US EPA, or equivalent standard.

Air emission quantity reported is calculated based on concentration measured from random spot check being conducted by laboratories certified by and registered with Department of Industrial Works or from Continuous Emission Monitoring Systems, CEMs, multiplied by hot air flow rate and production hours.

The volume of Volatile Organic Compounds is obtained from statutory measurements and calculations using the Emission Factor or accepted calculation program from the Environment Protection Organization of the United States of America (US EPA).

Water

Water management consists of the amount of water withdrawn from outside, the amount of recycled water and the amount of effluent.

Beginning from 2020, the amount of water withdrawn has been reported with categorized by type of water source such as surface water, groundwater, and third-party water. In terms of category, "fresh water" means water with less than 1,000 mg/L. of total dissolved solid while "other waters" contain over 1,000 mg/L. of total dissolved solid. Water withdrawn from water-stress areas is estimated based on Aqueduct Water Risk Atlas.

Recycled water means the quantity of treated water returned to the process, excluding non-treated reused water such as cooling water.

Water discharge means quantity of effluences discharged into water sources such as surface water, groundwater, third-party water, and reporting of discharge into stress area from the first reporting year of 2020. Additionally, the report includes effluent types in terms of Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), and Total Suspended Solids (TSS).

Industrial Waste

Industrial waste reporting is divided into hazardous and non-hazardous waste according to laws and regulations in each country where SCGC operates, in terms of waste generation, waste management and waste in the storage to demonstrate production efficiency and waste management efficiency according to the following:

- Diverted from disposal consists of reuse, recycling and treatment.

- Waste directed to disposal consists of incineration for energy output, non-energy generating incineration, landfill and other disposal operations.

The amount of waste generation from production process is calculated using appropriate method on weighing, calculating or evidence-based estimation, whereas weighing of waste management using scale yielded more precise result.

Social

Health and Safety

Numbers of Employees and Contractors

1. **Employee** is full time employees according to contract, consisting of operational level, supervisory and technical staff level, and managerial level as well as intern (probationary) and special-contract employee.

- Operational level is a front-line worker who uses skills and technique in their daily operations.

- Supervisory and technical staff level is a front-line manager responsible for daily management or with subordinates.

- Managerial level is a manager responsible for addressing business strategies or policies, delegating, and controlling supervisory and technical staff who implement policy and daily work.

- Special contract employee is temporarily employed for a specific period.

2. **Contractor** is a person who consented to work or provide service or benefit to the company apart from the company's employee per the definition above, which could be divided into 3 types of contractors are as follow: -

   1) Workplace Contractor is a contractor working for the company, whose work and/ or workplace is controlled by the company (excluding Transportation Contractor).

   2) Direct Transportation Contractor is a transportation contractor with operation under SCG's brand.

   3) Other Transportation Contractor is a transportation contractor without operation under SCG's brand.

Workplace Contractor data covered in the report are calculated for the number of hours worked. Transportation Contractor data under SCG Logistics Management Co., Ltd. are reported in kilometer.

The Third Party is other people, neither employee nor contractor, who are not working for the company and not covered in this report.

Hours Worked Calculation

1. Data from a clock-in system, HR database, accounting, or relevant administrative functions.

2. In case the companies/plants do not have a clock-in system or database system, or other record document the formula below is applied to estimate hours worked.

Number of hours worked =
(number of worker x number of working days x number of normal hours worked per day) + total number of overtime hours worked (if any)

Health and Safety Data Recording

SCGC records the following data on work-related health and safety as follow: -

1. Fatality Work-Related Injury and Occupational Illness & Disease Rate from workplace is number of work-related injury and occupational illness & disease that result in fatality case (person) per 1,000,000 hours worked.

2. Total Recordable Work-Related Injury and Occupational Illness & disease Rate from workplace is the total number of work-related injury and occupational illness & disease that results in fatality, lost time, restricted work or medical treatment case (person) per 1,000,000 hours worked.

3. Number of Fatality Work-Related Injury is the number of work-related injury that result in fatality regardless of sudden death or suffering consequences and subsequent death.

4. Fatality Work-Related Injury Rate from workplace is the number of work-related injury that result in fatality case (person) per 1,000,000 hours worked.

5. Total Number of Recordable Work-Related Injury from workplace is total number of work-related injury that results in fatality, lost time, restricted work or medical treatment.

6. Total Recordable Work-Related Injury Rate from workplace is total number of work-related injury that results in fatality, lost time, restricted work or medical treatment case (person) per 1,000,000 hours worked.

7. Number of High-Consequence Work-Related Injury from workplace is total number of work-related injury that result in high-consequence, excluding fatality.

8. High-Consequence Work-Related Injury Rate from workplace is total number of work-related injury that result in high consequence excluding fatality case (person) per 1,000,000 hours worked.

9. Lost Time Injury Frequency Rate from workplace is total number of work-related lost time injury case (person) per 1,000,000 hours worked.

10. Severity Work-Related Injury Rate from workplace is total number of lost workday (day) from work-related lost time, injury per 1,000,000 hours worked.

11. Number of Fatality Occupational Illness & Disease from workplace is number of occupational illness & disease that result in fatality regardless of sudden death or suffering consequences and subsequent death.

12. Total number of Recordable Occupational Illness & Disease Rate from workplace is total number of occupational illness & disease that results in fatality, lost time, restricted work or medical treatment.

13. Total Recordable Occupational Illness & Disease Rate from workplace is total number of occupational illness & disease that results in fatality, lost time, restricted work or medical treatment case (person) per 1,000,000 hours worked.

14. Near Miss Frequency Rate is the number of near miss cases per 1,000,000 hours worked.

Lost Time is work-related injury, occupational illness & disease that causes the injured absence from work on the next working day or the following shift, as well as the case that such injury, occupational illness & disease leads to leave of absence as the person is incapable of returning to work after the incident.

High-consequence work-related injury is an injury that results in a fatality or in an injury from which the worker cannot, does not, or is not expected to recover fully to pre-injury health status within six months.

Employees

Average Wage Ratios

Employees refers to persons who work full time for the company as specified in the employment contract and can be categorized into executives, management employees, and non-management employees.

Wage refers to salary paid on a monthly basis to employees as prescribed by the company.

Other remuneration refers to any remuneration in addition to salary, given as incentives or special performance-related pay, as well as other monetary rewards such as bonuses.

Reporting of average wage ratio calculated solely on salary, and average remuneration ratio calculated on salary and other remuneration throughout the year, and comparative average between female and male employees in different levels including gender pay gap analysis, is in accordance with GRI 405-2.

Significant Changes

From the year 2021 onwards, information on environment, safety and occupation has incorporated the SCGC's abroad operation comprising Productions, Raw Materials, Greenhouse Gas Emission, Energy and Water Withdrawal. Additionally, Map Ta Phut Olefins Co., Ltd. has increased the production capacity by 300,000 tons per year.

In 2022, reported information on environment, and safety and occupation exclude joint venture and associate companies. In addition, some plants are shut down for machinery maintenance.

This report and its predecessors can be downloaded from https://www.scgchemicals.com/en/sustainability/report

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Tel: 066-2586-1111

Website: https://www.scgchemicals.com/

Sustainability Performance Data 2019-2022

Economic Performance

Performance Data	Unit	2019	2020	2021	2022	GRI Standards	SASB
Revenue from Sales	Million Baht	177,634	146,870	238,390	236,587	GRI 201-1	
Profit for the year	Million Baht	14,417	15,341	27,068	5,901	GRI 201-1	
EBITDA	Million Baht	27,736	31,565	46,681	11,633	GRI 201-1	
Employee compensation comprising salary, wage, welfare and regular contributions	Million Baht	10,209	10,396	10,425	10,517	GRI 201-1	
Dividend from shareholders	Million Baht	11,758	11,942	85,841	10,587	GRI 201-1	
Interest and financial expenses to lender	Million Baht	935	908	1,748	2,288		
Taxes to government and local government authorities such as income tax, local maintenance tax, property tax and other specific taxes	Million Baht	2,085	3,178	3,818	2,151	GRI 201-1	
Tax privilege and others from investment promotion, and research and development	Million Baht	537	414	949	451	GRI 201-4	
Contributions to organizations*	Million Baht	NA	NA	NA	17.29		
Contributions to political activities**	Million Baht	0	0	0	0	GRI 415-1	
Revenue from Sales of High Value Added Products and Services (Subsidiary)	Million Baht %	59,472 33	53,533 36	85,460 36	86,170 36		
Revenue from Sales of SCG Green Choice Products and Services (Subsidiary)	Million Baht %	86,733 49	65,739 42	124,149 49	133,524 56		
Revenue from sales of products and services provide resource efficiency benefits during their use phase to customers and consumers (Subsidiary)	Million Baht %	NA NA	490 0.3	5,302 2.1	27,457 11.6		RT-CH-410a.1
Suppliers that assessed Environmental, Social and Governance (ESG) Risks	% of procurement spend	80	99	99	99.70	GRI 414-1 GRI 308-1	
Procurement Spending by Geography • Domestic • Regional	% of procurement spend	 78 22	 78 22	 80 20	 80 20	GRI 204-1	
Non-compliance case through SCG Whistleblowing System	case	3	2	8	6	GRI 205-3	
Average Customer Satisfaction	%	85	88	87	87		

* The first third organizations contributed by SCGC are Alliance to End Plastic Waste (AEPW),The Federation of Thai Industries, and The Thai Chamber of Commerce.

** SCGC remains politically neutral, and set policy which does not give financial or any kind of supports to any political party, political group, or candidates in local, regional or national levels or person with political influence or lobbying or interest representation or similar and other categories (such e.g. election campaign, spending related to ballot measures, voting activities, or referendums). In addition, SCGC establishes definition and prohibition of facilitation payments in Anti-corruption policy which means any action that may influence or motivate an unfair decision making and treatment.

NA = Not Available

Tax to Government

Vietnam **16%** · Indonesia **0%** · Singapore **1%** · Cambodia **1%** · Others **1%**

Thailand **81%**

Legend:
- Thailand
- Vietnam
- Indonesia
- Singapore
- Cambodia
- Others
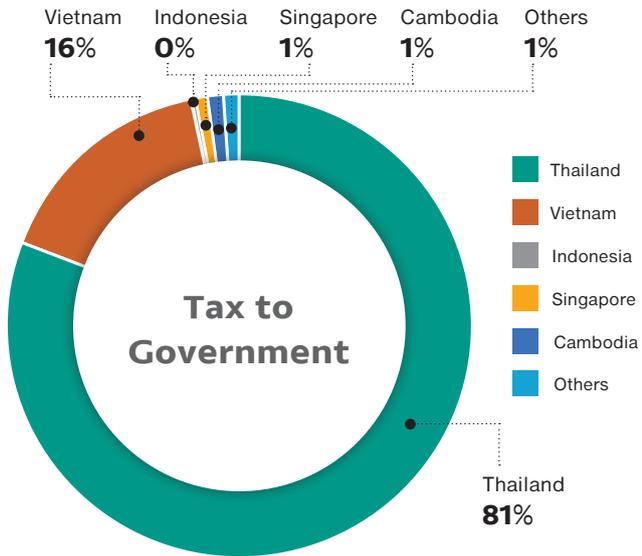
Tax to Government (GRI 207-4)
2,151 Million Baht

Thailand 1,735 Million Baht	**Cambodia** 19 Million Baht
Vietnam 348 Million Baht	**Others** 31 Million Baht
Indonesia 7 Million Baht	
Singapore 10 Million Baht	

Revenue from Sales

Indonesia **6%** · South East Asia **6%** · East Asia **4%** · Others **8%**

Thailand **55%** · Vietnam **10%** · South Asia **6%** · China **5%**

Legend:
- Thailand
- Vietnam
- South Asia
- China
- Indonesia
- South East Asia
- East Asia
- Others
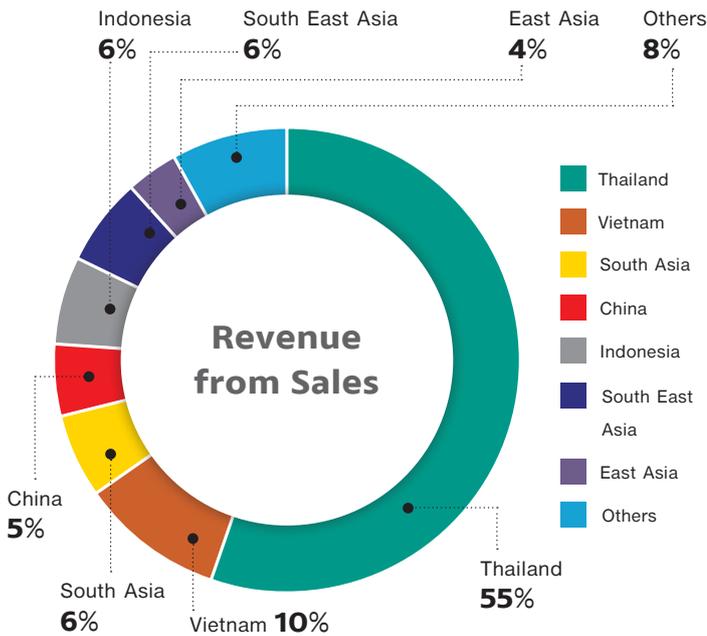
Revenue from Sales (GRI 201-1)
236,587 Million Baht

Thailand 131,286 Million Baht	**South East Asia** [1] 14,528 Million Baht
Vietnam 23,205 Million Baht	**East Asia** [2] 8,503 Million Baht
South Asia 14,027 Million Baht	**Others** 18,569 Million Baht
China 11,578 Million Baht	[1] Excluding Thailand Vietnam and Indonesia
Indonesia 14,891 Million Baht	[2] Excluding China

Tax Privilege

Vietnam **4%**

Thailand **96%**

Legend:
- Thailand
- Vietnam
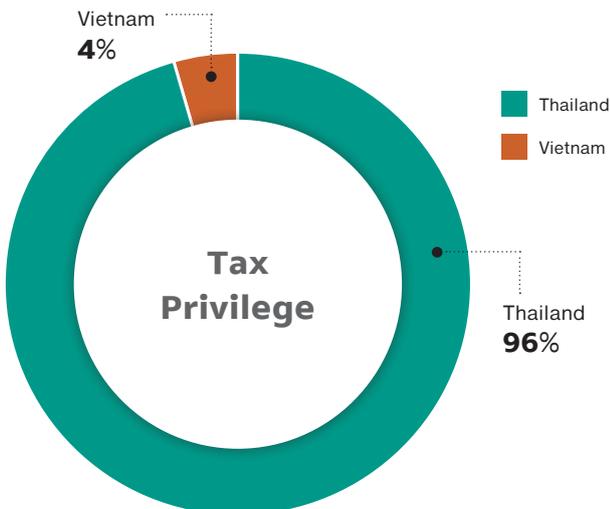
Tax Privilege (GRI 201-4)
451 Million Baht

Thailand 431 Million Baht
Vietnam 20 Million Baht

Environmental Performance

Production and Raw Material

Performance Data	Unit	2019	2020	2021*	2022	GRI Standards	SASB
Production	Thousand Tons	8,350	7,906	9,420	7,517		RT-CH-000.A
Raw Materials	Thousand Tons	6,750	6,519	8,948	8,586	GRI 301-1	
Non-renewable Materials	Thousand Tons	6,750	6,519	8,948	8,586	GRI 301-1	
Renewable Materials	Thousand Tons	0	0	0	0	GRI 301-1	
Recycled Materials	Thousand Tons	37	32	53	32	GRI 301-2	

* 1st year to incorporate environmental performance from abroad operation

Greenhouse Gas Emissions

Performance Data	Unit	2019	2020	2021*	2022	GRI Standards	SASB
GHGs Emission Scope 1 and 2	Million Ton CO_2e	4.32	4.02	4.73	3.62		
GHG Emission Scope 1**	Million Ton CO_2e	3.44	3.15	3.71	2.89	GRI 305-1	RT.CH-110a.1
'Biogenic CO_2 emissions	Million Ton CO_2e	0.00	0.00	0.00	0.00	GRI 305-1	
GHG Emission Scope 2**	Million Ton CO_2e	0.89	0.87	1.02	0.72	GRI 305-2	
- Market Base	Million Ton CO_2e	N/A	N/A	0.93	0.62		
- Location Base	Million Ton CO_2e	N/A	N/A	0.09	0.10		
GHG Emission (Scope 3)***	Million Ton CO_2e	N/A	N/A	5.04	4.73	GRI 305-3	
GHG emission intensity (scope 1+2)	Ton CO_2e/Ton Production	0.52	0.51	0.50	0.48	GRI 305-4	
GHG emission reduction	Thousand Ton CO_2e	18.02	29.78	46.21	52.99	GRI 305-5	
- Own Operation	Thousand Ton CO_2e	18.02	29.78	46.21	52.99		
- Offsets	Thousand Ton CO_2e	0.00	0.00	0.00	0.00		

*   1st year to incorporate environmental performance from abroad operation

**   Within SGS's limited assurance scope (Page 98-99)

*** Scope 3 greenhouse gas calculation and report are based on the GHG Protocol including Category 1 : Purchased Goods and Services, Category 3 : Fuel-and Energy-Related Activities, Category 4 : Upstream Transportation and Distribution, Category 5 : Waste Generated in Operations, Category 9 : Downstream Transportation and Distribution and Category 15 : Investments

Greenhouse Gas Emission (GRI 305-1, 305-2)

Million Ton CO_2e

| | GHG Emission (Scope 2)** | | GHG Emission (Scope 1)** |

Greenhouse Gas Emission Reduction (GRI 305-5)

Thousand Ton CO_2e
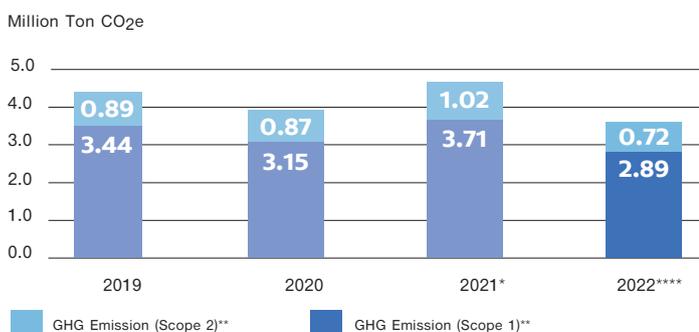
*   1st year to incorporate environmental performance from abroad operation

**** In 2022, there are shutdown activities in some plants, resulted in lower GHG emission than normal operation.
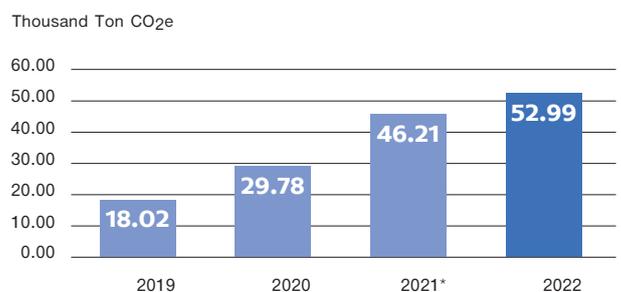
Energy Consumption

Performance Data	Unit	2019	2020	2021*	2022	GRI Standards	SASB
a) Total fuel consumption within the organization from non-renewable sources	Petajoules	60.12	56.96	68.45	57.47	GRI 302-1a	
b) Total fuel consumption within the organization from renewable sources	Petajoules	0.00	0.00	0.00	0.00	GRI 302-1b	
c) Total purchased Energy Consumption**	Petajoules	8.14	7.65	8.58	6.56	GRI 302-1c	
Non-Renewable							
- Electricity	Petajoules	5.89	5.63	6.28	5.12		RT-CH-130a.1.
- Heating	Petajoules	0.00	0.00	0.00	0.00		
- Cooling	Petajoules	0.00	0.00	0.00	0.00		
- Steam	Petajoules	2.25	2.02	2.30	1.44		
Renewable							
- Solar Cell	Petajoules	0.00	0.00	0.00	0.00		
d) Self Generate		0.01	0.01	0.20	0.27		RT-CH-130a.1.
Non-Renewable	Petajoules	0.00	0.00	0.19	0.26		
Renewable	Petajoules	0.01	0.01	0.01	0.01		
e) Total energy (electricity and heating & cooling) sold	Petajoules	0.00	0.00	0.00	0.82	GRI 302-1d	
- Electricity	Petajoules	0.00	0.00	0.00	0.00		
- Heating	Petajoules	0.00	0.00	0.00	0.00		
- Cooling	Petajoules	0.00	0.00	0.00	0.00		
- Steam	Petajoules	0.00	0.00	0.00	0.82		
Total energy consumption within the organization (a+b+c+d-e)**	Petajoules	68.27	64.62	77.24	63.48	GRI 302-1e	RT-CH-130a.1.
Energy Intensity	Gigajoules/ Ton Production	8.18	8.17	8.20	8.45	GRI 302-3	
Amount of reductions in energy consumption	Petajoules	0.37	0.55	0.66	0.80	GRI 302-4	

* 1st year to incorporate environmental performance from abroad operation

** Within SGS's limited assurance scope (Page 98-99)

Total Energy Consumption (GRI 302-1e), (SASB RT-CH-130a.1)

Petajoules

Amount of Reductions in Energy Consumption (GRI 302-4)

Petajoules

Renewable ■ Non-Renewable

* 1st year to incorporate environmental performance from abroad operation

Water Withdrawal and Effluent Quality

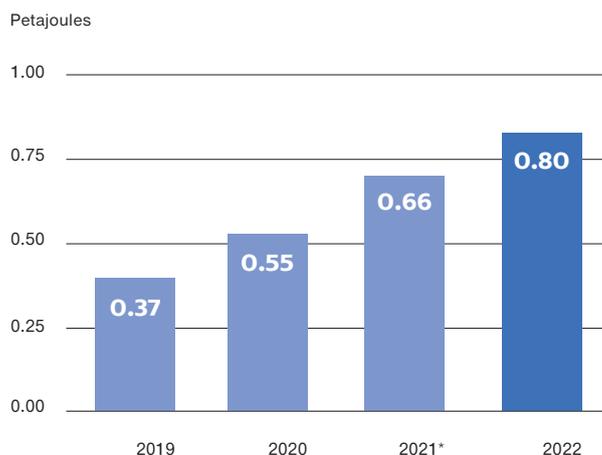| Performance Data	Unit	2019	2020	2021*	2021 Area with Water Stress*	2022	2022 Area with Water Stress	GRI Standards	SASB
Water Withdrawal									
Water Withdrawal by Source									
Surface water**	Million Cubic Meters	0.00						GRI 303-3	RT-CH-140a.1
• Freshwater TDS ≤ 1,000 mg/l			0.00	0.00	0.00	0.00	0.00		
• Other water TDS > 1,000 mg/l			0.00	0.00	0.00	0.00	0.00		
Groundwater**	Million Cubic Meters	0.00				0.00	0.00	GRI 303-3	RT-CH-140a.1
• Freshwater TDS ≤ 1,000 mg/l			0.00	0.48	0.00	0.37	0.00		
• Other water TDS > 1,000 mg/l			0.00	0.00	0.00	0.00	0.00		
Third-party water (total)**	Million Cubic Meters	28.07	0.00	0.00	0.00	0.00	0.00	GRI 303-3	RT-CH-140a.1
• Freshwater TDS ≤ 1,000 mg/l			26.07	30.31	0.00	23.73	0.00		
• Other water TDS > 1,000 mg/l			0.00	0.00	0.00	0.00	0.00		
Total Water Withdrawal**	Million Cubic Meters	28.07	26.07	30.79		24.10			
Recycled Water**	Million Cubic Meters	1.43	1.27	1.46		1.64			
	%	5.1	4.9	4.9		6.8			
Water Discharge									
Water Discharge by Destination									
• Surface water	Million Cubic Meters	3.73	4.62	5.62	0.00	5.15	0.00	GRI 303-4	
• Ground water	Million Cubic Meters	0.00	0.00	0.00	0.00	0.00	0.00	GRI 303-4	
• Sea water	Million Cubic Meters	NA	NA	NA	NA	0.15	0.00		
• Third-party water (total)	Million Cubic Meters	0.00	0.03	0.06	0.00	0.02	0.00	GRI 303-4	
---Third-party water sent for use to other organizations	Million Cubic Meters	0.00	0.00	0.00	0.00	0.00	0.00		
Total Water Discharge**	Million Cubic Meters	3.73	4.65	5.69	0.00	5.31	0.10	GRI 303-4	
Water Discharge by Freshwater and Other Water									
• Freshwater TDS ≤ 1,000 mg/l	Million Cubic Meters	3.73	1.05	0.57	0.00	1.11	0.00	GRI 303-4	
• Other water TDS > 1,000 mg/l	Million Cubic Meters	0.00	3.60	5.12	0.00	4.20	0.00		
BOD	Tons	17	20	19	0	29	0		
COD	Tons	194	241	275	0	225	0		
TSS	Tons	15	41	43	0	42	0		
Water Consumption	Million Cubic Meters	24.34	21.42	25.10		18.79		GRI 303-5	
Water Consumption Intensity	Cubic Meters/Ton	2.91	2.71	2.66		2.50			
Number of violations of legal environmental obligations/ regulations	Number of Cases	0	0	0	0	0	0	GRI 2-27	RT-CH-140a.2

* 1st year to incorporate environmental performance from abroad operation   ** Within SGS's limited assurance scope (Page 98-99)   NA = Not Available

Water Withdrawal (GRI 303-3)

Million Cubic Meters
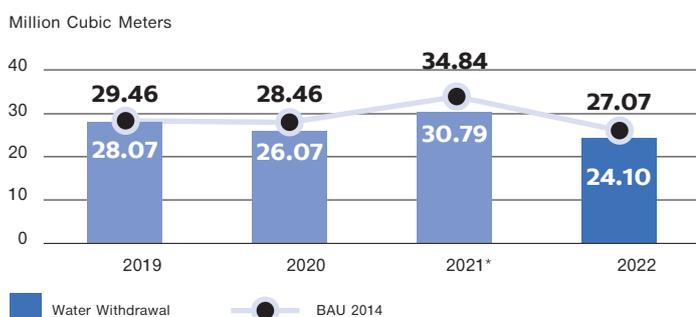
* 1st year to incorporate environmental performance from abroad operation

Water Consumption Intensity

Cubic Meters/ton product
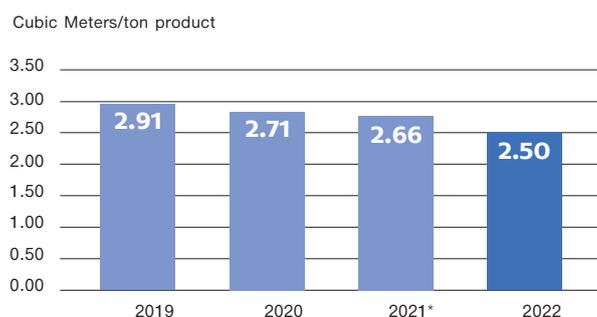
Waste Management

Performance Data	Unit	2019	2020	2021 Within SCGC	2021 Outside SCGC	2022* Within SCGC	2022* Outside SCGC	GRI Standards	SASB
Hazardous Waste Generation	Tons	6,178	11,120		6,559		10,835	GRI 306-3	RT-CH-150a.1
Hazardous Waste Management				Within SCGC	Outside SCGC	Within SCGC	Outside SCGC		
Diverted from Disposal**		5,884	10,950	5	1,895	0	7,169	GRI 306-4	RT-CH-150a.1
• Reuse	Tons	NA	NA	0	0	0	0		
• Recycled	Tons	NA	NA	5	1,782	0	7,084		
• Other recovery	Tons	NA	NA	0	113	0	85		
Directed to Disposal**		289	136	0	4,407	0	3,626	GRI 306-5	
• Incinerated with energy recovery	Tons	NA	NA	0	4,391	0	3,435		
• Incinerated without energy recovery	Tons	NA	NA	0	16	0	190		
• Other disposal	Tons	NA	NA	0	0	0	0		
• Landfilled	Tons	0	0	0	0	0	0.55		
Hazardous waste in the storage at the end of the year	Tons	155	180	225		192			
Non-Hazardous Waste Generation	Tons	23,744	23,783	19,978		17,401		GRI 306-3	RT-CH-150a.1
Non-Hazardous Waste Management				Within SCGC	Outside SCGC	Within SCGC	Outside SCGC		
Diverted from Disposal**		23,390	24,702	134	19,034	150	16,345	GRI 306-4	RT-CH-150a.1
• Reuse	Tons	NA	NA	0	0	0	26		
• Recycled	Tons	NA	NA	134	18,921	150	16,319		
• Other recovery	Tons	NA	NA	0	113	0	0		
Directed to Disposal**		846	93	0	992	0	800		
• Incinerated with energy recovery	Tons	NA	NA	0	696	0	262	GRI 306-5	
• Incinerated without energy recovery	Tons	NA	NA	0	296	0	197		
• Otherdisposal	Tons	NA	NA	0	0	0	0		
• Landfilled	Tons	NA	NA	0	0	0	341		
Non-Hazardous waste in the storage at the end of the year	Tons	645	699	621		749			
Total Waste Generated and Being Managed	Tons	30,409	35,881	26,354		28,091			
• Reuse /Recycled /Other recovery /Incinerated with energy recovery	Tons	29,274	35,653	139	20,816	150	23,514		
• Incinerated without energy recovery/ Other Disposal/Landfilled	Tons	1,135	229	0	5,398	0	4,427		

* 1st year to incorporate environmental performance from abroad operation

** Within SGS's limited assurance scope (Page 98-99)

Hazardous Waste Management (GRI 306-4, 306-5)
- 34% Diverted from Disposal
- 66% Directed to Disposal

Non-Hazardous Waste Management (GRI 306-4, 306-5)
- 95% Diverted from Disposal
- 5% Directed to Disposal

Legend:
- Diverted from Disposal
- Directed to Disposal
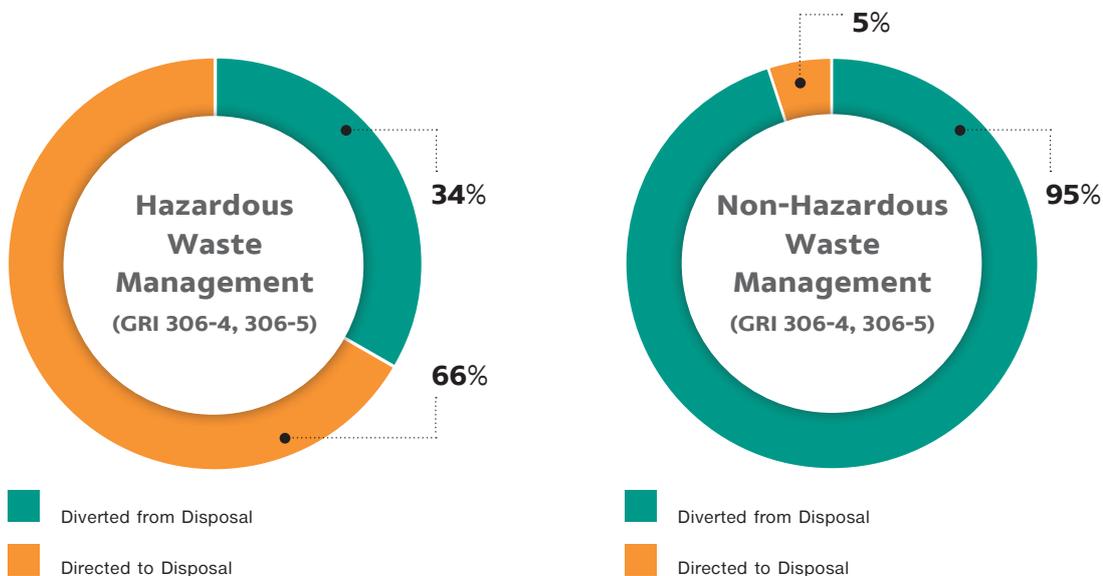
Air Emission

Performance Data	Unit	2019	2020	2021	2022*	GRI Standards	SASB
Oxides of Nitrogen**	Thousand Tons	1.48	1.29	1.52	1.36	GRI 305-7	
Oxides of Sulfur**	Thousand Tons	0.01	0.01	0.01	0.03	GRI 305-7	
Dust**	Thousand Tons	0.02	0.02	0.01	0.04	GRI 305-7	
VOCs***	Thousand Tons	0.63	0.60	0.66	0.55	GRI 305-7	

* 1st year to incorporate environmental performance from abroad operation

** Within SGS's limited assurance scope (Page 98-99)

*** Thailand operation only and in 2022, the calculation method of volatile organic compounds from flare was updated based on of the Best Practice Guideline for controlling and reducing VOCs Emissions from flare utilization, the Petroleum Institute of Thailand

Environmental Expenditures and Benefits/Violations of Legal Obligations and Regulations

Performance Data	Unit	2019	2020	2021	2022	GRI Standards	SASB
Operating Expenses – Environmental	Million Baht	747	768	717	878		
Capital Investment – Environmental	Million Baht	255	110	276	172		
Total Expenses – Environmental (Capital Investment + Operating Expenses)	Million Baht	1,002	879	993	1,050		
Savings, cost avoidance and tax incentives linked to environment investment	Million Baht	158	223	237	520		
Number of violations of legal environmental obligations/ regulation	No. of Cases	0	0	0	0	GRI 307-1 GRI 2-27	

Social Performance

Health and Safety

Performance Data	Unit	2019	2020	2021*	2022	GRI Standards	SASB
From Workplace							
Workers Covered by an Occupational Health and Safety Management System						GRI 403-8	
Covered by an occupational health and safety management system	Person	NA	NA	NA	6,516		
	%	NA	NA	NA	100		
Covered by such a system that has been internally audited	Person	NA	NA	NA	6,516		
	%	NA	NA	NA	100		
Covered by such a system that has been audited or certified by an external party	Person	NA	NA	NA	6,516		
	%	NA	NA	NA	100		
Hours Worked**	Million Hours Worked						
• Employee		15.03	14.64	17.49	15.71	GRI 403-9	
• Contractor		24.76	24.09	21.76	20.92		
Total Recordable Work-Related Injury and Occupational Illness & Disease Rate	Cases/1,000,000 Hours Worked						
• Employee**		0.133	0.205	0.114	0.064		RT-CH-320a.1
• Contractor		0.121	0.208	0.414	0.096		
Fatality Work-Related Injury and Occupational Illness & Disease Rate	Cases/1,000,000 Hours Worked						
• Employee**		0.000	0.000	0.000	0.000		RT-CH-320a.1
• Contractor		0.000	0.000	0.138	0.000		
Total Number of Recordable Work-Related Injury**	Cases						
• Employee		2	3	2	1	GRI 403-9	
• Contractor		3	5	9	2		
Total Recordable Work-Related Injury Rate**	Cases/1,000,000 Hours Worked						
• Employee		0.133	0.205	0.114	0.064	GRI 403-9	
• Contractor		0.121	0.208	0.414	0.096		
Number of Fatality Work-Related Injury**	Cases						
• Employee (Male : Female)		0 : 0	0 : 0	0 : 0	0 : 0	GRI 403-9	
• Contractor (Male : Female)		0 : 0	0 : 0	3 : 0	0 : 0		
Fatality Work-Related Injury Rate**	Cases/1,000,000 Hours Worked					GRI 403-9	RT-CH-320a.1
• Employee		0.000	0.000	0.000	0.000		
• Contractor		0.000	0.000	0.138	0.000		
Number of High-Consequence Work-Related Injury**	Cases						
• Employee		NA	0	0	0	GRI 403-9	
• Contractor		NA	0	0	1		
High-Consequence Work-Related Injury Rate**	Cases/1,000,000 Hours Worked						
• Employee		NA	0.000	0.000	0.000	GRI 403-9	
• Contractor		NA	0.000	0.000	0.048		
Lost Time Injury Frequency Rate**	Cases/1,000,000 Hours Worked						
• Employee		0.000	0.000	0.000	0.000		
• Contractor		0.000	0.000	0.092	0.096		
Severity Work-Related Injury Rate	Cases/1,000,000 Hours Worked						
• Employee		0.000	0.000	0.000	0.000		
• Contractor		0.000	0.000	2.390	11.997		
Total Number of Recordable Occupational Illness & Disease** (Only Thailand Operations)	Cases						
• Employee		0	0	0	0	GRI 403-10	
• Contractor		0	0	0	0		

Performance Data	Unit	2019	2020	2021*	2022	GRI Standards	SASB
From Workplace							
Occupational Illness Frequency Rate (Only Thailand Operations) • Employee** • Contractor	Cases/1,000,000 Hours Worked	0.000 0.000	0.000 0.000	0.000 0.000	0.000 0.000		
Number of Fatality Occupational Illness & Disease (Only Thailand Operations) • Employee** • Contractor	Cases	0 0	0 0	0 0	0 0	GRI 403-10	
Process Safety Incidents Count (PSIC)	Cases	NA	0	0	0		RT-CH-540a.1
Process Safety Total Incident Rate (PSTIR)	Cases/200,000 Hours Worked	NA	0	0	0		RT-CH-540a.1
Process Safety Incident Severity Rate (PSISR)	Cases/200,000 Hours Worked	NA	0	0	0		RT-CH-540a.1
From Travelling and Transportation							
Number of Fatality Work-Related Injury** • Employee (Male : Female) • Direct Transportation Contractor (Male : Female) • Other Transportation Contractor (Male : Female)	Cases	0 : 0 0 : 0 0 : 0	0 : 0 0 : 0 0 : 0	0 : 0 0 : 0 0 : 0	0 : 0 0 : 0 0 : 0	GRI 403-9	
Number of Transport Incidents	Cases	1	2	1	0		RT-CH-540a.2
From Workplace, Travelling and Transportation							
Number of Fatality Work-Related Injury** • Employee (Male : Female) • Contractor (Male : Female)	Cases	0 : 0 0 : 0	0 : 0 0 : 0	0 : 0 3 : 0	0 : 0 0 : 0	GRI 403-9	
Others							
Product that have under gone a Hazard Assessment	%	NA	100	100	100	GRI 416-1	RT-CH-410b.1
Revenue from Products that contain Globally Harmonized System of Classification andLabeling of Chemicals (GHS)	%	NA	100	100	100		RT-CH-410b.1

* 1st year to incorporate environmental performance from abroad operation

** Within SGS's limited assurance scope (Page 98-99)

NA = Not Available

Total Recordable Work-Related Injury and Occupational Illness & Disease Rate (RT-CH-320a.1)

Cases/1,000,000 Hours Worked

	Employee	Contractor
2019	0.133	0.121
2020	0.205	0.208
2021*	0.114	0.414
2022	0.064	0.096

■ Employee   ■ Contractor
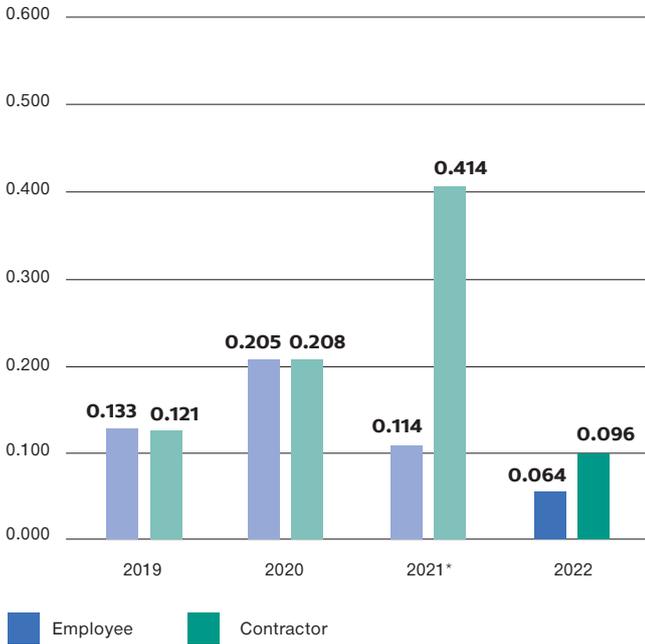
Severity Work-Related Injury Rate

Days/1,000,000 Hours Worked
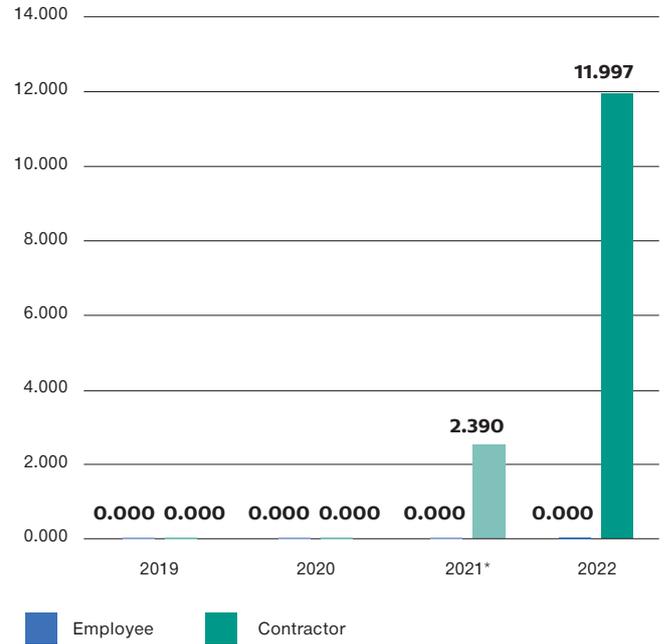
	Employee	Contractor
2019	0.000	0.000
2020	0.000	0.000
2021*	0.000	2.390
2022	0.000	11.997

■ Employee   ■ Contractor

Number of Fatality Work-Related Injury

Cases

	Workplace Contractor
2019	
2020	
2021*	3
2022	

■ Employee   ■ Workplace Contractor
■ Other Transportation Contractor   ■ Direct Transportation Contractor
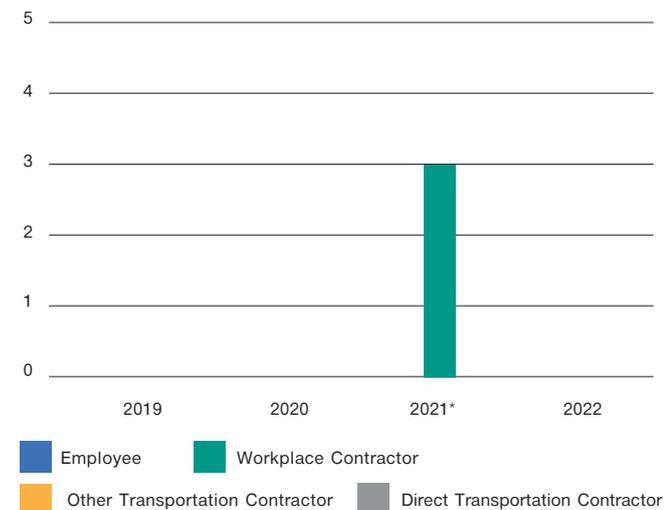
* 1ˢᵗ year to incorporate environmental performance from abroad operation

Labor and Social Development

Performance Data	Unit	2019	2020	2021	2022	GRI Standards	SASB
Number of employees	Persons	5,784	5,856	6,168	6,516	GRI 102-7	
Relevant ratio of the entry level wage by gender at significant locations of operation to the minimum wage						GRI 202-1	
• Female	ratio	NA	NA	NA	2.17		
• Male	ratio	NA	NA	NA	2.17		
Proportion of local senior management*	%	2.4	1.9	1.7	6.0	GRI 202-2	
Number of new employees hire	Persons	185	36	152	655		
• Percentage of total employees	%	21.4	3.3	11.1	10.1		
• by Gender (Female : Male)	%	20 : 80	8 : 92	20 : 80	29 : 71	GRI 401-1a	
• by Employee level (Management level : Other level)	%	0 : 100	0 : 100	0 : 100	0.2 : 99.8		
• by Age group (under 30 yr : 30 - 50 yr : over 50 yr)	%	84 : 16 : 0	94 : 6 : 0	90 : 10 : 0	77 : 23 : 0		
Voluntary employee turnover	Persons	173	151	128	309		
• Percentage of total employees	%	3.5	3.6	3.6	4.7		
• by Gender (Female : Male)	%	27 : 73	25 : 75	23 : 77	15 : 85	GRI 401-1b	
• by Employee level (Management level : Other level)	%	2 : 98	6 : 94	3 : 97	2 : 98		
• by Age group (under 30 yr : 30 - 50 yr : over 50 yr)	%	45 : 54 : 1	25 : 55 : 20	39 : 57 : 4	46 : 52 : 2		
Total employee turnover	Persons	285	174	156	336		
• Percentage of total employees	%	5.8	3.6	3.3	5.2		
• by Gender (Female : Male)	%	23 : 77	23 : 77	23 : 77	16 : 84	GRI 401-1b	
• by Employee level (Management level : Other level)	%	7 : 93	6 : 94	8 : 92	2 : 98		
• by Age group (under 30 yr : 30 - 50 yr : over 50 yr)	%	28 : 51 : 21	22 : 48 : 30	33 : 47 : 20	45 : 52 : 3		
Return to Work after Parental Leave**						GRI 401-3	
• Number of employees taken parental leave	Persons	18	13	16	40		
• Number of employees returnedto work after parental leave	Persons	18	13	16	39		
Female share of total workforce	%	21.2	20.3	20.5	20.6	GRI 405-1	
Female in all management positions	%	21.3	21.2	23.0	25.4		
Female in junior management positions	%	22.7	22.7	24.4	26.5		
Female in top management positions	%	11.7	13.3	16.7	19.5		
Female in management positions in revenue-generating functions***	%	10.0	9.8	11.9	22.7	GRI 405-1	
Number of employees with disability****	Persons	1	2	2	1	GRI 405-1	
Total number of incidents of discrimination	case	NA	NA	NA	0	GRI 406-1	
Percentage of security personnel who have received formal training in the organization's human rights policies	%	NA	NA	NA	100		
Employees represented by an independent trade union or covered by collective bargaining agreements*****	%	99.6	100	100	93.5	GRI 2-30	
Number of positions filled by internal candidates (Rotation/Promotion)	Persons	467	194	432	1,464		
• Percentage of total employees	%	9.5	4.1	9	22		
• by Gender (Female : Male)	%	25 : 75	20 : 80	26 : 74	32 : 68		
• by Employee level (Management level : Other level)	%	9 : 91	12 : 88	16 : 84	12 : 88		
• by Age group (under 30 yr : 30 - 50 yr : over 50 yr)	%	28 : 68 : 4	23 : 73 : 4	28 : 69 : 3	28 : 66 : 6		
Average hiring cost per employee	Baht/Person	80,600	191,200	72,000	55,300		
Employee engagement level	%	NA	69	58	65		
• by Gender (Female : Male)	%	NA	62 : 71	52 : 60	53 : 68		
• by Employee level (Management level : Other level)	%	NA	78 : 67	69 : 57	71 : 65		
• by Service year (0-5 yr/over 5-20 yr/over 20 yr)	%	NA	66 : 67 : 76	52 : 55 : 69	62 : 63 : 72		
Employee engagement level by ethnic group of employees (Thai : Others)	%	NA	69 : 66	NA	64 : 77		

Performance Data	Unit	2019	2020	2021	2022	GRI Standards	SASB
Proportion of Absence by Type						GRI 403-2	
• Sick Leave	%	15.55	13.20	11.84	20.02		
• Work-related leave	%	0	0	0	0.46		
• Others	%	99.30	99.32	99.47	65.18		
Remuneration of Female to Male							
Ratio of average salary of female to male (Executive Level) (base salary only)	ratio	1.130	1.285	1.148	1.102	GRI 405-2	
Ratio of average salary of female to male (Executive Level) (base salary + other cash incentives)******	ratio	1.117	1.216	1.181	1.015	GRI 405-2	
Ratio of average salary of female to male (Management Level) (base salary only)******	ratio	0.945	0.971	1.045	0.935	GRI 405-2	
Ratio of average salary of female to male (Management Level) (base salary + other cash incentives)******	ratio	0.932	0.990	1.011	0.906	GRI 405-2	
Ratio of average salary of female to male (Non-management Level) (base salary only)******	ratio	1.256	1.224	1.301	1.201	GRI 405-2	
Ratio of average salary of female to male (Non-management Level) (base salary + other cash incentives)******	ratio	1.000	1.030	1.049	0.985	GRI 405-2	
Human Development							
Average hours of training and development	Hours/Person	76	85	51	120	GRI 404-1	
• Mandatory	Hours/Person	NA	NA	NA	80		
• Non-mandatory	Hours/Person	NA	NA	NA	40		
Percentage of employees receiving regular performance and career development reviews						GRI 404-3	
• by Gender (Female : Male)	%	NA	NA	NA	100 : 100		
• by Employee level (Management level : Other level)	%	NA	NA	NA	100 : 100		
• by Age group (under 30 yr : 30 - 50 yr : over 50 yr)	%	NA	NA	NA	100 : 100 : 100		
Average amount spent on training and development	Baht/Person	88,680	62,200	10,880	32,900		
Social Contribution							
Contribution for social and community development	Million Baht	NA	NA	14.79	25.60	GRI 201-1	
Employee volunteering during paid working hours	Million Baht	NA	NA	3.84	6.30		
In-kindgiving: products or services donations, projects/ partnerships or similar	Million Baht	NA	NA	NA	20.00		
Management overheads related to CSR activity	Million Baht	NA	NA	38.93	36.15		

*   Calculate from percentage of local Management Level over total management staff

**   Under Thai laws, only female employees can take parental leave

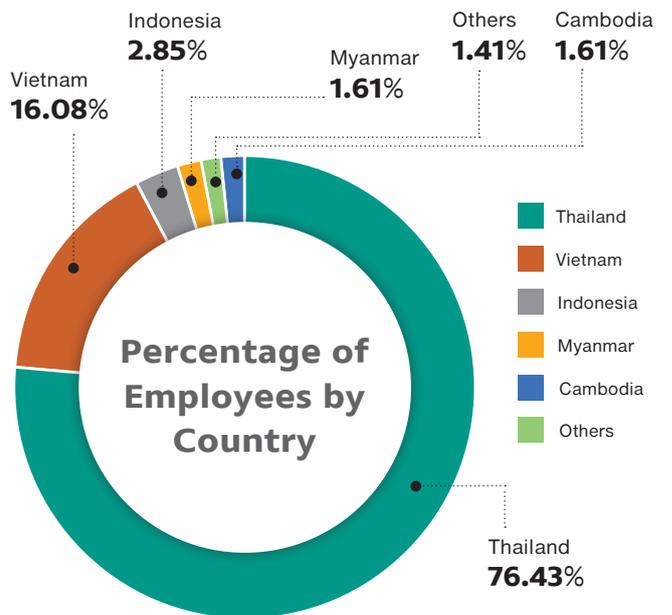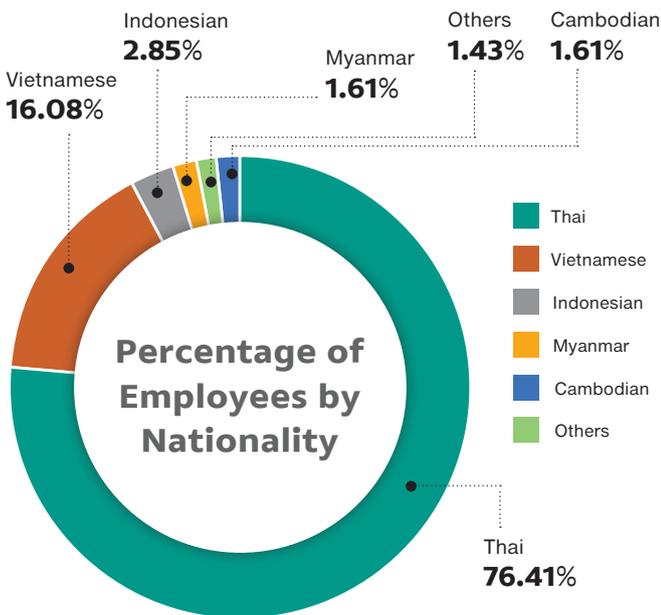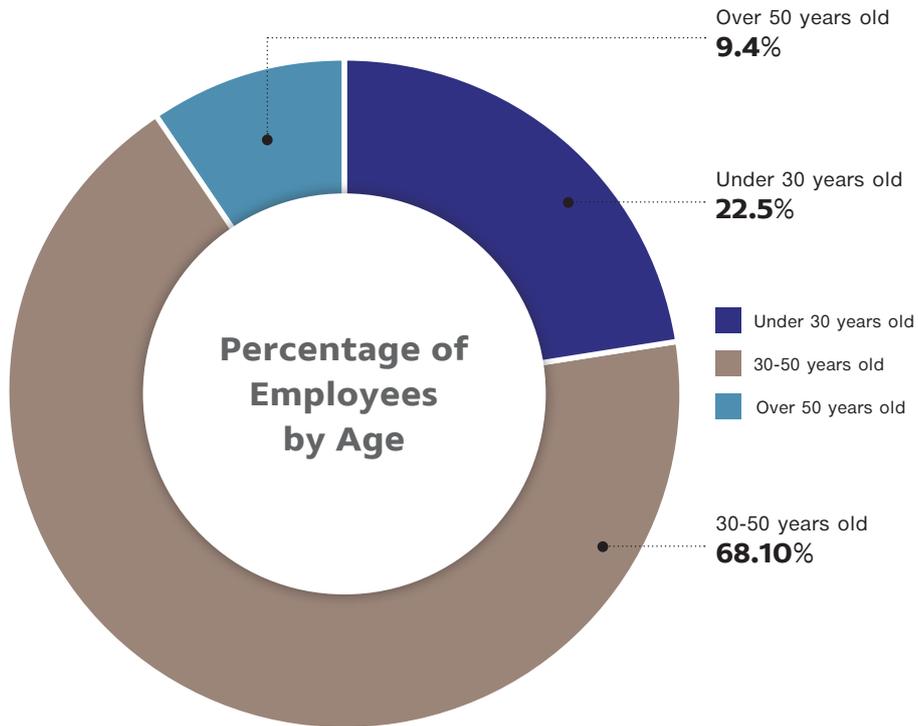***   Revenue-generating functions e.g. marketing, sales, production

****   Visual and physical impairment and movement disability or other, e.g.hearing impairment, mental disability, communication disability

***** Employee joining trade union or working with companies covered by Welfare Committee

****** Within SGS's limited assurance scope (Page 98-99)

NA = Not Available

Percentage of Employees by Age

Over 50 years old
9.4%

Under 30 years old
22.5%

30-50 years old
68.10%

Legend:
- Under 30 years old
- 30-50 years old
- Over 50 years old

Percentage of Employees by Nationality

Vietnamese
16.08%

Indonesian
2.85%

Myanmar
1.61%

Others
1.43%

Cambodian
1.61%

Thai
76.41%

Legend:
- Thai
- Vietnamese
- Indonesian
- Myanmar
- Cambodian
- Others

Percentage of Employees by Country

Vietnam
16.08%

Indonesia
2.85%

Myanmar
1.61%

Others
1.41%

Cambodia
1.61%

Thailand
76.43%

Legend:
- Thailand
- Vietnam
- Indonesia
- Myanmar
- Cambodia
- Others

Percentage of Management Level by Nationality

Vietnamese **0.75%**

Cambodian **0.19%**

Others **5.26%**

Thai **93.80%**

Legend:
- Thai
- Vietnamese
- Cambodian
- Others

Percentage of New Employee Hired by Nationality

Vietnamese **37.71%**

Indonesian **1.83%**

Myanmar **0.15%**

Cambodian **1.98%**

Thai **58.32%**

Legend:
- Thai
- Vietnamese
- Indonesian
- Myanmar
- Cambodian

Percentage of Employee Termination by Nationality

Vietnamese **37.50%**

Indonesian **3.27%**

Myanmar **2.98%**

Cambodian **4.17%**

Thai **51.79%**

Legend:
- Thai
- Vietnamese
- Indonesian
- Myanmar
- Cambodian

Subsidiaries included in Sustainability Report 2022* (Thailand)

	Business / Company	Production	Raw Materials: Total Raw Material	Raw Materials: Raw Mat Recycled	Raw Materials: Raw Mat Renewable	Energy: Thermal	Energy: Electrical	Air: Dust	Air: SO$_x$	Air: NO$_x$	Air: GHG	Air: VOCs	Water: Water Withdrawal	Water: Recycled Water	Water: BOD	Water: COD	Water: TSS	Waste	Safety	Occupational Illness
	Company																			
1	SCG Chemicals Public Company Limited																		✓	✓
2	Rayong Engineering & Plant Service Co., Ltd.																		✓	✓
3	Protech Outsourcing Co., Ltd.																		✓	✓
4	Repco Maintenance Co., Ltd.																		✓	✓
5	Texplore Co., Ltd.																		✓	✓
6	Vina SCG Chemicals Co., Ltd.																			
7	WTE Company Limited																			
8	SMH Co., Ltd.																			
9	Total Plant Service Co., Ltd.																			
10	Rayong Pipeline Co., Ltd.																		✓	✓
11	Kation Power Co., Ltd.																			
12	Flowlab & Service Co., Ltd.																		✓	✓
13	SENFI Ventures Company Limited																			
14	Thai Polyethylene Co., Ltd.	✓	✓	✓	✓	✓	✓	NR	NR	NR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15	RIL 1996 Co., Ltd.	NR	NR	NR	NR	NR	✓	NR	NR	NR	✓	NR	NR	NR	✓	✓	✓	✓	✓	✓
16	Thai Plastic and Chemicals Public Company Limited	✓	✓	✓	✓	✓	✓	NR	NR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17	TPC Paste Resin Co., Ltd.	✓	✓	✓	✓	✓	✓	NR	NR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
18	Nawaplastic Industries Co., Ltd. (Rayong/ Saraburi)	✓	✓	✓	✓	✓	✓	NR	NR	NR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19	Nawa Intertech Co., Ltd.	✓	✓	✓	✓	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	✓	✓	✓
20	SCG ICO Polymers Company Limited	✓	✓	✓	✓	✓	✓	NR	NR	NR	✓	NR	✓	✓	NR	NR	NR	✓	✓	✓
21	Map Ta Phut Tank Terminal Co., Ltd.	NR	NR	NR	NR	✓	✓	NR	NR	NR	✓	NR	✓	NR	NR	NR	NR	✓	✓	✓
22	Rayong Olefins Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
23	Map Ta Phut Olefins Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NR	✓	✓	✓
24	Circular Plas Company Limited																			

NR = Non Relevance (The data is not relevant or has no significance to the overall performance of SCG or is not included this year)

☐ Office/Investment/Sales/Service where the collection data is not necessary

☐ Greenfield (less than 3 years) or newly acquired companies (less than 4 years) is not required to incorporate data into SCG

Subsidiaries Included in Sustainability Report 2022* (Abroad)

Business / Company	Country	Production	Total Raw Material	Raw Mat Recycled	Raw Mat Renewable	Thermal	Electrical	Dust	SO_X	NO_X	GHG	VOCs	Water Withdrawal	Recycled Water	BOD	COD	TSS	Waste	Safety	Occupational Illness
Company																			
1 Recycling Holding Volendam B.V.	The Netherlands																			
2 Kras Investments B.V.	The Netherlands																			
3 Krasgroup Vastgoed B.V.	The Netherlands																			
4 Kras Belgium B.V.	Belgium																			
5 Kras Asia Ltd.	Hongkong																			
6 Sirplaste - Sociedade Industrial de Recuperados de Plástico, S.A.	Portugal																			
7 REPCO NEX (Vietnam) Company Limited	Vietnam																			
8 Long Son Petrochemicals Co., Ltd.	Vietnam																			
9 Norner AS	Norway																			
10 Norner Research AS	Norway																			
11 PT TPC Indo Plastic and Chemicals	Indonesia	✓	✓	✓	✓	✓	✓	NR	NR	NR	✓	NR	✓	✓	NR	NR	NR	NR	✓	NR
12 Chemtech Co., Ltd.	Vietnam	✓	✓	✓	✓	NR	✓	NR	NR	NR	✓	NR	✓	✓	NR	NR	NR	NR	✓	NR
13 Xplore S.R.L. (Formerly: HTExplore S.R.L.)	Italy																			
14 SENFI UK Limited	UK																			
15 Grand Nawaplastic Myanmar Co., Ltd.	Myanmar	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
16 Viet-Thai Plastchem Co., Ltd.	Vietnam	✓	✓	✓	✓	✓	✓	NR	NR	NR	✓	NR	✓	✓	NR	NR	NR	NR	✓	NR
17 TPC Vina Plastic and Chemical Corporation Ltd.	Vietnam	✓	✓	✓	✓	✓	✓	NR	NR	NR	✓	NR	✓	✓	NR	NR	NR	NR	✓	NR
18 Nawaplastic (Cambodia) Co., Ltd.	Cambodia	✓	✓	✓	✓	✓	✓	NR	NR	NR	✓	NR	✓	✓	NR	NR	NR	NR	✓	NR
19 Binh Minh Plastics Joint Stock Company	Vietnam	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	✓	NR
20 North Binh Minh Plastics Limited Company	Vietnam																			
21 PT Berjaya Nawaplastic Indonesia	Indonesia																			
22 SCG Chemicals Trading Singapore Pte. Ltd.	Singapore																			
23 SCG Chemicals (Singapore) Pte. Ltd.	Singapore																			
24 Tuban Petrochemicals Pte. Ltd.	Singapore																			
25 Hexagon International, Inc.	USA																			
26 SENFI Norway AS	Norway																			
27 SCGN AS	Norway																			
28 SENFI Swiss GmbH	Switzerland																			
29 PT Nusantara Polymer Solutions	Indonesia																			
30 Kras Gemert B.V.	The Netherlands																			
31 Kras Hoek van Holland B.V.	The Netherlands																			
32 Kras Polymers B.V.	The Netherlands																			
33 Kras Recycling B.V.	The Netherlands																			
34 REKS LLC	Kosovo																			

NR = Non Relevance (The data is not relevant or has no significance to the overall performance of SCG or is not included this year)

Office/Investment/Sales/Service where the collection data is not necessary

Greenfield (less than 3 years) or newly acquired companies (less than 4 years) is not required to incorporate data into SCG

SGS

ASSURANCE STATEMENT

SGS (THAILAND) LIMITED'S REPORT ON SUSTAINABILITY ACTIVITIES IN
SCG CHEMICALS PUBLIC COMPANY LIMITED'S FOR 2022

NATURE OF THE ASSURANCE/VERIFICATION
SGS (THAILAND) LTD. (hereinafter referred to as SGS) was commissioned by SCG Chemicals Public Company Limited (hereinafter referred to as SCGC) to conduct an independent assurance of the SCGC Sustainability Report 2022 (hereinafter referred to as the Report) for the year ended December 31, 2022 in accordance with the reporting criteria.

INTENDED USERS OF THIS ASSURANCE STATEMENT
This Assurance Statement is provided with the intention of informing all SCGC's Stakeholders.

RESPONSIBILITIES
The information in the Report and its presentation are the responsibility of the directors or governing body (as applicable) and the management of SCGC. SGS has not been involved in the preparation of any of the material included in the Report. Our responsibility is to express an opinion on the text, data, graphs and statements within the scope of verification with the intention to inform all SCGC's stakeholders.

ASSURANCE STANDARDS, TYPE AND LEVEL OF ASSURANCE
The SGS ESG & Sustainability Report Assurance protocols used to conduct assurance are based upon internationally recognised assurance guidance and standards. Assurance has been conducted at a limited level of level of scrutiny.

The assurance of this report has been conducted according to the following Assurance Standards:
- ISAE 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information
- ISAE 3410, Assurance Engagements on Greenhouse Gas Statements

SCOPE OF ASSURANCE AND REPORTING CRITERIA
The scope of the assurance included evaluation of quality, accuracy and reliability of specified performance information as detailed below and evaluation of adherence to the following reporting criteria:
- GRI Standards 2021 (in Accordance with)
- WBCSD/WRI Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard
- Sustainability Accounting Standards Board (SASB)

SPECIFIED PERFORMANCE INFORMATION AND DISCLOSURES INCLUDED IN SCOPE
SCGC's Sustainability Report are adequately in line with the Sustainability Reporting Standard and fulfills all the required content and quality criteria for the identified aspects listed as below;
a) Environmental dimension performance indicators expressed numerically or in descriptive text
   o Energy consumption (petajoules)
   o Greenhouse gas emissions scope 1 & 2 (million tons)
   o Water withdrawal (million cubic meters) and recycled water (million cubic meters)
   o Water discharge (million cubic meters)
   o Water discharge by quality (BOD, COD and TSS (Ton))
   o Total weight of waste by type and disposal method (thousand tons)
   o Oxides of Nitrogen (NOx), Oxides of Sulfur (SOx), dust and other significant air emissions data including VOCs (tons)
b) Social dimension performance indicators or in descriptive text
   o Number and rate of fatality work-related Injury, high-consequence work-related Injury, lost time injury, recordable work-related Injury and number of hours worked
   o Number of fatality work-related occupational illness & disease and occupational illness & disease frequency rate
   o Ratio of the basic salary and remuneration of women to men and gender pay gap

ASSURANCE METHODOLOGY

SGS's assurance engagements are carried out in accordance with assurance procedure.

The assurance comprised a combination of

- SCGC's Management interviews, including the Sustainable Development team with responsibility for performance in the areas within scope
- Interview with data owners &/or managers responsible for internal data collection and reporting databases
- Document review of relevant systems, policies, and procedures where available
- Understanding, analysing and sample testing the key data collection, aggregation, validation and reporting systems, processes, procedures, and controls
- Sampling evidence to confirm the reliability of the selected reporting standards, selected 2 sites for onsite visit as below:
  - ○ Thai Polyethylene Co., Ltd.
  - ○ TPC Vina Plastic and Chemical Corporation Ltd.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

LIMITATIONS AND MITIGATION

Financial data drawn directly from independently audited financial accounts has not been checked back to source as part of this assurance process. Note here any other specific limitations for the assurance engagement and actions taken to mitigate those limitation. Some statements and data within the scope were not assured due to lack of accessible records during the timescale allowed for assurance, and these are clearly marked throughout the Report

STATEMENT OF INDEPENDENCE AND COMPETENCE

The SGS Group of companies is the world leader in inspection, testing and verification, operating in more than 140 countries and providing services including management systems and service certification; quality, environmental, social and ethical auditing and training; environmental, social and sustainability report assurance. SGS affirm our independence from SCGC, being free from bias and conflicts of interest with the organisation, its subsidiaries and stakeholders.

The assurance team was assembled based on their knowledge, experience and qualifications for this assignment, and comprised auditors registered with ISO 9001, ISO 14001, ISO 45001, ISO 50001, ISO 14064-1, ISO 14067, ISO 26000, WFP, SA 8000 and experience on the SRA Assurance service provisions

ASSURANCE/VERIFICATION OPINION

On the basis of the methodology described and the verification work performed, nothing has come to our attention that causes us to believe that the specified performance information included in the scope of assurance is not fairly stated and has not been prepared, in all material respects, in accordance with the reporting criteria. We believe that the organisation has chosen an appropriate level of assurance for the selected indicators for the year ended December 31, 2022 included in their reporting.

Signed:

For and on behalf of SGS (Thailand) Limited

Montree Tangtermsirikul
General Manager
100 Nanglinchee Road Chongnonsee Yannawa, Bangkok 10120 Thailand
21 February 2023

WWW.SGS.COM

GRI Content Index

Statement of use	SCG Chemicals Public Company Limited
GRI 1 used	GRI 1: Foundation 2021

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION		
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION
General Disclosures					
GRI 2: General Disclosures 2021	2-1 Organizational details	SR Front cover, SR Back cover			
	2-2 Entities included in the organization's sustainability reporting	SR 95-96			
	2-3 Reporting period, frequency and contact point	SR 78-81			
	2-4 Restatements of information	SR 78-81			
	2-5 External assurance	SR 97-98			
	2-6 Activities, value chain and other business relationships	SR 8-11			
	2-7 Employees	SR 91-93			
	2-8 Workers who are not employees	–	a, b, c	Confidentiality constraints	This information is for internal use
	2-9 Governance structure and composition	SR 14-17			
	2-10 Nomination and selection of the highest governance body	https://www.scgchemicals.com/en/ sustainability/governance-economy/ corporate-governance			
	2-11 Chair of the highest governance body	https://www.scgchemicals.com/ en/sustainability/governance-economy/ corporate-governance			
	2-12 Role of the highest governance body in overseeing the management of impacts	https://www.scgchemicals.com/ en/sustainability/governance-economy/ corporate-governance			
	2-13 Delegation of responsibility for managing impacts	SR 14			
	2-14 Role of the highest governance body in sustainability reporting	SR 18-19			
	2-15 Conflicts of interest	https://www.scgchemicals.com/en/ sustainability/governance-economy/ ethics-compliance			
	2-16 Communication of critical concerns	SR 26-27			
	2-17 Collective knowledge of the highest governance body	https://www.scgchemicals.com/en/ publications/report?sub=19			
	2-18 Evaluation of the performance of the highest governance body	https://www.scgchemicals.com/en/ publications/report?sub=19			
	2-19 Remuneration policies	https://www.scgchemicals.com/en/ sustainability/report?sub=20			
	2-20 Process to determine remuneration	https://www.scgchemicals.com/en/ sustainability/report?sub=20			
	2-21 Annual total compensation ratio	–	a, b, c	Confidentiality constraints	This information is confidential
	2-22 Statement on sustainable development strategy	SR 4-5, 13-14			
	2-23 Policy commitments	https://www.scgchemicals.com/en/ sustainability/society/human-rights			
	2-24 Embedding policy commitments	SR 12-15			
	2-25 Processes to remediate negative impacts	SR 54-55			
	2-26 Mechanisms for seeking advice and raising concerns	SR 22-25			
	2-27 Compliance with laws and regulations	SR 54, 86-87			
	2-28 Membership associations	SR 32, 50-51			
	2-29 Approach to stakeholder engagement	SR 22-25			
	2-30 Collective bargaining agreements	SR 91-93			

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION		
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION
Material Topics					
GRI 3: Material Topics 2021	3-1 Process to determine material topics	SR 18-19			
	3-2 List of material topics	SR 18-19			
Economic Performance					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 6-7, 10-11			
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	SR 82-83			
	201-2 Financial implications and other risks and opportunities due to climate change	SCG TCFD Report 2022 P. 7-16			
	201-3 Defined benefit plan obligations and other retirement plans	–		Confidentiality constraints	This information is for internal use.
	201-4 Financial assistance received from government	SR 82-83			
Market Presence					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 6-11			
GRI 202: Market Presence 2016	202-1 Ratios of standard entry level wage by gender compared to local minimum wage	SR 91-93			
	202-2 Proportion of senior management hired from the local community	SR 91-93			
Indirect Economic Impacts					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 6-11			
GRI 203: Indirect Economic Impacts 2016	203-1 Infrastructure investments and services supported	https://www.scgchemicals.com/en/ sustainability/society/ community-involvement-program			
	203-2 Significant indirect economic impacts	–	a, b	Information unavailable/ incomplete	Impact valuation has been conducted by project base such as Sharing the Dream, Learn to Earnt, The Power of Community, Skills Development School, and Q-CHANG.
Procurement Practices					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 56-57			
GRI 204: Procurement Practices 2016	204-1 Proportion of spending on local suppliers	SR 82-83			
Anti-corruption					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 54-55			
GRI 205: Anti-corruption 2016	205-1 Operations assessed for risks related to corruption	SR 54-55			
	205-2 Communication and training about anti-corruption policies and procedures	SR 54-55			
	205-3 Confirmed incidents of corruption and actions taken	SR 82-83			
Anti-competitive Behavior					
GRI 3: Material Topics 2021	3-3 Management of material topics	https://www.scgchemicals.com/ uploads/3-6_SCGC_Antitrust_ Policy-EN.pdf			
GRI 206: Anti-competitive Behavior 2016	206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	SR 54-55			

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION		
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION
Tax					
GRI 3: Material Topics 2021	3-3 Management of material topics	https://www.scgchemicals.com/ uploads/3-16_SCGC-Tax_Policy-EN.pdf			
GRI 207: Tax 2019	207-1 Approach to tax	https://www.scgchemicals.com/ uploads/3-16_SCGC-Tax_Policy-EN.pdf			
	207-2 Tax governance, control, and risk management	https://www.scgchemicals.com/ uploads/3-16_SCGC-Tax_Policy-EN.pdf			
	207-3 Stakeholder engagement and management of concerns related to tax	SR 22-25			
	207-4 Country-by-country reporting	SR 82-83			
Materials					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 64			
GRI 301: Materials 2016	301-1 Materials used by weight or volume	SR 84			
	301-2 Recycled input materials used	SR 84			
	301-3 Reclaimed products and their packaging materials	–		Information unavailable/ incomplete	SCGC has a collective process but this process cannot identify the number of company's product.
Energy					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 38-41			
GRI 302: Energy 2016	302-1 Energy consumption within the organization	SR 84-85			
	302-2 Energy consumption outside of the organization	–	a, b, c, d	Confidentiality constraints	Energy data are very complexity of suppliers, transporters, customers and related stakeholders in value chain.
	302-3 Energy intensity	SR 84-85			
	302-4 Reduction of energy consumption	SR 84-85			
	302-5 Reductions in energy requirements of products and services	SR 40-43, 62-63			
Water and Effluents					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 65			
GRI 303: Water and Effluents 2018	303-1 Interactions with water as a shared resource	SR 65			
	303-2 Management of water discharge-related impacts	SR 65			
	303-3 Water withdrawal	SR 65, 86			
	303-4 Water discharge	SR 65, 86			
	303-5 Water consumption	SR 65, 86			
Biodiversity					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 68			
GRI 304: Biodiversity 2016	304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	SR 68			
	304-2 Significant impacts of activities, products and services on biodiversity	SR 68			
	304-3 Habitats protected or restored	SR 68			
	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	https://www.scgchemicals.com/en/ sustainability/environment/biodiversity			

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION		
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION
Emissions					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 38-41, 67			
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	SR 38-41, 84			
	305-2 Energy indirect (Scope 2) GHG emissions	SR 38-41, 84			
	305-3 Other indirect (Scope 3) GHG emissions	SR 38-41, 84			
	305-4 GHG emissions intensity	SR 38-41, 84			
	305-5 Reduction of GHG emissions	SR 38-41, 84			
	305-6 Emissions of ozone-depleting substances (ODS)	–	a, b, c, d	Information unavailable/ incomplete	Collection of data is not required by Thai law.
	305-7 Nitrogen oxides (NO$_x$), sulfur oxides (SO$_x$), and other significant air emissions	SR 88			
Waste					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 66			
GRI 306: Waste 2020	306-1 Waste generation and significant waste-related impacts	SR 66, 87			
	306-2 Management of significant waste-related impacts	SR 66, 87			
	306-3 Waste generated	SR 66, 87			
	306-4 Waste diverted from disposal	SR 66, 87			
	306-5 Waste directed to disposal	SR 66, 87			
Supplier Environmental Assessment					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 56-57			
GRI 308: Supplier Environmental Assessment 2016	308-1 New suppliers that were screened using environmental criteria	SR 56-57, 82-83			
	308-2 Negative environmental impacts in the supply chain and actions taken	SR 56-57			Number and coverage of supplier identified as having high Potential Sustainability Risk (including environmental)
Employment					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 72-73			
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	SR 91-93			
	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	–	a, b	Confidentiality constraints	The benefit vary by country and type of employment.
	401-3 Parental leave	SR 91-93			
Labor/Management Relations					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 72-73			
GRI 402: Labor/ Management Relations 2016	402-1 Minimum notice periods regarding operational changes	–	a, b	Information unavailable/ incomplete	Under Labor Protection Act

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION		
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION
Occupational Health and Safety					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 70-71			
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	SR 70-71, https://www.scgchemicals.com/ en/sustainability/society/occupational-health-safety			
	403-2 Hazard identification, risk assessment, and incident investigation	SR 70-71, https://www.scgchemicals.com/ en/sustainability/society/occupational-health-safety			
	403-3 Occupational health services	SR 70-71, https://www.scgchemicals.com/ en/sustainability/society/occupational-health-safety			
	403-4 Worker participation, consultation, and communication on occupational health and safety	SR 70-71, https://www.scgchemicals.com/ en/sustainability/society/occupational-health-safety			
	403-5 Worker training on occupational health and safety	SR 70-71, https://www.scgchemicals.com/ en/sustainability/society/occupational-health-safety			
	403-6 Promotion of worker health	SR 70-71, https://www.scgchemicals.com/ en/sustainability/society/occupational-health-safety			
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	SR 70-71, https://www.scgchemicals.com/ en/sustainability/society/occupational-health-safety			
	403-8 Workers covered by an occupational health and safety management system	SR 89-90			
	403-9 Work-related injuries	SR 89-90			
	403-10 Work-related ill health	SR 89-90			
Training and Education					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 72-73			
GRI 404: Training and Education 2016	404-1 Average hours of training per year per employee	SR 91-93			
	404-2 Programs for upgrading employee skills and transition assistance programs	SR 72-73			
	404-3 Percentage of employees receiving regular performance and career development reviews	SR 91-93			
Diversity and Equal Opportunity					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 72-73			
GRI 405: Diversity and Equal Opportunity 2016	405-1 Diversity of governance bodies and employees	SR 91-93			
	405-2 Ratio of basic salary and remuneration of women to men	SR 91-93			
Non-discrimination					
GRI 3: Material Topics 2021	3-3 Management of material topics	https://www.scgchemicals.com/en/ sustainability/society/human-rights			
GRI 406: Non-discrimination 2016	406-1 Incidents of discrimination and corrective actions taken	SR 91-93			
Freedom of Association and Collective Bargaining					
GRI 3: Material Topics 2021	3-3 Management of material topics	https://www.scgchemicals.com/en/ sustainability/society/human-rights			
GRI 407: Freedom of Association and Collective Bargaining 2016	407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	https://www.scgchemicals.com/en/ sustainability/society/human-rights			
Child Labor					
GRI 3: Material Topics 2021	3-3 Management of material topics	https://www.scgchemicals.com/en/ sustainability/society/human-rights			
GRI 408: Child Labor 2016	408-1 Operations and suppliers at significant risk for incidents of child labor	SR 69			
Forced or Compulsory Labor					
GRI 3: Material Topics 2021	3-3 Management of material topics	https://www.scgchemicals.com/en/ sustainability/society/human-rights			
GRI 409: Forced or Compulsory Labor 2016	409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labor	SR 69			

GRI STANDARD/ OTHER SOURCE	DISCLOSURE	LOCATION	OMISSION		
			REQUIREMENT(S) OMITTED	REASON	EXPLANATION
Security Practices					
GRI 3: Material Topics 2021	3-3 Management of material topics	https://www.scgchemicals.com/en/ sustainability/society/human-rights			
GRI 410: Security Practices 2016	410-1 Security personnel trained in human rights policies or procedures	100% of security personnel were trained by contracted company in accordance with SCG Supplier Code of Conduct			
Rights of Indigenous Peoples					
GRI 3: Material Topics 2021	3-3 Management of material topics	https://www.scgchemicals.com/en/ sustainability/society/human-rights			
GRI 411: Rights of Indigenous Peoples 2016	411-1 Incidents of violations involving rights of indigenous peoples	No case found			
Local Communities					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 74-75			
GRI 413: Local Communities 2016	413-1 Operations with local community engagement, impact assessments, and development programs	SR 22-25, 74-75			
	413-2 Operations with significant actual and potential negative impacts on local communities	No case found			
Supplier Social Assessment					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 56-57			
GRI 414: Supplier Social Assessment 2016	414-1 New suppliers that were screened using social criteria	SR 56-57			
	414-2 Negative social impacts in the supply chain and actions taken	No case found			
Public Policy					
GRI 3: Material Topics 2021	3-3 Management of material topics	https://www.scgchemicals.com/en/ sustainability/report?sub=19			SCG Chemicals remains politically neutral, and set policy which does not give financial or any kind of supports to any political party, political group, or candidates in local, regional or national levels or person with political influence or lobbying or interest representation or similar and other categories (such e.g. election campaign, spending related to ballot)
GRI 415: Public Policy 2016	415-1 Political contributions	SR 82-83			
Customer Health and Safety					
GRI 3: Material Topics 2021	3-3 Management of material topics	https://www.scgchemicals.com/en/ sustainability/environment/product-stewardship			
GRI 416: Customer Health and Safety 2016	416-1 Assessment of the health and safety impacts of product and service categories	SR 62-63			
	416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	No case found			
Marketing and Labeling					
GRI 3: Material Topics 2021	3-3 Management of material topics	SR 62-63			
GRI 417: Marketing and Labeling 2016	417-1 Requirements for product and service information and labeling	https://www.scgchemicals.com/en/ sustainability/environment/product-stewardship			
	417-2 Incidents of non-compliance concerning product and service information and labeling	No case found			
	417-3 Incidents of non-compliance concerning marketing communications	No case found			
Customer Privacy					
GRI 3: Material Topics 2021	3-3 Management of material topics	https://www.scgchemicals.com/en/ sustainability/society/customer-experience			
GRI 418: Customer Privacy 2016	418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	SR 58			

Sustainability Accounting Standards Board Response (SASB)

Topic	Metric	Category	Unit of Measure	Code	Response/ Reference
Activity Metrics	Production by reportable segment	Quantitative	Metric tons (t)	RT-CH-000.A	SR 84
Green House Gas Emissions	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	Quantitative	Metric tons (t) CO_2-e, Percentage (%)	RT-CH-110a.1	SR 84
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	RT-CH-110a.2	SR 38-41
Air Quality	Air emissions of the following pollutants: (1) NO_x (excluding N_2O), (2) SO_x, (3) Volatile organic compounds (VOCs), and (4) Hazardous Air Pollutants (HAPs)	Quantitative	Metric tons (t)	RT-CH-120a.1	SR 88 (4) Data not avaliable
Energy Management	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable, (4) total self-generated energy	Quantitative	Gigajoules (GJ), Percentage (%)	RT-CH-130a.1	SR 85
Water Management	(1) Total water withdrawn, (2) Total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Thousand cubic meters (m^3), Percentage (%)	RT-CH-140a.1	SR 86
	Number of incidents of non-compliance associated with water quality permits, standards, and regulations	Quantitative	Number	RT-CH-140a.2	SR 86
	Description of water management risks and discussion of strategies and practices to mitigate those risks	Discussion and Analysis	n/a	RT-CH-140a.3	SR 65
Waste Management	Amount of waste generated, percentage hazardous, percentage recycled*	Quantitative	Metric tons (t), Percentage (%)	RT-CH-150a.1	SR 87
Community Relations	Discussion of engagement processes to manage risks and opportunities associated with community interests	Discussion and Analysis	n/a	RT-CH-210a.1	SR 22-25
Workforce Health & Safety	1) Total recordable incident rate (TRIR)* and (2) fatality rate for (a) direct employees and (b) contract employees	Quantitative	Rate	RT-CH-320a.1	TRIR: Case/200,000 manhours Employee 0.0127 Contractor 0.0191 Fatality: Case/200,000 manhours Employee 0.000 Contractor 0.000
	Description of efforts to assess, monitor, and reduce exposure of employees and contract workers to long-term (chronic) health risks	Discussion and Analysis	n/a	RT-CH-320a.2	SR 70-71
Product Design for Use-phase Efficiency	Revenue from products designed for use-phase resource efficiency	Quantitative	Reporting currency	RT-CH-410a.1	SR 82-83

Topic	Metric	Category	Unit of Measure	Code	Response/ Reference
Safety & Environmental Stewardship of Chemicals	(1) Percentage of products that contain Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances, (2) percentage of such products that have undergone a hazard assessment	Quantitative	Percentage (%) by revenue, Percentage (%)	RT-CH-410b.1	SR 89-90
	Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact	Discussion and Analysis	n/a	RT-CH-410b.2	SR 62-63
Genetically Modified Organisms	Percentage of products by revenue that contain genetically modified organisms (GMOs)	Quantitative	Percentage (%) by revenue	RT-CH-410c.1	Not Applicable
Management of the Legal & Regulatory Environment	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	Discussion and Analysis	n/a	RT-CH-530a.1	SR 54-55
Operational Safety, Emergency Preparedness & Response	Process Safety Incidents Count (PSIC), Process Safety Total Incident Rate (PSTIR), and Process Safety Incident Severity Rate (PSISR)	Quantitative	Number, Rate	RT-CH-530a.1	SR 89-90
	Number of transport incidents	Quantitative	Number	RT-CH-530a.2	SR 89-90

Task Force on Climate-related Financial Disclosures (TCFD)

Recommendations		SCGC SR
GOVERNANCE	Disclose the organization's governance around climate-related risks and opportunities.	4-5, 12-17
	a) Describe the board's oversight of climate-related risks and opportunities.	
	b) Describe management's role in assessing and managing climate-related risks and opportunities.	
STRATEGY	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	10-11, 18-19, 38-41
	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long-term.	
	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	
	c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	
RISK MANAGEMENT	Disclose how the organization identifies, assesses, and manages climate-related risks.	26-27, 38-41
	a) Describe the organization's processes for identifying and assessing climate-related risks.	
	b) Describe the organization's processes for managing climate-related risks.	
	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	
METRICS and TARGETS	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	
	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	38-41
	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	
	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	84-85

SCGC TCFD Report 2022 is available at https://www.scgchemicals.com/en/sustainability/report and QR Code