SUSTAINABILITY REPORT 2016

SCG

CREATING SUSTAINABLE BALANCE

Create sustainable balance of economy, society, environment, and culture through the principles of Sufficiency Economy.

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Contents

About SCG

4	Message from the President & CEO
5	Message from the Chairman of the Sustainable Development Committee
6	Following the Royal Initiative of H.M. King Bhumibol Adulyadej
8	Sustainability Highlights
9	About SCG
11	Our Core Business
14	Business Philosophy and Vision
16	Corporate Governance
18	Sustainable Development Structure
20	Sustainable Management Approach

SCG and Sustainable Development

24	Materiality
26	Risk and Opportunity
30	Stakeholder Engagement

Sustainability Performance

38 Corporate Governance Practice
42 Health and Safety
48 Human Rights
52 Employee Caring and Development
58 Energy and Climate Change
64 Water Management
70 Material Use and Recycling Strategy
74 Waste Management
80 Sustainable Products and Services
88 Sustainable Value towards Customer
92 Create Sustainable Value towards Supplier
98 Biodiversity and Ecosystem
104 Concern for Society and Community

Appendices

118 Sustainability Performance Data 2012-2016
124 World Business Council for Sustainable Development, Cement Sustainability Initiative (WBCSD-CSI)
126 About this report
129 Subsidiaries Included in Sustainability Report 2016
133 GRI Content Index
141 United Nation Global Compact (UNGC) Communication on Progress for the Advanced Level
144 Assurance Statements
148 Pride of SCG

From cover: Creating Sustainable Balance

Over the year, SCG has long adopted the principle of Sufficiency Economy in its business practice. The balance of economy, society, environment and culture has enable the company to survive challenges and crises and thrive amid constant global economic changes.

"Sufficiency" does not mean "stop", but rather "working at full potential to achieve sustainable growth". the principle of Sufficiency Economy is the approach to sustainability which can be adopted by all, not only by the agricultural sector. Therefore, operating business in accordance to the principle of Sufficiency Economy does not mean that one must halt business growth or maximizing short-term profitability, but one must rather use the principle to help achieve business stability and sustainable growth.

With eternal respect and gratitude for H.M. King Bhumibol Adulyadej, SCG pledges to follow in the Royal footsteps in sustaining the development of our business and giving knowledge and act as a role model to other organizations to maintain ASEAN sustainable growth and prosperity.

Message from the President & CEO

In spite of myriad challenges in 2016, be it global economic volatility, soaring energy prices, intensifying competition in the ASEAN market and the digital transformation, SCG has been able to press ahead with its policy of business expansion, seeking sustainable growth in the region. We continue to focus on research and development of High Value Added products and services, and strive to increase our competitiveness. Our business practice is governed by sustainability principles that respond to the needs of the society, community and environment, along with applying the principles of Sufficiency Economy of His Majesty the late King Bhumibol Adulyadej.

SCG's material sustainability issues include safety, energy management and climate change, water management, waste management, and concern for the society and community. We have committees and task forces, governed by SCG Sustainable Development Committee, dedicated to oversee practices comply with SCG's sustainable initiatives.

As President and CEO, chairing these committees enabled me to have a broad overview of materiality in the context of sustainability and ensure that resources are readily deployed to ensure success of each tasks. SCG must adapt and be prepared to grasp changes that are happening fast amidst challenges and volatility. Restructuring and assignment of role and responsibility of committees, working groups, units and teams are critical in this context. SCG has been able to retain its membership in the Dow Jones Sustainability Indices ranking, Construction Materials Industry, yet, there remains room for improvement, particularly on social issues. SCG must step up efforts and commitment to ceaselessly drive for improvement.

SCG is committed to steering the organization towards Sustainable Development Goals, in line with Thailand's commitment to "Transforming Our World: the 2030 Agenda for Sustainable Development," and the Paris Agreement at COP21 where countries, including Thailand, pledge to keep global warming to well below 2 degrees Celsius. For its part, SCG has set target to reduce GHG emissions per production unit by 10 percent within 2020, from the base year of 2007. Furthermore, we need to urgently intensify actions in issues concerning health and safety, employee development, labor management and human rights.

In 2016, Thailand as a member of Group 77, was certified to assume Chairmanship of G77. At the same time, the Thai Prime Minister presented a vision on "From Vision to Action: Inclusive Partnership for Sustainable Development," incorporating the principles of Sufficiency Economy as an option in the path towards sustainability. SCG's adoption of the principle of Sufficiency Economy has helped weather the crisis and staged a successful turnaround to achieve long-term sustainability and growth. It is imperative for us to demonstrate our commitment to being a role model organization for "Sustainable Development" to achieve sustainable growth, utilize natural resources efficiently and care for the environment for a healthy society. We believe our human resources, be it employee or supplier, are our most valuable assets. Safety, physical and mental health, and happiness are meant not just for our workforce, but also for their families and the society around our employees too.

SCG remains committed to conducting business with ethics and good corporate governance, in the best interests for all. We are prepared to bring shared growth and prosperity to Thailand, the Region and to becoming a leader in ASEAN, according to SCG's vision.

Roongrote Rangsiyopash

President & CEO, SCG

Message from the Chairman of the Sustainable Development Committee

The SCG Sustainable Development Committee has the duty to formulate and review sustainability policies which touch on multiple issues. To ensure efficient implementation and effective outcomes, we prioritize issues that are material sustainability. Materiality prioritization allows us to come up with policies, direction and strategies for actions per each materiality that is compatible with SCG's business operations. We also set targets for sustainability that can be communicated so stakeholders are on the same page on issues including safety, human rights, energy and climate change. In 2016, SCG was still in the process of prioritizing materiality issues for individual Business Unit, which would facilitate our pursuit of sustainability that is context-specific, and appropriate to the setting, factors and conditions of each Business Unit going forward.

Moreover, SCG's materiality has been broadened and enriched through a participatory process with stakeholders all through the value chain, which will institute sustainability for the business, society and environment through the Green Manufacturing production process, upstream supplier development towards sustainability, delivering added value to the producers and consumers downstream, as well as supporting and propagating a sustainability path in the country and internationally.

In 2016, the prominent materiality issue for us is safety. SCG is committed to seeing our employees and suppliers contented and safe. Yet we were unable to achieve our targets of zero fatality and reducing loss time injuries to not more than half of the previous year's rate. SCG therefore has set up a special committee dedicated to safety. We have implemented several measures with an aim to reducing incident rates such as the Life Saving Rules, banning logistics truckers from parking on road shoulders, and cautioning drivers when it is time for mandatory rest. SCG remains determined to achieve these very challenging targets in the year to come.

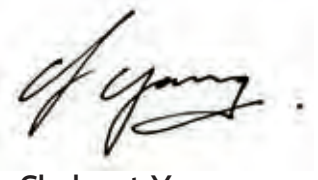
Human rights protection is another issue that SCG gives priority to. We have laid out the guidelines in the SCG Code of Conduct, to prevent human rights violations in every aspect. Our Human Rights Policy is announced and enforced in every country and in every business activity of SCG.

On Energy and Climate Change, SCG set the target of reducing Greenhouse Gas Emissions by 10 percent per unit of production by 2020, compared with the base year 2007. To achieve this target, we focus on enhancing energy efficiency, increasing the capacity to use renewable energy such as biomass, energy from solid waste and solar energy. And as natural disasters struck many parts of the country – from drought and water shortage, to floods and inundation, to earthquakes – SCG has undertaken disaster relief work to help those affected, and work on post-disaster recovery.

At the global level, 2016 witnessed two landmark agreements, namely, the Sustainable Development Goals and Paris Agreement which must be translated into a roadmap for Thailand to cut Greenhouse Gas Emissions post 2020. SCG must review existing plans for compatibility with these international commitments, as well as keep up with changes, as a role model organization in sustainability.

sFrom 2004, SCG has the opportunity to participate in the sustainable business ranking of Dow Jones Sustainability Indices, in the Construction Materials Industry, and we have been able to maintain our DJSI membership for 13 years running. In 2016, despite SCG's success in improving performance on economic and environment issues, yet, in the context of social issues, SCG ceased to meet expectations, namely in the issues of health and safety, labor relations management and in human rights. Results of the DJSI assessment helped SCG to reflect and provide guidance on improvement. Consequently, SCG has demonstrated relentless effort at development.

SCG remains firm in its vision to be a role model in good corporate governance and sustainability, by continuing the legacy of His Majesty the late King Bhumibol Adulyadej's water management approach, and achieving sustainable growth through the principle of Sufficiency Economy. And we stand ready to share our experience with other organizations.



Cholanat Yanaranop

President, SCG Chemicals

Chairman, SCG Sustainable Development Committee

Following the Royal Initiative of H.M. King Bhumibol Adulyadej

Following the passing of H.M. King Bhumibol Adulyadej on October 13, 2016, all SCG staff in Thailand and ASEAN countries have come together as one to pay our deepest condolences and express our eternal respect and gratitude for H.M. the King's dedication and gracious kindness. We pledge our commitment to following in the Royal Footsteps for many years to come.

Throughout the years, SCG has carried out business with concern for society and all involved parties by adopting the principles of Sufficiency Economy in its operations to enable the Company to "survive, thrive, and achieve sustainability". The endeavors were best evidenced during the 1997 financial crisis when SCG managed to survive the economic woes and thrive steadily. Today, SCG has become a leading conglomerate in ASEAN that operates with commitment to promoting sustainable growth in the region along with uplifting the quality of life and well-being of people by creating a flurry of excellence innovative products and services.

Principles of Sufficiency Economy

Sufficiency Economy is the principles initiated by H.M. King Bhumibol Adulyadej over 30 years ago for guidance on development stressing the modest practices and conscientiousness in all modes of conduct. Principles of Sufficiency Economy embody moderation, reasonableness, and prudence in ever-changing factors as well as knowledge and virtue to guide the livelihood of the people. It also encompasses wisdom and perseverance which will enable people to live a truly harmonious and happy life.

2 Conditions

Knowledge

Knowledge in relevant academic approaches and the ability to integrate knowledge in planning and implementation prudently and carefully.

Virtues

Adherence to ethics, integrity, patience, perseverance, and living life intelligently.

3 Principles

Moderation

Moderation in the sense of not too much or not too little means being moderate without exploiting oneself or others.

Reasonableness

The choice of sufficiency level should be justifiable by carefully taking into consideration all the relevant factors and consequences that may ensue as a result.

Prudence

Preparing for and conducting oneself to cope with the impacts and changes through the anticipation of the situations that may happen in the future.

SCG Business Practices in Accordance to the Principles of Sufficiency Economy*

Virtues

> **Ethical corporate culture:** In line with one of SCG Business Philosophy of "Adherence to Fairness", the SCG Code of Conduct provides guidelines on how to behave for employees which has long been observed for decades. It has become a corporate culture, requiring all employees comply with the Code of Conduct by avoiding corruption practices and discrimination against gender, race, and religion. At the same time, employees are obligated to operate with adherence to accountability, transparency, and fairness to all stakeholders.

Moderation/ Prudence

> **Prudent business moves:** Having learned lessons from the 1997 Asian financial crisis when SCG diversified its business recklessly, the Company now focuses on core businesses in which it has keen expertise. Apart from making prudent investment decisions, SCG has taken careful steps in making and expanding investment overseas, encompassing conducting a market trial and creating product acceptance before investing in establishing new manufacturing facilities.

Prudence/ Reasonableness

> **Minimizing risks through diversification:** SCG comprises three core business units dedicated to manufacturing a diverse range of products from upstream to downstream, thereby helping hedge risks as sagging sales of one core business can be offset by the others'. The efforts also extend to expanding the market both locally and overseas to minimize risks.

Virtues/ Reasonableness

> **Value of employees:** SCG believes that employees are the Company's most valuable assets. Even during the economic crisis in 1997, no employees were laid off. The Company is committed to developing its employees continuously and is now thriving to become a learning organization.

Virtues/ Reasonableness

> **Taking care of stakeholders:** SCG places great importance on entire business's stake holders and takes into consideration benefit return to society together with brings sustainability and happiness in community. As seen from Semi Open Cut quarrying, although it requires relative high investment and has lower production capacity, it is the approach which SCG applies to rehabilitate to the most closely to the original conditions with minimum impact to community.

Knowledge/ Moderation

> **Resources Management:** SCG is resolved to maximize efficiency in the consumption of resources such as fuel, energy, water, and raw materials in line with the principles of the 3Rs encompassing reducing resource consumption, reusing resources, and recycling or developing waste into value-added products.

Knowledge/ Prudence

> **Innovation development:** SCG stresses the importance of research and development across the Company in products as well as service and manufacturing processes to address customers' emerging needs along with retaining leadership and enhancing competitiveness. The efforts will empower the company to grow sustainably as an innovation organization.

Knowledge/Virtues

> **Sharing knowledge:** In addition to developing learning within the Company, SCG also commits itself to developing and enhancing the knowledge of its suppliers, allowing them to grow alongside SCG sustainably. The endeavors also extend to providing knowledge to consumers and customers to create better understanding about sustainable and eco-friendly products and services.

* Adapted from *Development of Approaches to Sustainable Business Operations in Accordance with the Philosophy of Sufficiency Economy* by Dr. Sooksan Kantabutra *et. al* published by The Thailand Research Fund (TRF)

Sustainability Highlights

HVA Products and Services

2015
37 percent

2016
38 percent

of revenue from sales

SCG eco value Products and Services

2015
26 percent

2016
40 percent

of revenue from sales

Environmental Expenditure
(percent of revenue from sales)

2015
3,016 million baht
0.69 percent

2016
2,686 million baht
0.63 percent

Research & Development Investment
(percent of revenue from sales)

2015
3,510 million baht
0.80 percent

2016
4,350 million baht
1.03 percent

Green Procurement Purchased

2015
9,838 million baht

2016
9,936 million baht

Alternative Fuel

2015
10.9 percent

2016
10.7 percent

Hazardous / Non-hazardous Waste to Landfill

2015
0.0/0.2 percent

2016
0.0004/0.001 percent

Carbon Label Certified
(Carbon Reduction Label and Carbon Footprint Label)

2015
132 items

2016
531 items

GHG Emissions
(compared with BAU 2007)

2015
Decrease 1.46 million tons
5.5 percent

2016
Decrease 1.81 million tons
7.0 percent

Lost Time Injury Frequency Rate
(Employee/Contractor)

2015
0.073/0.055
Case / 200,000 man-hour

2016
0.041/0.045
Case / 200,000 man-hour

Enhance Professional Skill of Fleet Carrier Employees through Trainings from Skills Development School

2015
12,564 persons

2016
12,196 persons

Dow Jones Sustainability Indices (DJSI) /Robeco Sustainable Asset Management

2015
Industry Leader for the 5th Consecutive Year
Gold Class for the 8th Consecutive Year

2016
Listed on Dow Jones Sustainability Indices (DJSI) for 13 Consecutive Years

Social Contribution
(percent of revenue from sales)

2015
591 million baht
0.13 percent

2016
710 million baht
0.17 percent

Sharing Opportunities Drawing the Future Program

2015
130 Projects
15.9 million baht

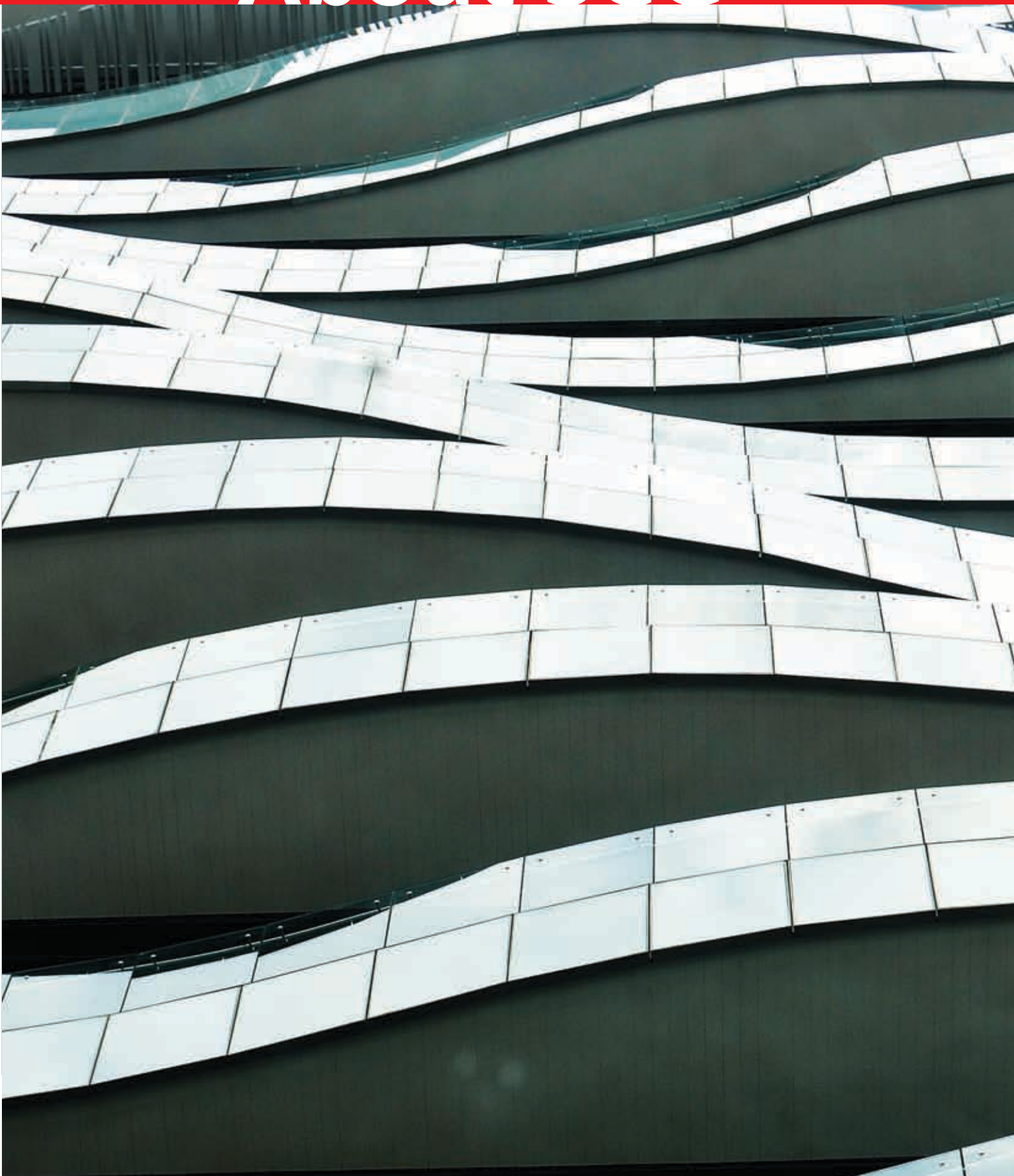
2016
190 Projects
21.6 million baht

Number of Check Dam

2015
68,445 units

2016
70,764 units

About SCG



*For more than 100 years, **SCG** has operated its business in line with corporate governance and sustainable development framework since its inception by Royal Decree of His Majesty King Rama VI in 1913. SCG now expands its business across ASEAN, with 200 subsidiaries and a workforce of 53,000 employees. SCG is at the forefront of leading companies with sustainable growth in ASEAN.*

SCG's core business consists of SCG Cement-Building Materials, cement and construction materials manufacturer and distributor, which later expands its business to cover logistics. SCG Chemicals, a complete array from upstream to downstream of chemicals products producer. SCG Packaging, a total Packaging Solutions Provider through the development and delivery of innovative products and services.

SCG is committed to innovation in every aspect of its operation: products and services, processes, and business models. We seek to create value, respond to needs of customers and stakeholders, and protect the well-being of communities where we operate. At the same time, we build the capacity of our business partners, as they too are part of sustainability.

SCG operates our business within the sustainability framework with a clear policy, practice and guidelines relating to environmental conservation, occupational health and safety. SCG is a member of the World Business Council for Sustainable Development (WBCSD) since 2000. SCG Cement-Building Materials is the first Thai company to become a member of the Cement Sustainability Initiative (CSI) under WBCSD. SCG Packaging is also a member of the Sustainable Forest Products Industry (SFP) under WBCSD.

World Business Council for Sustainable Development

WBCSD is developing its Action 2020 guideline, which will lead to the realization of Vision 2050. As a WBCSD member, SCG is actively monitoring and contributing to this to align with Vision 2050.

SCG is a member of the United Nations Global Compact (UNGC), showing in our commitment to comply with international best practices. Since 2012, SCG achieved the Advanced Level of compliance that covers 24 aspects governing areas such as human rights, labor practices, the environment, anti-corruption, value chain, transparency and certification.

THE GLOBAL COMPACT
WE SUPPORT

In disclosing sustainability information to stakeholders, SCG adopts the Global Reporting Initiative approach (GRI-G4.)

The United Nations has declared the Sustainable Development Goals or SDGs, where Thailand has endorsed its 17 goals with 169 targets. The goals are consistent with the business practices of SCG with a committed approach to sustainable development. In 2016, SCG has joined the sponsors presented a prototype for a sustainable industry in the G77 Meeting on Investment for Sustainable Development shows that the industry can support and achieve all the 17 goals. SCG also has a representative delivered a speech on leadership philosophy applied in the business sector.

SUSTAINABLE DEVELOPMENT GOALS

SCG Cement-Building Materials

SCG founded its first business operations in 1913, pioneering the production and distribution of cement and concrete products. In 1938, it ventured into the production of building materials, including ceramic tiles, roofing tiles, ceiling and wall materials. In 1962, SCG Distribution was established as a trading arm; managing logistics and warehousing.

Currently these three core businesses are consolidated under SCG Cement-Building Materials to leverage our competitive advantage, pursue the innovation of High Value Added products and services, to best respond to increasingly diverse customers' needs and at the same time facilitate our expansion into ASEAN.

SCG Cement-Building Materials conducts its business according to the Sufficiency Economy Philosophy with integrity, resilience, knowledge-based and a sustainability mindset. Our key achievements in 2016 include:

→ Improve the work environment to suit a Diversity Workforce inside Thailand and beyond. The focus is to keep employees happy, safe, with a work-life balance and good quality of life.

→ Encourage the SCG Marketing Way: Building Trusted Innovation among the workforce through confidence-building among employees on innovation, enhancing everybody's quality of life, and through organization-wide cooperation

→ Continue to generate SCG Eldercare Solution to accommodate a changing society and lifestyle, focusing on developing solutions for those with joint and lower body muscle problems.

→ Innovate a smart ventilation system, by combining Passive Stack Ventilation with natural air flow, functioning on the basis of a smart system to provide a pleasant ambience to inhabitants.

→ Improve energy efficiency within the production processes, by adding value to waste, natural material substitution, turning community refuse to fuel for business sustainability, social contribution and minimizing environmental impact.

→ Strengthening the civil society sector through a range of projects and activities such as the Check Dam construction project, SCG Education Clinic, Community Livelihoods activities, the Waste Bank Project; resulting in a better quality of life and lasting happiness for the community.

SCG Chemicals

SCG Chemicals is an integrated chemicals business founded in 1983. A leading manufacturer in Thailand and in Asia-Pacific, SCG Chemicals produces a complete array of products from upstream olefins, midstream - styrene monomer, PTA and MMA – and downstream with polyethylene, polypropylene, polyvinyl chloride and polystyrene plastic pellets.

Against the background of product pricing changes at a global level and oil prices as determinants of raw material costs, SCG is fully committed to the development of High Value Added products to insulate against the impact of pricing volatility of product price and raw material cost. Research and Development is fully engaged to come up with products that respond to the customer's demand, and optimizing our knowledge and expertise in the petrochemical industry in innovating services that meet the needs in industry sectors.

SCG Chemicals conducts our business according to the Sufficiency Economy Philosophy, with integrity, resilience, and a knowledge-based and sustainability mindset. Our key achievements in 2016 include:

→ Support the upscaling of business management through Integrated Business Excellence (IBE) by increasing the output rates, modifying the management of the product group, and cost-cutting. These efforts are estimated to have an added value of over 3.1 billion baht.

→ Step up learning for employees under the supervision of SCG Chemicals Academy. We ensure that skills and competencies are comprehensively addressed, and in alignment with every job position. We design staff learning along the 70:20:10 formula for the best outcome.

→ Support "Design Catalyst" aimed at generating innovations for the customer's ease of use. For example: the Sharps Disposal Containers for medical use, an innovation that addresses convenience and safety.

→ Develop eco-friendly products and services, with productions that are certified SCG eco value, now accounting for 52 percent of sales.

→ Support livelihoods and improve the quality of life of communities around our manufacturing facilities. As a result of concerted and continuous efforts, these communities managed to generate incomes of about 15 million baht per year. We helped facilitate the formation of 13 community-based enterprises in Rayong province. We also shared knowledge and know-how with communities and factories around us. Examples of stakeholders' collaboration in eco-friendliness include the Water Conservation Center at Khao Yai Da in Rayong, the Community Fishery Learning Center at Noen Kho, Rayong. We also continue our peer-to-peer support to make manufacturing plants eco-friendly.

SCG Packaging

SCG Paper was rebranded SCG Packaging on 2 June 2015, reflecting the shift of strategic focus to packaging on the basis of robust growth of the sector and SCG's plans to expand packaging business in ASEAN. It is our aim to be a Total Packaging Solutions Provider through the development and delivery of High Value Added products and services, including the Flexible Packaging line, or non-paper packaging materials. SCG Packaging operates two business lines: namely the Packaging Chain and Fibrous Chain.

SCG Packaging takes into account risk and opportunity in advancing the corporation's sustainability and applies the assessment to its business strategy in order to grow amidst rapidly unfolding changes. In the equation, we consider also stakeholders' interests and the impact of our business on them, so that we achieve equilibrium economically, socially and environmentally.

SCG Packaging conducts our business according to the Sufficiency Economy Philosophy, with integrity, resilience, and a knowledge-based and sustainability mindset. Our key achievements in 2016 include:

→ Developing the OptiBreath© line of packaging for fresh fruits and vegetables for export. The Inorganic filler technology applied extends 50% more freshness into the greens' shelf life, compared to normal plastic bags. Meanwhile, we keep enriching the design of the "Fest" safe food packaging line to respond to diverse consumers' needs and lifestyles.

→ Support and implement energy efficiency efforts through the development of alternative energy, investment in energy-saving programs such as Heat Recovery to Reduce Energy Use in Production Processes Project; Improving Efficiency of Steam Trap Project; replacing fluorescent bulbs with LED, the project to produce biogas from eucalyptus bark, which are waste from pulp production, to replace fuel oils used in lime kiln.

→ Develop and improve production processes to reduce loss and use of water through actions such as reusing water from machinery discharge, and reusing treated water.

→ Encourage extraction of value from waste, which at the same time helps reduce production waste. For example, the installation of lime kiln to turn lime mud into useable raw material, and at the same time reducing the volume of lime mud as waste.

→ Give importance to caring for communities around our factories and all stakeholders for a peaceful and sustainable co-existence. Our commitment is reflected through organized social development activities and among the few include the Green Mart project that provides marketing spaces for communities to showcase and sell their products, the Eco-Youth camp by SCG Packaging Green Academy (now in its 9th year), and the design contest SCG Packaging x *Wallpaper** The Challenge 2016.

SCG *believes in* ***the ethical conduct*** *of our business. The Company's Board of Directors, management and employees at all levels consistently comply with this business philosophy. SCG is thus recognized as a leading, credible enterprise that conducts its business with transparency, accountability and the treatment of all our stakeholders equally.*

SCG Business Philosophy

Adherence to Fairness
- Treat all stakeholders with fairness and equality
- Integrity, transparency, and accountability
- Work equally without prejudice to any particular group

Dedication to Excellence
- Create innovation to respond to the needs of the society
- Dedicate to goals and better results
- Keep up to date with global trends and ready to respond to changes

Belief in the Value of the Individual
- Develop employees' potential at all levels consistently
- Work as a team, care and respect each other

Concern for Social Responsibility
- Comply with safety, occupational health, and environmental standards
- Recognize the value of natural resources
- Help preserve the environment, community, and participate in the social development

OPEN & CHALLENGE

Open – Open our mind to learning and Respect the difference
- Open our mind, listen to others, and be flexible to learn regardless of our belief
- Eager to learn and have courage to say we do not know
- Collaborate and network both internal and external organization
- Be courage to admit our mistakes and ready to learn to move forward

Challenge – Challenge ourselves for the betterment
- Do not limit ourselves to past nor present success
- Think out of the box
- Be assertive to express our different opinion, and accept the agreement after open discussion
- Be courage to make decision in a timely manner, and willing to take and manage risks
- Ready to turn our thinking and learning into action before being forced

Business Philosophy and Vision

***SCG** has defined a **vision** that provides a key goal in which all employees work hard to realize.*

SCG Vision

SCG strives to become a regional market leader, whose business operations contribute to sustainable growth of ASEAN and communities wherever it operates. SCG is committed to creating value to its employees, suppliers, customers and stakeholders. Its world-class management conforms to corporate governance principles and high safety standards. SCG aims to enhance the quality of life and well-being of people through delivery of excellent products and services developed out of rigorous efforts, process, technology and innovations.

SCG seeks to be recognized as an innovative workplace of choice, and a role model in corporate governance and sustainability. SCG believes in the value and potential of employees, working together within a constructive, energetic and transparent atmosphere. SCG employees adhere to and comply with SCG Business Philosophy and SCG Code of Conduct.

SCG has valued the development of employees of diverse ethnicity, culture, and experiences to be committed to responding customers' needs, to have a wide vision, and be both smart and ethical people.

Corporate Governance

SCG *conducts business with responsibility, transparency and fairness, adhering to the long-standing business philosophy as outlined in the SCG Code of Conduct and on the basis of balanced and sustainable success.*

Corporate governance principles are organizational guidelines that are internationally-recognized, compatible with SCG's Business Philosophy and Code of Conduct. The corporate governance ensures fairness and transparency, return and value creation over the long term for shareholders. At the same time, it provides reassurance for all stakeholders, and enhancing SCG's competitiveness, enabling SCG to grow sustainably.

SCG codifies corporate governance policies and guidelines in the SCG Corporate Governance Manual. The Manual is subject to regular review and update to stay relevant. Our reference points are the OECD Principles of Corporate Governance, DJSI Sustainability Assessment, ASEAN Corporate Governance Scorecard (ASEAN CG Scorecard), the Stock Exchange of Thailand and Thai Institute of Directors. (IOD)

Key Roles and Responsibility of the Board of Directors

1. Board of Directors

The Board of Directors drives the organization. The Board's roles and duties include formulating corporate strategies and policies in the best interest of and fairness to stakeholders under the corporate governance principles. It also provides oversight and assesses the performance of SCG's management and of the President and CEO to ensure that plans are implemented and results accomplished.

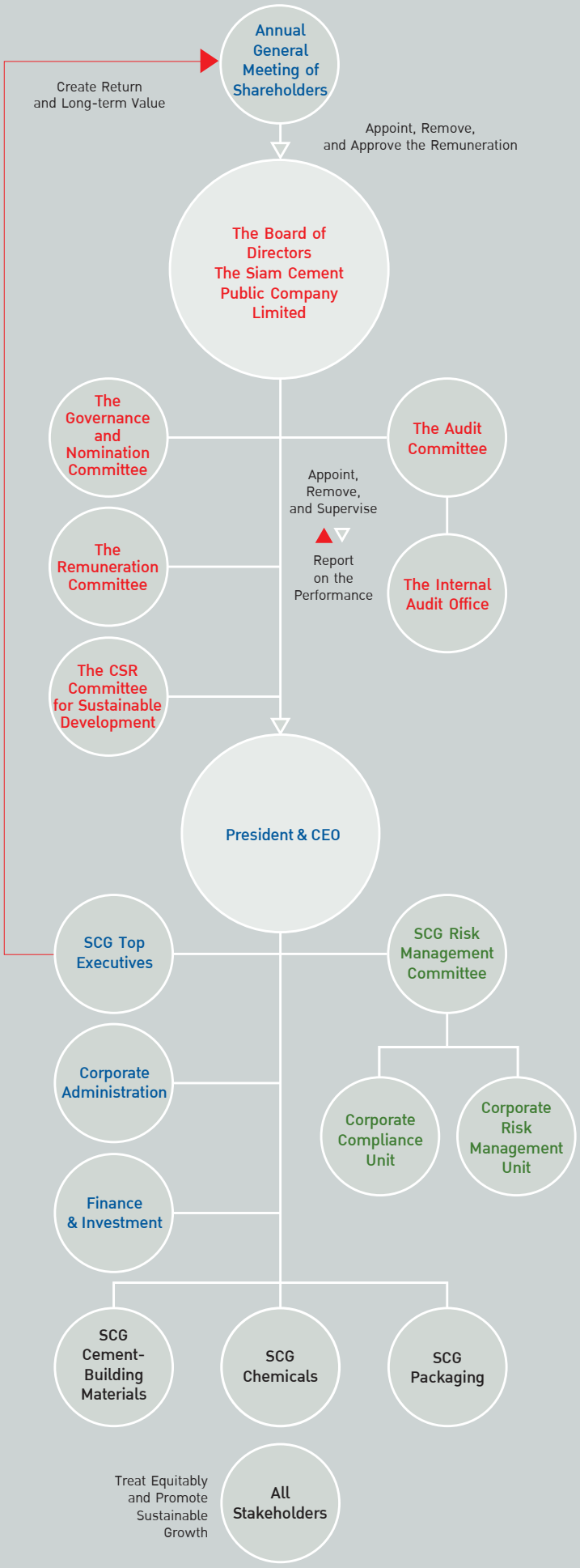
2. The Governance and Nomination Committee

The Governance and Nomination Committee oversees SCG's corporate governance matters, formulation of policy and guideline, monitoring the performance of the Board of Directors and the Management to ensure compliance with SCG's corporate governance policy. The Committee also monitors and evaluates corporate governance compliance and deliberates on occasional review of guidelines to ensure alignment with business operation and corporate governance practice nationally and internationally. In addition, it has the mandate to nominate qualified candidates to serve as Directors to replace those who are due to retire by rotation or any other reasons.

3. The Audit Committee

The Audit Committee is responsible for validating corporate governance, risk management, legal and regulatory compliance and internal control. The Internal Audit Office audits, evaluates and advises operators (First Line) and supporting functions (Second Line), according to Integrated Governance Risk Compliance and Control (Integrated GRC). For forward-looking perspective, SCG has a Risk Management Committee (RMC) as a mechanism in managing risks at these levels: SCG, Business Units, and Company. Risk Management Unit and the Compliance Unit are tasked with communicating the policies, issuing guideline, conducting monitoring and evaluation, and report findings to the Audit Office to evaluate, investigate, and follow up on efficiency and effectiveness, before reporting to the Audit Committee.

SCG Corporate Governance Structure



Code of Conduct

"SCG Code of Conduct" was launched in 1987, and subject to regular review and update. The current edition in use, 2015 and 6th revision, features greater clarity of contents and information grouping covering regulations, policies and guidelines on stakeholder engagement. It also incorporates current issues such as human rights and labor rights, environment, health and safety, products and services safety, anti-corruption, accepting gift and entertainment, disclosure, conducting business outside Thailand, and trade competition.

Anti-Corruption Policy

SCG takes anti-corruption seriously and it has embedded anti-corruption mindset into the organizational culture as reflected in the Business Philosophy. SCG has earned the Certified Company status from Thailand's Private Sector Collective Action Coalition Against Corruption (CAC) in 2013. We continue to develop relentlessly, taking into account social responsibility and accountability to all stakeholders in line with corporate governance principles and SCG Code of Conduct.

Sustainable Development Structure

The CSR Committee for Sustainable Development

- Formulate policy, guideline for implementation and allocate budget for sustainability-oriented Corporate Social Responsibility activities. Our guiding principle is we believe that people's better quality of life marks the first step leading to community and social development, which ultimately contribute to national development.

SCG Risk Management Committee

- Formulate policy, management framework and risk management plans.
- Define structure and persons in charge of risk management, as well as providing support, monitoring and supervision of compliance.
- Chaired by the SCG President & CEO, with President and Vice President of Business Units as members.

SCG Sustainable Development Committee

- Formulate and review policy, implementation, and targets of sustainable development.
- Listen to stakeholder's voices, particularly the experts.
- Formulate Materiality to engage stakeholders meaningfully.
- Currently chaired by the President of SCG Chemicals, with President and Vice President of Business Units and corporate functions as members.

SCG Energy Committee

- Formulate policy and guideline on sustainable energy management, ensure adequate supply, energy conservation, renewable energy use.
- Communicate, advocate, support and drive energy conservation among the workforce so that the organization is a responsible energy user.

SCG Climate Change Committee

- Formulate policy, strategy, target, work plan to mitigate Climate Change impact and reduce SCG's Green House Gas emission.
- Monitor Climate Change, especially potential risks that may impact SCG.
- Raise awareness and knowledge among the workforce of Climate Change.

SCG Waste Management Committee

- Monitor and facilitate industrial waste management in compliance with Zero Waste to Landfill and 3Rs policy.
- Formulate guideline for SCG to manage waste in house at best possible effort.
- Promote and coordinate Reuse/Recycle through R&D and adding value to waste internally and outside SCG.

SCG Water Management Committee

- Formulate policy, monitor, facilitate and issue water management guideline while making sure they are translated into actions, with concrete indicators to track performance.
- Promote and coordinate for industrial water to be Reused/Recycled through R&D inside and beyond SCG.

SCG Safety Committee

- Formulate policy, strategy and safety management structure.
- Support, advocate safety practice, and manage safety-related risks.
- Cultivate basic work discipline, attitude, awareness and encourage learning.

SCG Supplier Development for Sustainability Committee

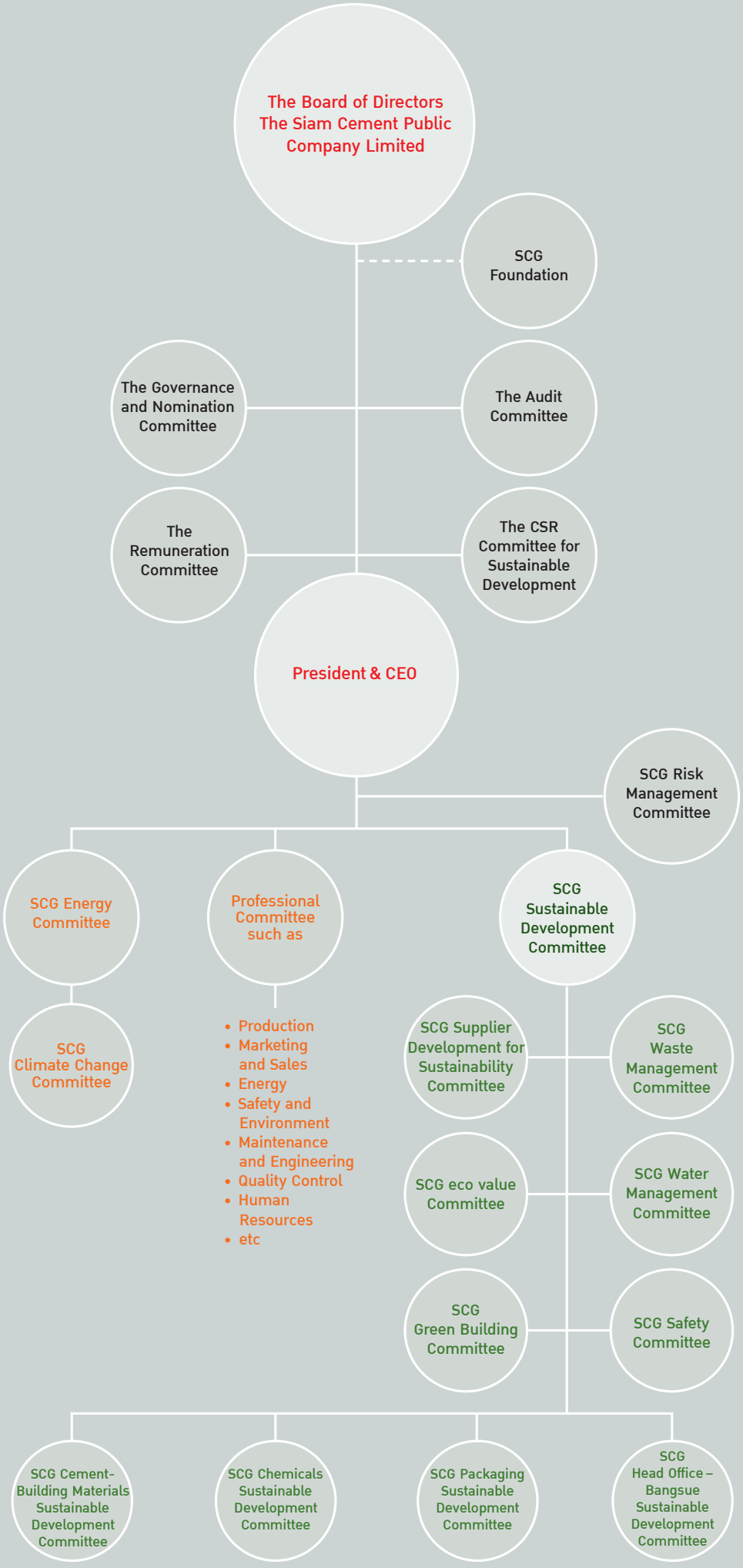
- Formulate policy, strategy, targets and workplan for Upstream Supply Chain Sustainability, building upon the successful rollout of Green Procurement, SCG Contractor Safety Certification Program and SCG Supplier Code of Conduct.

SCG eco value Committee

- Regulate value creation to Downstream Supply Chain to provide options of green products and services to the consumer.

SCG Green Building Committee

- Deliberate and supervise renovation of SCG Headquarters at Bangsue so that it is energy-efficient, environment-friendly and a happy work place for our employees.
- Formulate strategy, guideline and implementation, to generate business opportunities for SCG's products that are energy-efficient and green.


The Board of Directors The Siam Cement Public Company Limited
SCG Foundation
The Governance and Nomination Committee
The Audit Committee
The Remuneration Committee
The CSR Committee for Sustainable Development
President & CEO
SCG Risk Management Committee
SCG Energy Committee
Professional Committee such as
SCG Sustainable Development Committee
SCG Climate Change Committee
• Production
• Marketing and Sales
• Energy
• Safety and Environment
• Maintenance and Engineering
• Quality Control
• Human Resources
• etc
SCG Supplier Development for Sustainability Committee
SCG Waste Management Committee
SCG eco value Committee
SCG Water Management Committee
SCG Green Building Committee
SCG Safety Committee
SCG Cement-Building Materials Sustainable Development Committee
SCG Chemicals Sustainable Development Committee
SCG Packaging Sustainable Development Committee
SCG Head Office – Bangsue Sustainable Development Committee

Sustainable Management Approach

SCG *adheres to conducting its business with ethics, and responsibility to all stakeholders for sustainable mutual benefits. SCG has set its Sustainable Development Framework in accordance with global practices, covering three dimensions of economy, society and the environment, with corporate governance as an overarching principle. It is to ensure that operations by our business units are aligned.*

SCG is dedicated to creating value to the society through its environmentally friendly business operation. SCG is willing to share knowledge, experiences and success by engaging with all parties such as its relevant businesses throughout upstream and downstream, business organizations, institutes, including social and community-based enterprise to empower the society with strong and sustainability.

In 2016, SCG has launched its Environmental and Energy Policy to enhance efficient and effective implementation in all areas of SCG operations. The policy will also be applied when implementing any new project, modification project, due-diligence as well as mergers and acquisitions.

Corporate Governance

Supervises our business management to ensure fairness, transparency and accountability in accordance with its business philosophy "Adherence to Fairness".

- Good corporate governance
- Risk management
- Disclosure and reporting

Economy

Creates values not exclusively for profitability, but creates mutual benefits for all stakeholders.

- Contributes to national economic growth through value generated by our operations
- Income distribution among our stakeholders

Environment

Commits to conservation of the environment and natural resources, using resources wisely and maintaining ecological balance.

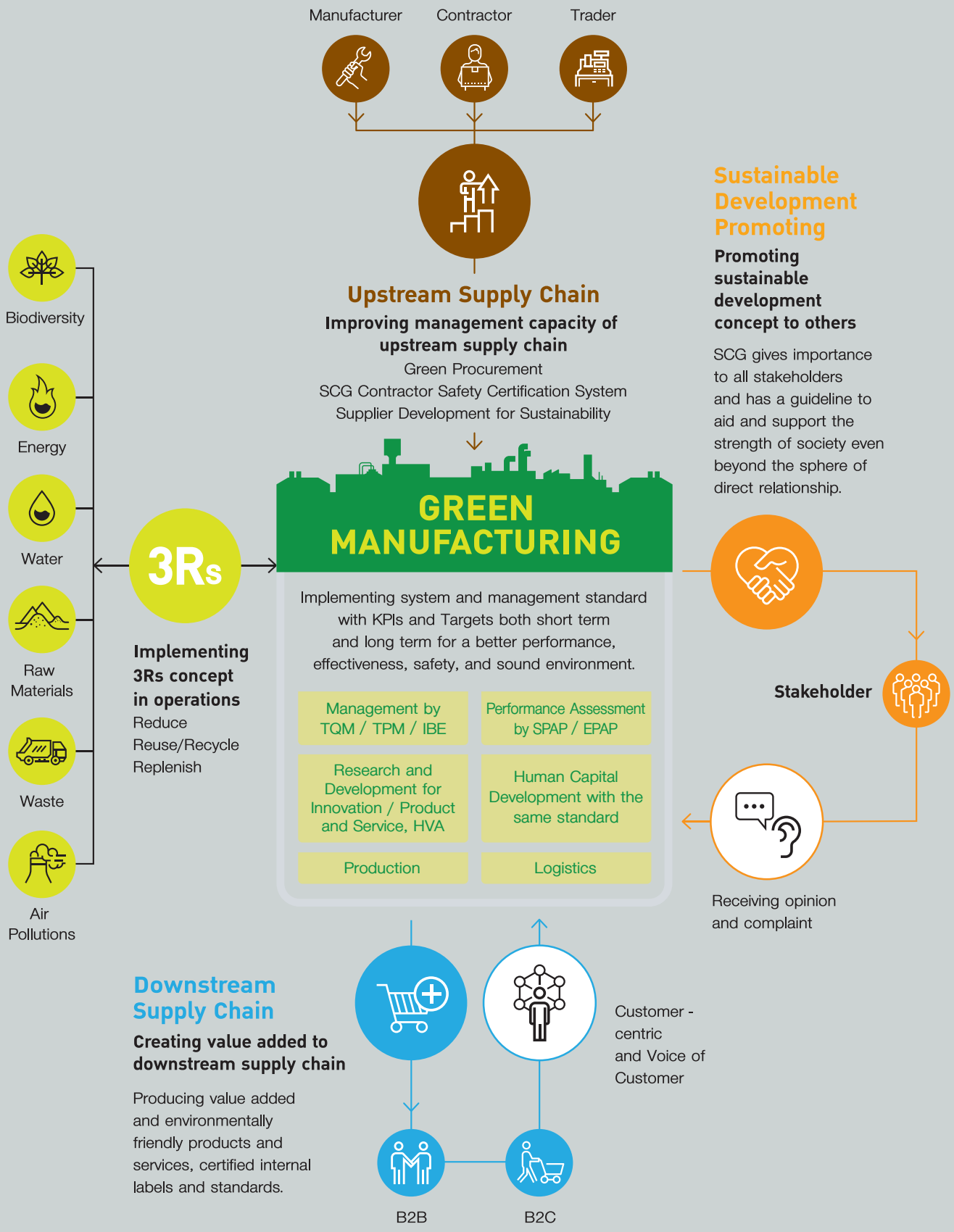
- Energy and climate change
- Water management
- Waste management
- Biodiversity and ecosystem
- Environmentally friendly products and services
- Logistics management

Society

Conducts business with ethics and concern for social responsibility. Participates in improving the quality of life where SCG operates.

- Community investment and donation
- Labor practices and human rights
- Human resources and human capital development
- Health and safety
- Stakeholder engagement

SCG Sustainable Supply Chain



Glossary

TQM – Total Quality Management
TPM – Total Productive Maintenance
IBE – Integrated Business Excellence
SPAP – Safety Performance Assessment Program
EPAP – Environmental Performance Assessment Program
HVA – High Value Added Product and Service

SCG and Sustainable Development

Materiality

SCG manages its sustainability issues by collecting and prioritizing them in connection to their relationship with business operations. We also take into account issues arising from risk assessment – current and projected risks that may impact SCG's businesses. SCG employs stakeholder engagement in the process; using steps such as opinion surveys, dialogue forums, and workshops – to draw upon a variety of perspectives, information and analyses, before we collect them all to prioritize as materiality issues. These efforts ensure that our management of materiality issues appropriately responds to stakeholders' needs. The whole process is referenced in accordance with the G4 - Global Reporting Initiative (GRI) and Dow Jones Sustainability Assessment Criteria.

Materiality Assessment Steps

1 **Collect sustainability and information issues across the entire supply chain (raw material sourcing/ production/transport and distribution/usage of products and services)**

- SCG Sustainable Development Guidelines
- International norms (GRI, DJSI, WBCSD, among others)
- Opinion panels of multi-disciplinary experts
- Employee Satisfaction Survey
- Community Satisfaction Survey
- Brand Image Survey
- Inputs from complaints mechanism
- Enterprise Risk Assessment

2 **Assess sustainability issues on the basis of impact on stakeholders**

- Organize workshops with representatives of functional areas that relate to each group of stakeholders to measure the extent of impact
- Conduct internal meetings at functional level to review priorities, taking into account external stakeholders' perspectives

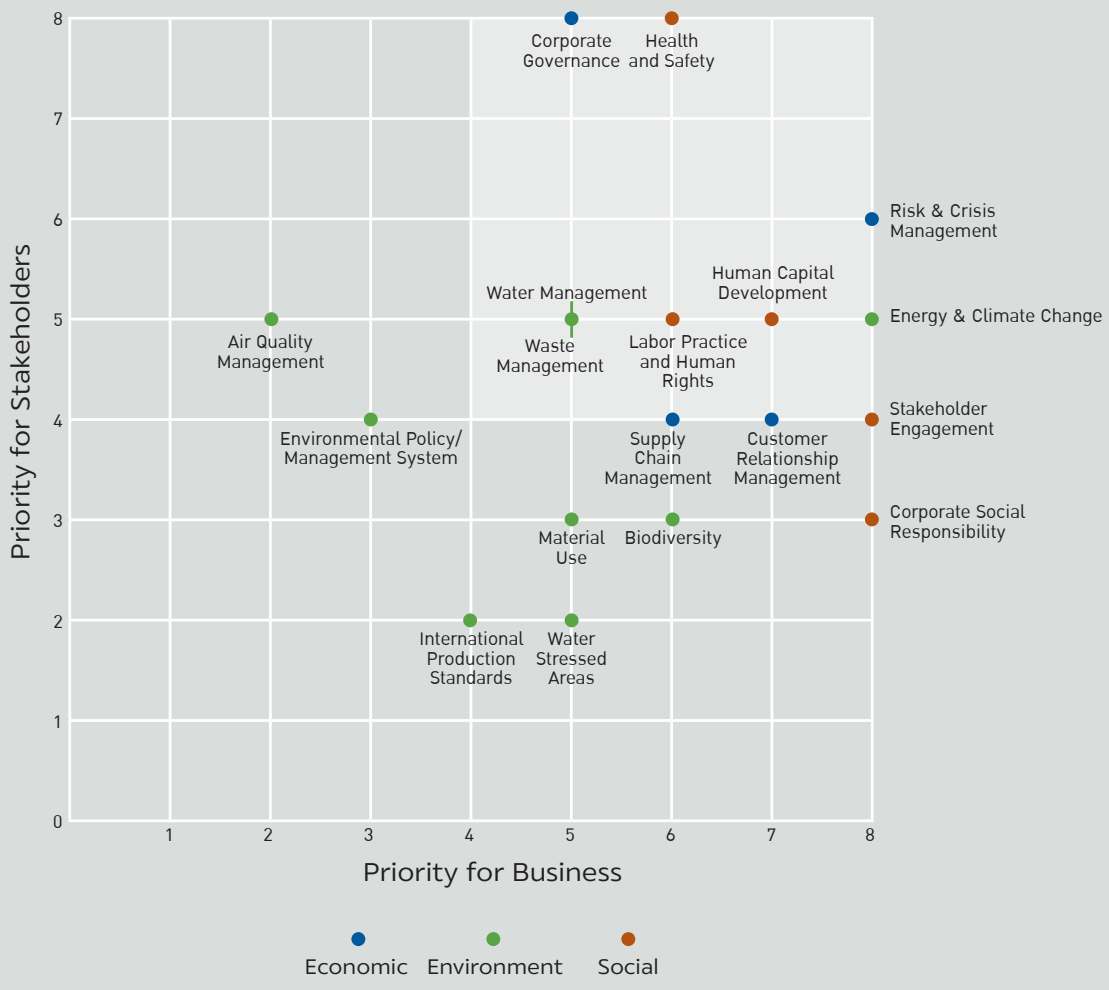
3 **Assess importance of issues on the basis of impact on SCG**

- Organize workshops with representatives from functions/units and SCG specialists to analyze and prioritize material issues from SCG's perspective, and considering impact or potential business opportunity

4 **Prioritize material sustainability issues**

- Plot the SCG Materiality Matrix reflecting the perspective of stakeholders and SCG's (Refer to Materiality Matrix)
- Organize meetings with functional areas to solicit opinion, and to validate the result of materiality prioritization
- Present Materiality Assessment results to the SCG Sustainable Development Committee

SCG Materiality Matrix



Sustainability Issues in this Report

Sustainability Issue	Scope of Reporting	Page
Material Issues		
Health and Safety	Health and Safety	42
Risk & Crisis Management	Risk and Opportunity	26
Corporate Governance	Corporate Governance/Corporate Governance Practices	16, 38
Energy and Climate Change	Energy and Climate Change	58
Human Capital Development	Employee Caring and Development	52
Stakeholder Engagement	Stakeholder Engagement	30
Labour Practice and Human Rights	Human Rights/Employee Caring and Development	48, 52
Customer Relationship Management	Sustainable Value towards Customer	88
Water Management	Water Management	64
Waste Management	Waste Management	74
Supply Chain Management	Create Sustainable Value towards Suppliers	92
Other Issues		
Corporate Social Responsibility	Concern for Society and Community	104
Biodiversity	Biodiversity and Ecosystem	98
Material Use	Material Use and Recycling Strategy	70
Environmental Policy/Management System	Sustainable Development Structure/ Sustainable Management Approach	18, 20
Water Stressed Areas	Water Management	64
Air Quality Management	Not covered in this report	-
International Production Standard	Not covered in this report	-

Risk and Opportunity

Amidst global economic uncertainties and various other risk aspects which are becoming more complex and more severe, SCG has adopted the "Principles of Sufficiency Economy" to build resilience for its business. At the same time, SCG has applied enterprise risk management in accordance with international standards. The framework characterizes every step from strategic formulation, to operation, to decision for new investment. SCG has raised awareness and increased efficiency in risk management to add value to the organization and stakeholders. SCG regularly conducts risk assessment and develops strategies to manage such risks and to identify potential business opportunities. We believe this effort will enable SCG to achieve its business objectives and sustainable growth.

SCG defines proactive Key Performance Indicators (KPIs) as both leading and lagging in order to forecast risk events and manage them in line with the targets. Results of enterprise risk management are reported to the Business Unit Risk Management Committee and SCG Risk Management Committee, respectively. Then, the reports are presented to the Audit Committee on a quarterly basis.

Structure and Responsibility

The SCG Risk Management Committee, chaired by the President and CEO of SCG, has the duty to support and monitor every aspect of risk management

SCG Eight Risk Categories

- Safety, Health and Environment Risks
- Compliance Risk
- Reputation and Intellectual Property Risks
- Hazard Risk
- Input Risk
- Process Risk
- Financial Risk
- Business Risk

as well as compliance. The SCG Risk Management Committee is overseen by the Board of Directors and the Audit Committee.

Strategy Establishment

SCG has established explicit objectives and risk appetites in managing risks to ensure consistent risk management practices across the organization.

Risk Management Process

The four steps in the risk management process are 1. Risk/Opportunity Identification, 2. Risk Assessment, 3. Risk Response, and 4. Risk Reporting. Risk management process is applied to three primary areas: medium to long-term strategic risk management, investment project risk management and operational risk management.

Building Organizational Culture

SCG has continuously raised risk management awareness to become a part of the organizational culture through internal communications, knowledge forums, and workshops for executives and employees. In addition, SCG appointed "Risk Champions" in each Business Unit to promote the adoption of risk management in the work processes of every company.

Risk Management Process

1 Risk/ Opportunity Identification

Aiming at a forward-looking approach using Key Risk Indicators.

2 Risk/Opportunity Assessment

Applying Common Risk Metrics, whereby Risk Owners apply tools such as Risk Map, Scenario Analysis, Correlation Analysis, Benchmarking, and Critical Process Identification for crisis management, to assess the likelihood and impact of risk.

3 Risk Response

In cases where the residual risk remains higher than the designated risk limit, countermeasures must be in place. In the case of a crisis, an Emergency Response Plan and Business Continuity Plan must be activated. With the advent of potential business opportunities, plans must be drawn up to exploit those opportunities.

4 Reporting and Monitoring

Risk management results are reported to the Risk Management Committee of Business Units and SCG, respectively.

Key Situations and Risk Management

Year	Risk Situation	Risk/Opportunity Management
1997	Asian Financial Crisis	Establishment of a Risk Management Committee and the First Risk Management Framework
2010-2011	Thailand Political Crisis	Formation of Business Continuity Management (BCM) office and Crisis Management Committee to monitor and analyze situations, assess risk and opportunity and develop response plans to ensure business continuity
2011	Thailand Mega Flood	Execution of business continuity plan including situational analysis, mobile office arrangement, and aid coordination center setup to help affected employees with prevention & relief activities and post-disaster recovery
2012	Global economic slump and public sector debt problem in Europe	Establishment of SCG Risk Management Committee and Corporate Risk Management Unit, and the revamp of the Risk Management Framework
2015	Consumer behavioral change driven by digitization and its impact on media printing business	A transformation of SCG Paper to become a Total Packaging Solutions Provider and thus, the rebranding as SCG Packaging
2016	Drought due to El Niño and its effect on production and business continuity	- Situational monitoring and analysis in vulnerable areas on water consumption as well as treated water quality released into the environment; - Strict compliance with the 3Rs concept (Reduce, Reuse/Recycle, and Replenish) of water management approach; - Collaboration with government and related organizations for efficient water source management such as to connect critical water sources in the East Coast Region; - Organization of social activities such as SCG Project to Counter Drought, and the scale up of SCG Conserving Water for Tomorrow Project

Emerging Risk Management

Risk from higher cost of energy in Thailand

Domestic energy sources in Thailand are projected to deplete in the long run, against ever increasing demand for energy. This risk would affect both energy and electricity prices, and also impact SCG's energy costs. SCG thus established the Energy Committee to develop policy and monitor energy efficiency efforts. Additionally, the organization appointed a taskforce who is responsible for the exploration of both conventional and alternative sources of energy that are environmentally friendly. At the same time, SCG invested in developing high value added products and services that reduce the use of energy and natural resources, and supported the production of electricity from process waste.

Risk from climate change, natural disaster and greenhouse gas emissions control

In 2016, Thailand ratified the Paris Agreement which commits participants to reduce greenhouse gas emission by 20-25 percent by 2030 which would limit global warming to well below 2 degrees Celsius. As Thailand's top industrial company, SCG has assessed the effects of full compliance with the Paris Agreement. Thus, SCG has established measures to reduce greenhouse gas emissions such as reducing the proportion of fossil fuel while increasing the use of alternative energy. Other initiatives include power generation from waste heat from cement production process, rooftop solar power generation system, and emisspro® technology to improve energy efficiency of furnaces. SCG has also raised awareness among the employees on the importance of energy conservation and the use of clean energy.

Risk of slow growth rate in Thailand

The study on "Thailand's New Normal" shows that the Thai economy could grow at a slower rate of 3 percent in GDP compared to the past average of 5 percent. Such a slower growth rate is mainly a consequence from the country's structural changes such as aging workforce, resulting in labor shortage and wage hikes that could impact SCG's production costs. Besides, the reduction from export from double to low single digit and lower domestic spending due to high household debt could pose as risks to Thailand's growth. SCG has therefore, collaborated with the government, private sector, and universities to improve the quality of vocational education and skills development in Thailand, alongside the use of automation and robotics in production processes. SCG also focuses on developing high value added products and services, adjusts strategies from a domestic-sales focus to exporting more to ASEAN and non-ASEAN countries, and further expands its businesses overseas.

Risk from digital technology transformation

Digital technology and social media have and will influence the way people live and how enterprises do business, and in the long run could put SCG's competitiveness at risk. On the upside, these could bring about new business opportunities to add value to the organization. For this reason, SCG has dedicated efforts to track and analyze digitization trends for business development while boosting competitiveness. Examples include the adoption of Big Data to analyze customer's needs, behavior and expectations, the development of marketing strategies focusing on Omni channel that allows customers to access products and services through physical stores and websites, and the offering of an express service for small parcel delivery to accommodate rapid growth of e-commerce, m-commerce.

Stakeholder Engagement

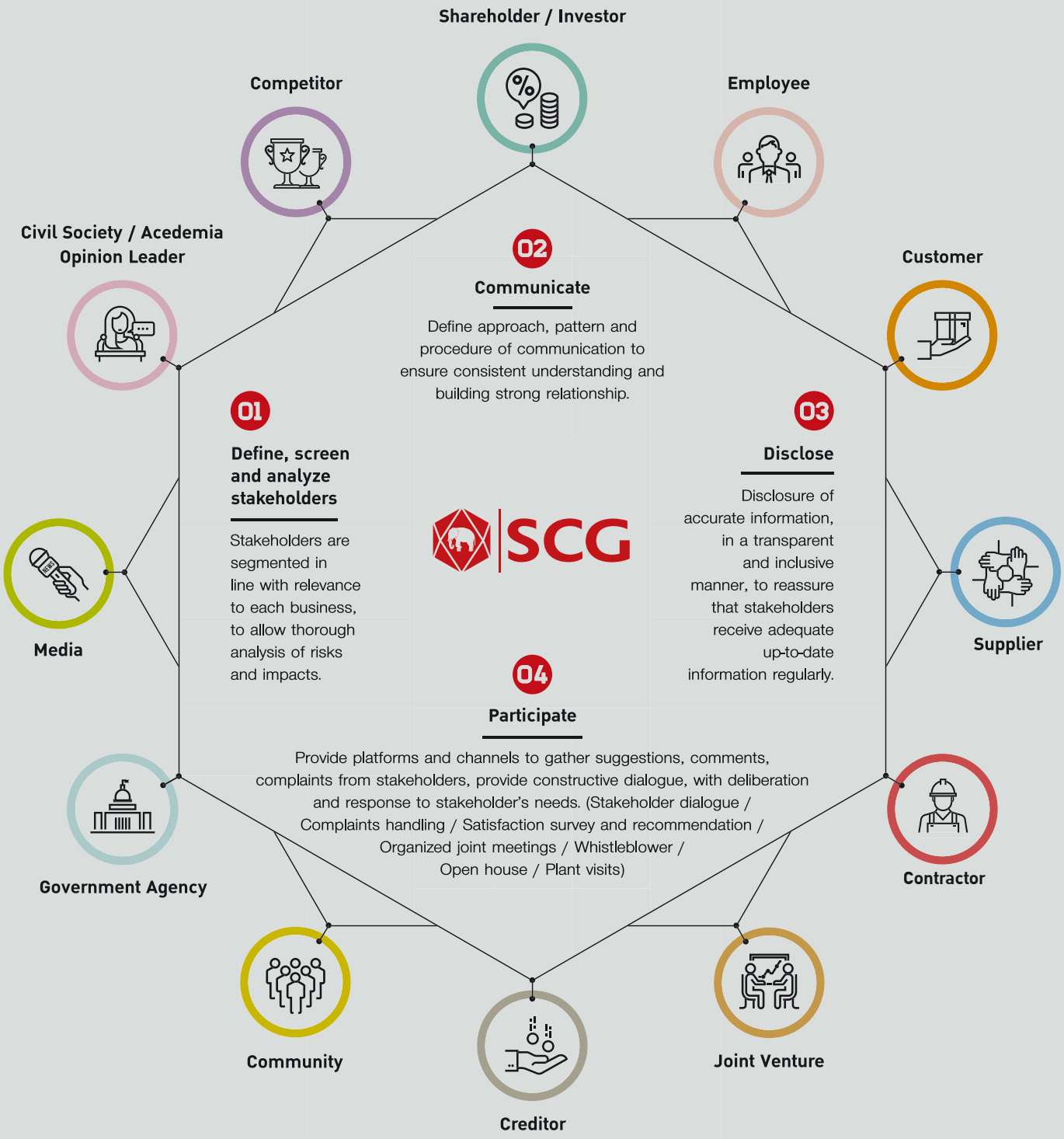
SCG has announced a Stakeholder Engagement Policy for all units and employees at all levels to be aware of the importance of stakeholders, to respect their rights, and to understand fair conduct towards the stakeholder. The Policy aims to prevent risk or consequences of inappropriate conduct. It also provides a framework for constructive engagement with the stakeholder, and together, we can make society stronger and the environment sustainable.

Stakeholders include people who are affected by SCG, those who may impact SCG, as well as those interested in SCG businesses. SCG has defined, identified and analyzed stakeholders as 12 categories of people and entities. We have formulated a communications strategy, disclosure of information and engagement that are suitable to these different categories, whose level of engagement with, interests and expectations may vary. SCG customizes methods and levels of engagement to suit each group of stakeholders, to achieve the broad objective of building stakeholder confidence in SCG's sustainability operation.

Stakeholders

12

groups



The Opinion Panel 2016

SCG Sustainable Development Committee convened the annual 2016 Opinion Panel to listen to information, suggestions and criticisms of Stakeholders, now in its sixth year. SCG assigned Energy and climate change as the thematic focus for the 2016 Opinion Panel. Participants included experts from the State sector, universities, non-governmental organizations and media representatives. They have put forth interesting suggestions regarding energy management and management under Climate Change contexts.

Opinion Panel Namelist

1. Thaweesak Budton
Matichon Weekly Magazine Columnist
2. Prasertsuk Chamornmarn
Executive Director of Thailand Greenhouse Gas Management Organization (Public Organization)
3. Twarath Sutabutr
Director-General, Energy Policy and Planning Office, Ministry of Energy
4. Assoc. Prof. Supot Teachavorasinskun
Dean of Engineering Faculty, Chulalongkorn University
5. Srisuwan Janya
Chair of the Association Against Global Warming

Suggestions from the Panelists

- Improve efficiency of the production process, reduce energy use, increase the share of renewable energy use, and cut greenhouse gas (GHG) emissions. All these should be done with clear targets accompanied by indicators that track improvements for instance, GHG emissions cut per production unit, energy-efficiency per product unit.

- Chart the direction and generate innovations of products and services that are energy-efficient, lower Greenhouse Gas emissions, and are responsive to climate change imperatives, keeping in mind the trend that consumers now pay more attention to the environmental impact of consumption.

- Communicate with customers regarding the portfolio of SCG products that are energy-efficient and eco-friendly throughout their life cycle, so as to educate customers, leading to their greater awareness of environmental impacts.

- Do business with responsibility, to win the acceptance of the community and society. In some locations where issues with the community have not been solved, it should step up efforts at social dialogue, communication and engage more to improve the understanding with the community.

- SCG should be the role model and leader of sustainable development, and expand the coverage to contractors in the entire supply chain. SCG should also mentor SME enterprises. Moreover, it should communicate its efforts more actively, to motivate the Civil Society Sector to have similar expectations and demand other organizations to follow the sustainability practices.

Sustainability Networking

SCG has supported many agencies and organizations in Thailand and beyond, in business, social development and environmental missions.

Thai Organization

- Federation of Thai Industries (FTI)
- The Thai Chamber of Commerce
- Council of Engineer
- Thailand Environment Institute Foundation (TEI)
- Thailand Productivity Institute
- Petroleum Institute of Thailand
- Thailand Development Research Institute (TDRI)
- National Institute for Emergency Medicine
- Thailand Greenhouse Gas Management Organization (TGO)
- The Engineering Institute of Thailand under H.M. the King's Patronage
- Environmental Engineering Association of Thailand
- Thailand Management Association (TMA)
- The Thai Institute of Chemical Engineering & Applied Chemistry
- The Thai Pulp and Paper Industries Association (TPPIA)
- Thai Cement Manufacturers Association (TCMA)
- Collaboration of Thai Clean Development Mechanism Project Association (CDMA)
- The Safety and Health at Work Promotion Association (Thailand)
- Occupational Health and Safety at Work Association (OHSWA)
- Thai Listed Companies Association
- Thai Institute of Directors (IOD)
- Community Partnership Association
- The Association of QC Headquarters of Thailand
- Thai Logistics and Production Society
- National Science and Technology Development Agency (NSTDA)
- Social Responsibility Center of the Stock Exchange of Thailand
- Road Safety Policy Foundation
- Thailand Business Council for Sustainable Development (TBCSD)
- Thailand's Private Sector Collective Action Coalition against Corruption (Thai CAC)
- The Public Private Sector Collaboration Working Group
- Thai Roads Foundation
- Chulalongkorn University
- Saraburi Technical College, Ta-Luang Cement-Thai Anusorn Technical College, Thung Song Technical College, Had Yai Technical College, Lampang Technical College, Rayong Technical College, Ratch aburi Technical College, Nakhon Nayok Technical College, Lopburi Technical College, Sattahip Technical College, Khon Kaen Technical College, Vimol Business Management Technology College
- Traffic Radio for Society

International Organization

- World Business Council for Sustainable Development (WBCSD)
  - WBCSD - Cement Sustainability Initiatives (WBCSD CSI)
  - WBCSD - Sustainable Forest Products Industry (WBCSD SFPI)
- UN Global Compact (UNGC)
- Dow Jones Sustainability Indices (DJSI)
- Asia Business Council (ABC)
- Regional Olefins Producer Technical Committee
- Forest Stewardship Council (FSC)
- International Council of Forest and Paper Associations (ICFPA)
- Federation of ASEAN Pulp and Paper Industries (FAPPI)
- Asian Pulp and Paper Association (APPA)
- International Corrugated Packaging Foundation (ICPF)
- International Corrugated Case Association (ICCA)
- The World Containerboard Organization (WCO)
- Duke Corporate Education

Strengthening Social and Environmental Sustainability together with Business Growth through Cooperation Projects with Stakeholders' Network

In 2016, SCG continues implementation of SCG Conserving Water for Tomorrow Project, making sure that we continue to follow His Majesty King Bhumibol's legacy of sustainable water management. We continue our support for communities who build check dams according to the Royal Initiative as these check dams are water management tools to keep the ecosystem sound all year round. Until 2016, the project has built to total 70,764 check dams. (Page 106)

On Climate Change, SCG aims to be a leading enterprise in demonstrating social and environmental responsibility, by setting our target to cut greenhouse gas (GHG) emissions by 10 percent within 2020 (compared to the base year of 2007). We have entered into a partnership with Thailand Greenhouse Gas Management Organization (Public Organization) or TGO to volunteer to join its projects as a pilot enterprise including the Clean Development Mechanism, Enterprise Carbon Footprint, and Product Carbon Footprint. Currently, our Carbon Footprint-certified products total 502 items. (Page 87)

SCG collaborates with suppliers to pursue Green Procurement. We give priority to procuring goods from our suppliers that are Green label-certified, or in the SCG Green Procurement List, and involve them in the Supplier Development for Sustainability Program. In 2016, the number of suppliers in the Green Approved Vendor List totals 197, with 75 products, accounting for Green Procurement value totaling 9.936 billion baht. (Page 94)

Important Issues for Stakeholders

An organization that inspires stakeholders' trust in good corporate governance

SCG has sought to build confidence among all groups of our stakeholders that it is a role model for good corporate governance, internally recognized for its corporate governance standards by charting policy,

Sarinee Achavanantakul

Managing Director, Knowledge Development
Sal Forest Company Limited

"A good Sustainability Report should be a communication tool for stakeholders to understand. Until now, the SCG Sustainability Report explains all issues equally. We don't really get a clear vision of sustainability of SCG as a national and regional organization. SCG should present its sustainability strategies and tangible targets. Where strategy is concerned, it should not just be about every single topic but it should select major issues that matter to the country, including issues that matter or impact SCG significantly, like Climate Change, greenhouse gas (GHG) emissions, which SCG itself is an actor as carbon emitter and mitigate impact on the Company's operations. SCG may address issues that affect Thailand's own sustainability such as an aging society, pollution or waste management problems. SCG should make clear how it is going to be part of the solution to those problems. Once strategy is presented, it should articulate short, medium and long-term targets. For instance, within 3 years, it would reduce what to what percentage and an annual work plan.

Moreover, in this report I'd really like to hear the real voice of real stakeholders who are not employees or contractors of SCG. Perhaps a representative of a non-governmental organization working with the community, someone who's not directly involved with SCG. That should strengthen the Stakeholder's Engagement chapter making it more credible."

a code of conduct and guideline for executives, employees, and suppliers. SCG Compliance Management System provides a framework to regulate operations at all levels. Joining Thailand's Private Sector Collective Action Coalition against Corruption (Thai CAC), SCG has been a Certified Company since 2013, and in 2016, it has earned the Recertified Company status. (Page 38-41)

Valuing human resources as our most valuable asset

Treating employees and suppliers with equality and fairness; and capacity building, fair remunerations attract and create a sense of job satisfaction among employees and suppliers so they want to work with SCG long term. SCG therefore gives priority to protection of human rights as outlined in the SCG Code of Conduct. We have announced that we apply the same human rights policy in any country where SCG operates. We also attend to advancing the competency of staff and suppliers to grow along with our business, and to employee engagement to retain the workforce on a long-term basis. (Page 52-57)

Safety

The production of SCG products and services involve safety risks to both our employees and contractors, plus other parties such as the community, the third party in the logistics business. SCG thus accords importance to safety as the first and foremost priority. SCG's safety policy is zero-tolerance and strict sanctions are imposed for violations. The executives must be role models and have the leadership to encourage a safety culture and a safe work practice. Our employees must also be safety-conscious and demonstrate their commitment to safety. (Page 42-47)

Ampai Harakunarad, Ph.D

Research Director for Sustainable Development
Thailand Development Research Institute (TDRI)

"SCG's business is very vulnerable where sustainability issues are concerned, and in particular the issue of the environment, and natural resource use, which are a part of the production costs. Because excessive use beyond carrying capacity will affect sustainability, SCG therefore should pay attention to the carrying capacity of resources within the areas, how much there is, how much it would be available to use, and how to use it most efficiently through innovations. Energy use has a large impact on global warming and Climate Change. SCG should make efforts to cut greenhouse gas (GHG) emissions, choose clean energy, avoid polluting the environment, and apply waste recycling technology. These are challenges that businesses must respond to the complex and rapidly changing world while maintaining profitability to keep the business sustainable.

Regarding the 17 Sustainable Development Goals that are our global advocacy, many of them may not be directly relevant to SCG, such as poverty, food security, wellness, education, but they are indirectly relevant to the suppliers and consumers whom SCG should care for. I would like to encourage SCG to focus on these goals because SCG should be able to do it well. One is innovations that can respond to changes and challenges. The Goal about urbanization and sustainable community, SCG's sustainable products and services are directly relevant. Though the marine resource goal may sound remote to SCG, we are facing plastic trash overflow in the Gulf of Thailand. There, one may link this to packaging, and in this context SCG may come up with innovations to address this, such as bio-degradable plastic that is eco-friendly. In this sense, SCG can contribute to the achievement of the 17 Sustainable Development Goals which will give SCG a good international profile."

Sustainability Performance

10 / 0.25
160 / 0.17
Cu
Zn
Ge
As
Ag
Cd
Sn
Sb

Corporate Governance Practice

SCG conducts business responsibly, and with transparency and fairness. The company upholds the principles of corporate governance, the Code of Conduct and compliance, and adheres to anti-corruption and anti-trust practices. The Governance and Nomination Committee drives policy, while operationally, the Corporate Compliance Committee supervises. With rigorous monitoring and evaluation processes at all levels of operations, we constantly invest efforts in making sure the ***"Adherence to Fairness"*** *component of our Business Philosophy prevails within the workforce as a preventive mechanism, mitigating risks of breaching a code of conduct, fraud and corruption that may impact shareholders, stakeholders and SCG business.*

Target

- To be a role model that is internationally recognized for good corporate governance practice

Strategies

1 Upholding good corporate governance in managing the organization

With the Board of Directors playing an instrumental role in corporate governance, the Company organizes regular forums to impart knowledge and other topical issues for members of the Board. Directors must demonstrate and set good examples for the management and the workforce in corporate governance and the SCG Code of Conduct compliance.

2 Formulating policy, the code of conduct and guide lines for the management, employees and contractors

To foster compliance with good corporate governance practice nationally and internationally, taking into account the appropriateness and fairness to all stakeholders, SCG Code of Conduct and corporate governance guidelines are subject to regular updates to reflect changes in laws and policies.

3 Supervision to ensure strict compliance

The SCG Compliance Management System is instituted for supervision at the corporate level, business units and companies, by integrating existing management systems to customize for individual companies and take into account their specific context and organizational structure.

4 Evaluation, audit and staff sensitization

SCG applies the Proactive Preventive tool, which is a preventive system consisting of Ethics e-testing for employees, risk management and internal control within a unit at 3 levels (operational, support and supervisory unit, and the audit office), plus lessons learned from fraud case studies, and regular internal communications to build an organizational culture of transparency.

2016 Performance

Anti-Corruption Effort

Corruption is a major problem Thailand is trying to resolve. SCG has an anti-corruption policy, and its fairness, transparency and accountability in business conduct has earned it the Certified Company status from Thailand's Private Sector Collective Action Coalition Against Corruption (Thai CAC) since 2013. In 2016, SCG has been assessed and recognized as a "Re-certified Company." In addition, we endeavored to bring other companies in our group onboard the Coalition. As a result, 3 more companies in our group have now joined the Thai CAC Certified Company rank, namely Thai-German Ceramic Industry Plc., Quality Construction Products Plc., and Thai Plastic and Chemicals Plc.

Highlights of SCG's anti-corruption work in 2016 include:

- Updating of Ethics e-testing. Ethics e-testing is now divided into 3 levels, in line with staff roles and responsibilities at different levels. All staff members are required to pass a 100 percent score. We conducted an analysis of answer sheets in order to plan more effective internal communications; and addressing gaps and issues that need clarification as reflected in the answer sheets.
- Conducting self-assessment of high-risk units such as procurement, sales, project management, central servicing, according to the Anti-Corruption Compliance framework. Results are used to plan further improvement.
- Producing two sets of video clips on "Well-Well Living with the SCG Code of Conduct" and "Anti-Corruption." Both clips serve as internal communications tools, using animation to make complex issues easier to understand across the entire workforce.

Whistleblowing Policy

The Whistleblowing Policy is an avenue for members of staff and the public to bring attention to alleged corrupt practices, acts suspicious of fraud, or the potential breaching of SCG's Business Philosophy or Code of Conduct. There is a mechanism to protect whistleblowers from harassment and retribution. If cases are established through inquiry as malpractices, SCG is strict with imposing sanctions, with maximum penalty being dismissal – in accordance with Human Resources Guidelines. Upon the completion of investigation into complaints, follow-up measures are implemented for preventive purposes, and reinforcing internal communications for staff to strengthen compliance.

Complaints Statistics

43 complaints received in 2016

11 complaints from 2015

49 cases, investigation completed

5 cases under investigation

0 case of anti-corruption policy violation

Investigation Results

2 cases of ethnical breach on environment, health and safety

3 cases of ethical breach relating to human rights issue

6 cases of ethical breach relating to conflict of interest

17 cases of non-compliance

21 cases of compliance – facts established as contrary to complaints. There is no case of false complaint or damaging others.

Insider Trading

SCG has committed to prevention of insider trading and misuse of internal information as evidenced by Article 7 of the SCG Code of Conduct. SCG's employees must not use inside information for their own or another person's illegitimate benefits and must examine impacts on all stakeholders and applicable laws before using the internal information.

Recognizing the importance of this issue, SCG organized throughout 2016 a series of seminars and forums to inform and update the Board of Directors, SCG top executives and staff in units concerned. It is also preparing a Securities and Exchange Act handbook for the workforce in 2017. These efforts along with the Compliance Management System (CMS) serve to reassure that managers and staff fully understand and comply with rules and regulations.

Trade Competition

SCG's strong commitment to complying with competition laws has been established in Article 11 of the SCG Code of Conduct. SCG conducts business with emphasis on ethics, fairness, and observance of competition regulation in every country it operates. The company also reaffirms its commitment by requiring the employees to follow SCG Anti-Trust Guidelines to promote free and fair competition.

In 2016, SCG introduced the CMS system to regulate trade competition to ensure that our management and staff understand fully the provisions of the trade competition law and enhance system for preventive actions.

Other Developments

- Dr. Sumet Tantivejkul, Chairman of the Governance and Nomination Committee, addressed a gathering of 600 SCG management-level employees on the theme of "Integrated Governance Risk Compliance" on 27 October 2016. The key message is that managers must set examples for ethical conduct and show courage to do what is right.

- A dialog on "Trends in Corporate Governance" on 10 November 2016, with Mr. Rapee Sucharitakul, Secretary-General of the Securities and Exchange Commission, allowing for an exchange of opinions among directors and top executives on SEC Good Governance Guideline 2016, and trends and challenges for Board of Directors and management.

Health and Safety

SCG *Safety Framework provides the fundamental guideline, and together with the Safety Performance Assessment Program (SPAP), to reassure higher occupational safety standards for our employees, contractors and suppliers.*

At present SCG still records work-related accidents, which constitute risks in urgent need of managing and it is deemed a crucial mission for the management to prevent and mitigate loss.

Targets

- Become an Injury and Illness-free Operation
- Achieve Zero fatality from work and reduce Loss Time Injury Frequency Rate to not more than 0.030 cases / 200,000 man hours
- Expand and reinforce our safety culture regionally

Strategies

❶ Assess safety performance with SPAP

We are committed to having all units achieve a higher level of Safety Performance Assessment Program (SPAP) certification. We aim for all factories in Thailand to pass Level 4 (Succeeding). This means the overall score must be within the range of 80-89, on the condition that there is no accident to the extent of a fatality or an organ-loss injury of employees, contractors, or a third party in the year under assessment.

❷ Establish safety standards and a safety culture among staff at all levels, to be led by top management

Management executives must demonstrate leadership and make themselves role models for safety, as well as mobilizing the participation of staff at all levels and of contractors, in order to institute a safety culture within each unit.

❸ Reduce work-at-height accidents

Working at heights over 1.8 meters requires risk assessment and compliance with accident prevention guidelines. This can be achieved by raising awareness and instilling the correct understanding about working at heights to our employees and contractors.

❹ Develop Safety Standards in countries where SCG operates

Management executives must lead in establishing safety practices and culture.
SCG Safety Framework has been applied in Vietnam, Cambodia and Indonesia.
We set the target of SPAP Level 3 for all of our factories in 2018, and pilot factories in each of these countries must achieve Level 4 in 2018.

❺ Enhance safety standards with a new work process system.

We apply safety standards nationally and internationally, or engage a new work process system appropriate to each unit (Process Safety Management, Safety Culture and Safety Leadership) with a view to reinforce a safety culture.

2016 Safety Performance

"At Height, No Risk"

In the last couple years, SCG continuously experienced work-at-height accidents. In 2016, SCG Cement-Building Materials introduced the new six steps guideline for working at height as a preventive measure in every factory. These steps include to assess risks of the task, to find other alternatives to avoid working at height by working on ground instead, and to use appropriate safety equipment as prevention.

As a result of this safety practices, several tools and equipment to make working at height safer have been developed. For instance, Truss Sky Walker for installation of ready-made roofing materials and Work-at-Height Checklist Application on mobile phones for supervisors to check at work site. Other equipment was developed to eliminate working at height. For instance, installation of cement silo level indicators, and installation of the auto tarpaulin cargo truck covering machine.

In addition, we set up the Work at Heights Training Station in familiarizing staff with safety standard and compliance.

With these actions, working at height has become safer.

"Committed and Caring"

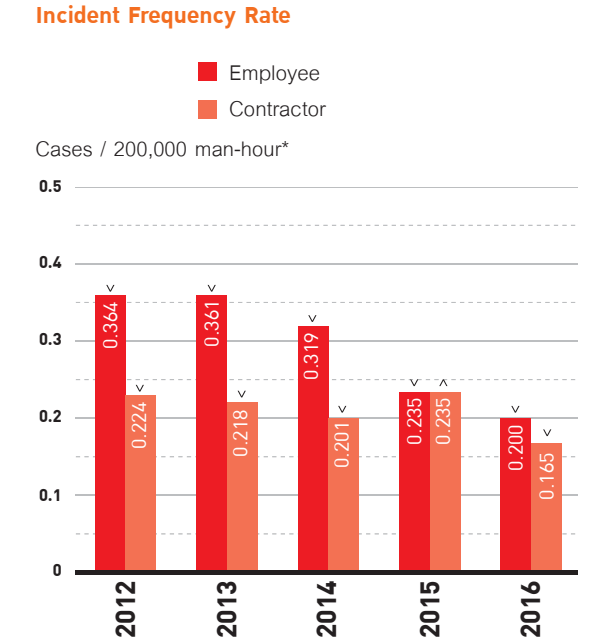
As we recognize that every life is precious, SCG aims to be an Injury and Illness Free organization. One critical element to achieve this goal is to embed a safety culture in how our employees go about doing their work everyday. The supervisors must lead, make themselves role models for safety and show their commitment.

One good practice at SCG Chemicals, the managers/supervisors are required to prepare individual safety plans in line with the Leader Standard Work template and display in a common area where all staff members can see. In doing so, employees get advance notice of the supervisor's mission of the day. For instance coaching, doing dialogue, or performing safety observation. This exercise demonstrates that supervisors take seriously the determination to reduce work-related accidents, and employees willingly cooperate.

In yet another example, SCG Chemicals implements a "The Lifesaver" program that promotes peer-to-peer support. It encourages practices such as warning each other when one spots an unsafe practice, or sharing experiences concerning safety at work, caring for one's own safety and their colleagues through the Life Saving Rules, to raise awareness that anyone at all can be a life saver, not just one's own but others as well.

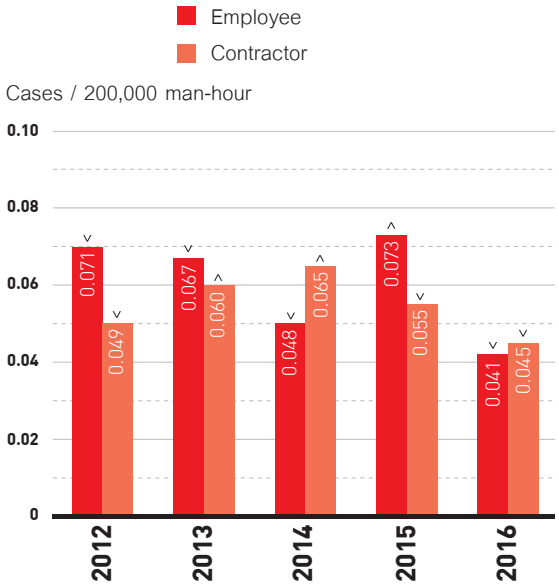
If one happens to visit an SCG Packaging factory, and come across staffers giving the thumbs unto each other, that show of care signals to colleagues not to forget safety at work, and a gesture that is part of the My Safety Commitment Program. Employees formulate their own pledge concerning occupational health and safety. Before each meeting starts, they raise their thumbs up and articulate their safety pledge.

Do you thumb up today?

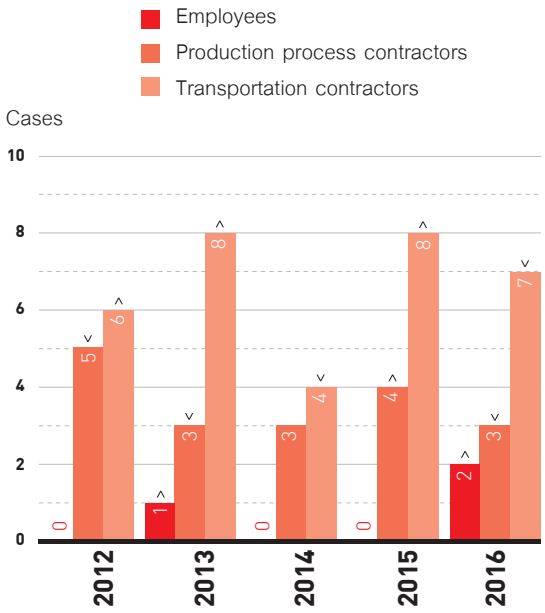


** Incident Frequency Rate is a criteria or indicator for incidents/accidents occurring in the organization, determined by the calculation of the number of people having an accident compared with the standard ratio of 100 employees working for 8 hours per day, 250 days per year, equivalent to 250,000 hours per person per year.*

Lost Time Injury Frequency Rate



Fatality Frequency Rate



Phoka Praypraew,

Director and General Manager
Thai Container Group Co.,Ltd. (Navanakorn Plant)

"I will make the factory a safe work place for all of us and our families, while delivering quality to our customer's satisfaction."

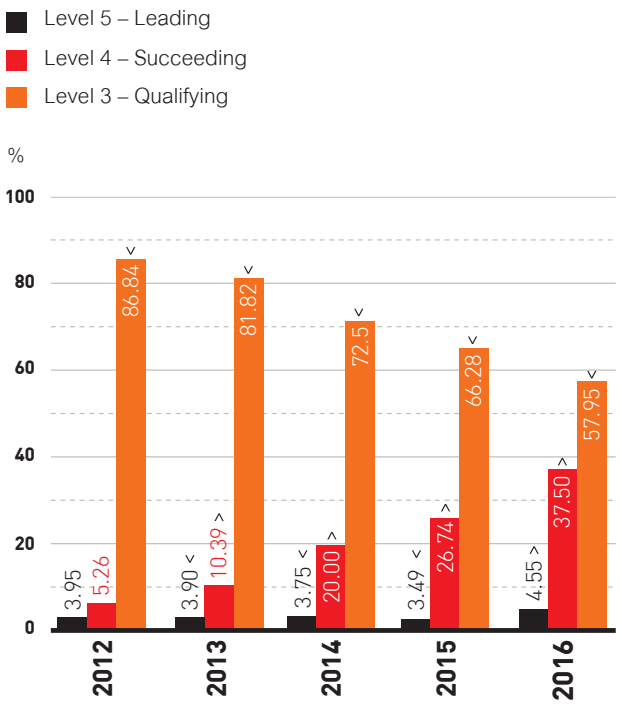
"Tracking Every Move"

Each day, the transporting of products and raw materials involves multiple truck trips. In 2015, we documented an increase in the number of accidents resulting from parking on road side and got hit from behind. In 2016, SCG Logistics Management Co., Ltd. started implementing an initiative called the "Delivery Plan" which specifies where the rest stops are located, and risky spots along different transport routes nationwide. It also installed a GPS in every vehicle of the fleet to enable the Logistics Command Center at the SCG Headquarters in Bangsue to track real-time 24 hours a day.

This represents efforts to apply technology in command operations and effectively reducing road accident rates.

Drivers who are found uncomplying with rules of parking on the road shoulder –for instance parking without emergency, no indicator lights on, not laying traffic cones, will be fined for every single count they violate. In addition, it organized a Carrier Ta-lon Tour in which executives of SCG Logistics Management Co., Ltd., Transporter, and their delegates transport executives go together on joint inspection trips of rest stops, and risky spots along the transportation routes.

Number of SPAP-certified factories in Thailand, 2012-2016



A Role Model of Safe Logistics

SCG Logistics Management Co., Ltd. (SCGL) operates a business on raw materials and products transportation. It exposes risks from transport and road accidents; therefore, the developments of driver skills and performances as well as monitoring and effective control are promoted and emphasized in order to be a Role Model of Safe Logistics. The key activities are:

ISO 39001 (Road Safety Management System)

In 2016, SCG was ratified ISO 39001 consecutively over the past years and expanded standards consistent with this system to cover 66 carriers which resulting in accident reduction in 2016 to 0.06 cases per million kilometers (PPM) or 63% reduction from 2015.

Smart Drivers

Promoting and developing the drivers who completely follow SCGL's rules and standards as well as no accident occurs to obtain special benefits such as scholarship for their children, advanced driving skills training, rewards and others. In 2016, the Smart Drivers accounted 25% from total 8,000 drivers.

Developing and Applying Global Position System (GPS) to Control Driving Behaviors

Apart from using GPS to limit speeds, GPS is applied to define no parking areas on road shoulder over 19,634 kilometers. In 2016, controlling and defining rest areas on transport route allows accident decrease from early in the year. Furthermore, other development plan of using GPS to limit driving hours to less than 4 hours by automatic alert is in place.

As of the end of 2016, the logistic related accidents occurred 0.4 PPM with 9% decrease from 2015. The major causes are drowsy driving and road shoulder parking. Though, SCGL's road accident is 16 times lower than average road accident in Thailand.

SCGL strives to reduce risk behaviors of transport vehicle driving by developing both drivers and technology for safe transport in order to create benefits to business, road passengers and society all together.

Other Developments

SCG Headquarters

- As employees spend long hours working in front of computers, which poses as an occupational hazard; SCG organized an Ergonomics project to adapt workstations and environments to be user-friendly. In 2016, the Facility Management Division, which is a pilot unit of the project, won the Thailand Ergonomics Best Practice 2016 Award, Management category, from the Thai Ergonomics Association.

SCG Cement-Building Materials

- Formed a "Production Professional Safety Standard Committee" consisting of representatives from 6 cement factories, with a mission to develop and organize safety standards in the production process. To date, 25 sets of standards have been completed with 11 more in the pipeline, and 4 factories have been assessed. Three of them scored at Level 5 (Excellent) and one at Level 4 (Good.) Recently we organized the "Show and Share" exercise in order to expand the practice to cover other factories. We have also conducted sharing sessions regarding the implementation of these standards with a view to make production processes safer.

SCG Chemicals

- Expanded the coverage of Process Safety Management (PSM) to include factories whose operations involve highly hazardous processes, in order to prevent serious incidents such as chemical leakage, fires, and explosions. As a parallel, we advance the capability of our staff to implement PSM sustainably.

- Developed a Contractor Safety Management (CSM) by contractor management executive involvement, in order to build a safety standard in accordance with international standards and to establish an agreement on ensuring work safety of all staff.

Human Rights

Protection of human rights is a priority at SCG, as reflected in the SCG Code of Conduct. SCG has announced its Human Rights Policy which effectively covered all countries where SCG operates. It is fully conforming to international human rights and core labor rights norms - the Universal Declaration of Human Rights and ILO's Declaration on Fundamental Principles and Rights at Work, among others. The Board of Directors, management and the entire SCG workforce must respect human rights when they operate and do business.

The Human Rights Due Diligence Processes provide the framework for us. The Processes require identification of human rights-related risks, identification of vulnerable group, preventive or mitigation plans, along with measures to redress and compensate, and monitoring to ensure strict human rights protection.

Targets

- Achieve being a role model organization regarding human rights, support and promote the business value chain to be aware of, as well as protect and respect human rights.
- Conduct business with respect to human rights, without violating the rights of all stakeholders.

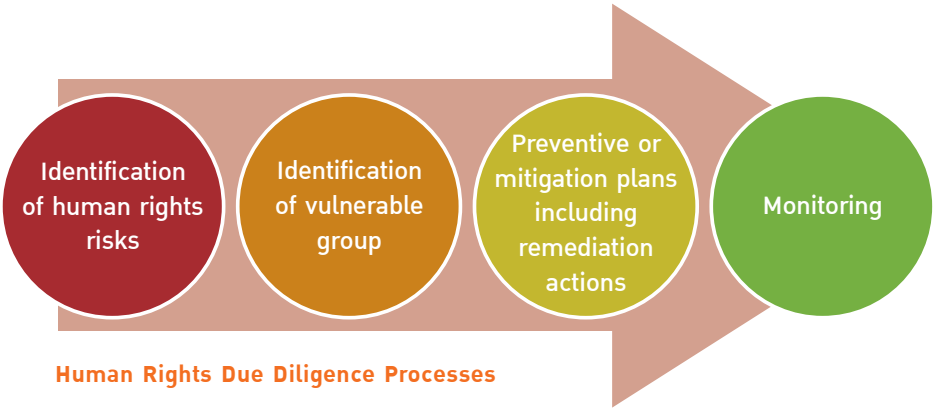
Strategies

❶ Ensure human rights conformity for SCG's own business activities

The Board of Directors, management and the entire SCG workforce must respect human rights in business conduct and operations, complying with the Human Rights Due Diligence Processes. They must also provide measures to mitigate and compensate fairly should violations occur.

❷ Support and promote the business value chain to comply with human rights conduct

Support and promote the value chain to conduct business in strict compliance with the laws and respect human rights principles, by encouraging compliance with SCG Supplier Code of Conduct. Provide regular communication and knowledge dissemination through different channels.



Human Rights Due Diligence Processes

2016 Performance

Prevention of Human Rights Violation

In 2016, SCG conducted a comprehensive human rights risk assessment in every single activity. The exercise has identified 10 important risks, classified into compliance with Labor Law related risks – namely issues relating to compensation, pregnant workers, child and female workers, forced labor, equal treatment, freedom of association and collective bargaining and people with disabilities, and compliance with new or revised Labor Law relatedCrisk – namely issues relating to gender equality and privacy of personal data. It was found that working hours issue is SCG's human rights risk; therefore, mitigation plan was in placed according to SCG's Human Rights Due Diligence Process to assure compliance with human rights conduct. For the other human rights issues, SCG has undertaken efforts continually, thereby minimizing risks. With the exception of risks relating to business partners, SCG is still pursuing rigorous monitoring of compliance.

Working Hours

Vietnam enforced a new Labor Law that legislates terms for overtime payment different from its predecessor law. This has direct impact upon the work of staff. SCG has prepared a Mitigation Plan, with this risk covered in every aspect of SCG's operations in Vietnam. We have taken steps to comply with the new laws.

SCG Human Rights Risk Assessment

Human Rights Related Risks	Impacted Stakeholder				SCG Actions
	Employee	Business Contractor	Supplier	Community	
Gender Equality	M	M	M	-	Study new law and regulation and provide gender equality working guidelines
Data Privacy	M	M	M	-	Study bill and its provision including build awareness on standard of data loss prevention
Compensation	L	M	M	-	Monitor and control collective compensation and assess business contractors on their compensations
Pregnant Workers	L	M	M	-	Provide safe workplace and appropriate workload. No layoff/lowering position level/reducing benefits
Working Hours	M	L	L	-	Monitor and control to compliance with law and regulations including assess business contractors on their compliances
Child and Female Workers	L	L	M	-	Monitor and control to compliance with law and regulations including assess business contractors on their compliances
Forced Labor	L	L	M	-	Monitor and control to compliance with law and regulations including assess business contractors on their compliances
Equal Treatment	L	L	L	-	Monitor and control to compliance with law and regulations including assess business contractors on their compliances
Freedom of Association and Collective Bargaining	L	L	L	L	Open channel to receive opinions on welfare improvement as well as monitor and control violating the rights of community, society and customers
People with Disabilities	L	L	L	-	Open equal opportunity to hire people with disabilities and support activity to promote their quality of life

Impact Assessment H - High M - medium L - low - no impact

Gender Equality

With Gender Equality Act 2015 coming into force in Thailand, and on the basis that men and women are equal in their pursuit of career growth as well as in welfare and compensation, SCG has undertaken a thorough study of the implications of the Act. It is developing a set of communication materials and guidelines to prevent discrimination and ensure gender equality.

Forced Labor

Forced labor is one of the issues under the global spotlight; in particular human trafficking-related forced labor. SCG has the policy not to do business with contractors that use forced labor in any form. We closely monitor and inspect our business partners to prevent any practice of forced labor.

Data Privacy

With the Digital Age posing a greater threat to rights to privacy, this is the kind of risk to be aware of and requires compliance to prevent data leaks or losses; be it data relating to employees, clients or business partners, in electronic or paper forms. We also need to closely monitor the development of the Personal Data Protection Act about to come into force in 2017.

People with Disabilities

SCG is an equal opportunity employer. We employ people with disabilities in our workforce and we have organized activities aimed at advancing the quality of life including livelihood training for caregivers, and hiring people with disabilities in our Safety Campaign Project. We constantly track results and seek to scale up our work on this front.

Other Developments

- We organized an Ethics e-testing to familiarize our staff with human rights issues leading to understanding and respecting of human rights. Employees are required to pass the test with a 100 percent score. We also put in place a monitoring system for the entire workforce to fully comply with human rights and labor rights norms.

Employee Caring and Development

With our belief in the value of individuals, SCG deems employees the most precious resource we have that will lead to success and sustainability of every business and in every country where SCG operates.

SCG routinely takes care of our staff, so that we are an organization people want to work with. Our expansion into ASEAN has made our workforce increasingly vibrant and diverse. In order to stay competitive and manage challenges, SCG is committed to strengthening the capacity and competency of our employees. They will contribute to strengthening our ability to overcoming challenges in our business now and in the future.

Targets

- To be a model organization in caring for employees, and as a role model with innovations in human resources development that can attract talented people.
- To be a role model in employee learning and development.
- In 2016, 32% of the workforce in Thailand took part in the Competency Assessment, with Individual Development Plan under the Learning Management System (LMS) and 70 : 20 : 10 learning platform.
- In 2017, attain 100% completion rate of the workforce in Thailand for Competency Assessment, with Individual Development Plan under the Learning Management System (LMS) and 70 : 20 : 10 learning platform. Start pilot roll out to some professional groups in Indonesia, Vietnam and the Philippines.

Strategies

❶ Build organizational values to attract talented people

Make the company a place that people aspire to work for, able to attract talented people to its workforce at all levels and with various professional skills.

❷ Caring for employees with inclusiveness and fairness so they bond with the organization

Promote quality of life and employee engagement by improving the human resource management system and building an organizational culture so employees feel united in bringing the organization toward shared goals and success.

❸ Encourage continuous learning and development among staff

Adjusting the staff's learning & development in every aspect ranging from the structure of learning, to the management of it to make sure that learning is more responsive to business imperatives, more effective, and aligned with the same standards across the region. To achieve this requires cooperation from the top executives to employees at all levels, and there is a committee to supervise at corporate level, business units, and along professional groups.

2016 Performance

Closing the Gaps

The period between December and February every year is a time that SCG employees have to perform Competency Assessment and Individual Development Plans, through a consultative process between an employee and his or her supervisor. This process enables identification of strengths and weaknesses of an employee as well as career's goals. The inputs serve as guidance to fulfill competency gaps or needs for the subsequent year, as well as enabling the supervisor to coach the direct reports most effectively.

SCG staff competency has three aspects: Professional, Leadership, and BU Technical competencies. These three aspects are important in the development of employees according to their role and their career path to lead the growth of SCG.

In 2016, a total of 11,582 employees in Thailand (or 32 percent) took part in the Competency Assessment & Individual Development Plan under the Learning Management System (LMS). Those who have not yet joined have to consult with their supervisors to come on board later outside the LMS.

70 : 20 : 10

SCG believes that the most effective learning method is to learning by doing or learning from experience (70), whereas learning from training or self-learning from other knowledge tank (10) is also still necessary as the fundamental knowledge or creating comprehensive concept to the learner. However, both learning by 70 approach and 10 approach will be more effective if adding learning from others (20) through coaching, dialogue or exchanging idea with supervisor or expert. Therefore the new learning platform 70 : 20 : 10 which SCG has been applying is the integrated approach to make learning to be the most effective.

This new approach to learning helps make it more relevant to business needs as well as making competency building among staff more efficient.

Learning and Development Process of Employee

December - February

1 Annual Competency Assessment and Individual Development Plan [IDP]

Professional Competency

Leadership Competency

Business Unit Technical Competency

IDP is prepared according to competency gap, strength and weakness of individuals including career goals which is the result from coaching between supervisor and his/her employee

32%

2016

Percentage of employee in Thailand took part in the Competency Assessment, with IDP in the LMS

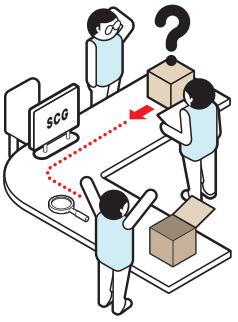
2 March - November

Learning and Development

Provide 70 : 20 : 10 learning solutions according to employee's competency gap

70 Learning from direct experience and learning by doing

- BEING COACH
- MENTORING
- OJT
- INSTRUCTOR [EXTERNAL & INTERNAL]
- BEING CONSULTANT
- ASSIGNMENT
- ACTION LEARNING



June - July

IDP MID-YEAR REVIEW

3

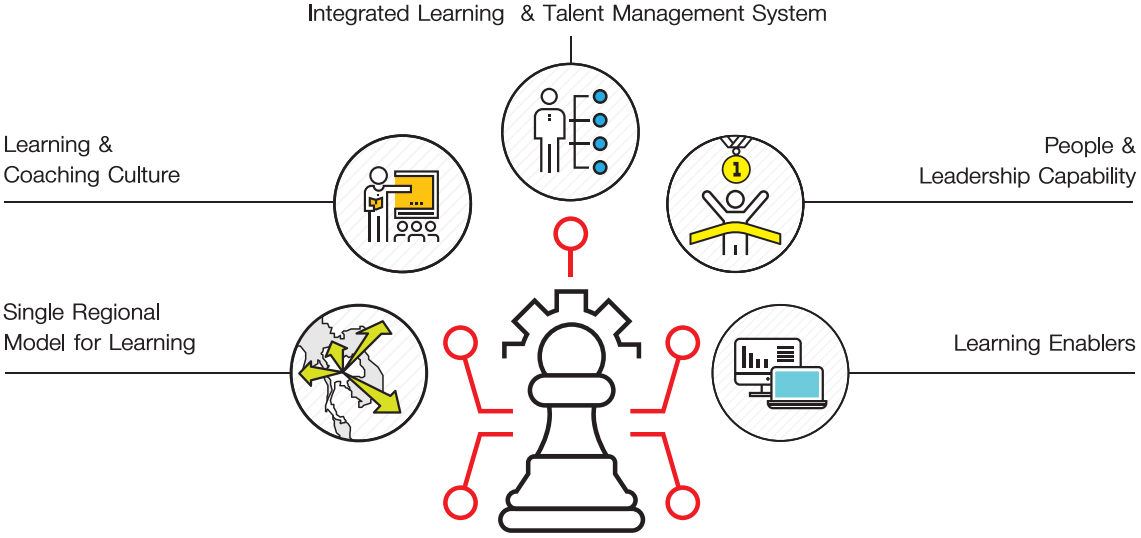
10 Learning from training or self-learning

- SELF-LEARNING
- CLASSROOM
- CONFERENCES AND FORUMS

20 Learning from others such as supervisor, expert or experienced people

- SITE VISIT
- NETWORKING
- SHADOWING
- BEING COACHEE
- CONSULTING WITH SME

SCG Learning and Development Strategy



The Journey from Newcomer up to Retirement

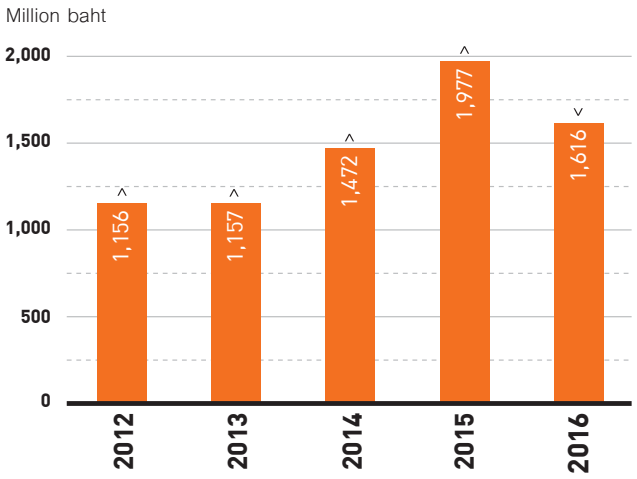
From day one of work as SCG employees, they are welcomed as family members. They feel the bond and learn how to work with SCG through a variety of training curricula, which in addition to business content, seeking to instill a strong sense of social and environmental responsibility.

During their career path, SCG employees have equal opportunity to progress, to move up the career path to the leadership rung, from the First Line Manager to Enterprise Leader. SCG provides development platforms to prepare our "leaders" in many approaches including Onboarding Program, New to Role Program, and other Assigned Program including Management Development Program (MDP) and Management Acceleration Program (MAP) in collaboration with one of the world's leading business school, Duke Corporate Education, which is necessary for leadership development.

And upon reaching retirement age, SCG has also developed a curriculum to prepare employees, which covers topics such as financial management, health, welfare and benefits in order to ensure employees' good quality of life when they retire.

In 2016, Dialogues between supervisor and his/her employee on past performance, competency gap closing including goals of their career path have been carried out continuously. Consequently, 10,240 employees have been promoted to higher level positions or rotated to more challenged work in line with their individual goals.

Employee Training Expenses



In 2016, training expenses (both internal and external) of SCG became 1,616 MB decreased from the previous year due to SCG New Learning Platform, which is to build effective & efficient learning & development through shifting most learning solutions to learning from experience (70) and learning from others (20). Consequently, classroom training (10) and its expense were decreased. Besides, the training expense of Integrated Business Excellence (IBE) Project was dropped since most of them were made in the previous year.

Number of Employee Training Days

6	days	All SCG employees*
12	days	M level (Management)
9	days	S level (Supervisor)
4	days	O level (Operator)

**Equal average training days for both male and female employee.*

Soknin Noun

HR Supervisor, Kampot Cement

"I applied for jobs in over 10 places. None of them would accept me because I had no computer skills. Finally, I had a chance to work with SCG. I received a computer for work. So I started learning computer programs from books and online resources. When assigned tasks that require advanced skills, I would ask for advanced techniques from my senior colleagues. I took their advice as a basis to train myself further, until I can finish tasks assigned to me. I must learn to improve myself so that I can share my own experience with junior colleagues; similar to the way I was coached by my superiors. I believe that learning is the key to giving me a better life that I have today."

Intern Plus Explore the World

In 2016, the SCG Excellent Internship Program, in its 15th year, accepted a total of 2,900 third-year students from universities nationwide. What sets our internship program apart is the emphasis on giving interns opportunities for on-the-job training, with one-on-one coaching to make the most of their time. Moreover, we encourage interns to put forth their creative ideas by participating in Business Game Award and Innovative Suggestion Award, with winners receiving study visits scholarship to SCG operations outside Thailand.

Another key feature of the internship program is the focus on good corporate governance and civic citizenship.

Other Developments

- In 2016 SCG reviewed its Corporate Engagement Strategy, Engagement Model, and conducted an Employee Engagement Survey, with a view to collecting inputs to update and improve the Staff Engagement measurement. In addition, it has conducted a survey of the entire workforce regarding conduct that is compatible with SCG PEOPLE Culture, with a view to improving the work environment and work style compatible with our organizational culture.

- In 2016, SCG is voted one of the top 3 companies to work with in a poll conducted by www.jobsdb.com

Energy and Climate Change

SCG's business is highly energy-dependent, therefore our business has exposed to both energy pricing volatility and restriction of sourcing; as well as risks brought about by climate change due to global warming. SCG has been preparing, and building our resilience to withstand the impact of rapid changes and external factors beyond our control. We do so by seeking and sourcing clean energy, reducing fossil-fuel dependence, and applying the best technology to improve the production processes to enhance energy efficiency and mitigating greenhouse gas (GHG) emissions that result directly and indirectly from our production. On top of this, we have worked on natural disaster preparedness to cope with intense weather events such as floods and drought.

Target

- By 2020, reduce GHG emissions per production unit by 10 percent from the base year of 2007.

Strategies

1 Mitigate impact of fossil fuel use

At SCG, the major source of heat generated for production is fossil fuel. Therefore, it is mandatory to have measures in place to mitigate risk and impact on the communities around us and the environment. This package of measures must have comprehensive coverage from acquisition, storage, transport and use of the fuel, to ensure strict compliance with pollution control laws and standards in Thailand and industry norms internationally.

2 Enhance the capacity for alternative energy

Research and develop the use of alternative energy for industrial machineries, and seek to increase the share of alternative energy in various ways, including waste to energy, biomass, biogas, solar energy in order to increase the flexibility of fuel types, reduce the use of fossil fuel and seek to reduce GHG emissions.

3 Increase energy efficiency

Improve or replace equipment for greater energy efficiency. Find ways to recover waste heat in the production processes to reduce fuel use and GHG emissions.

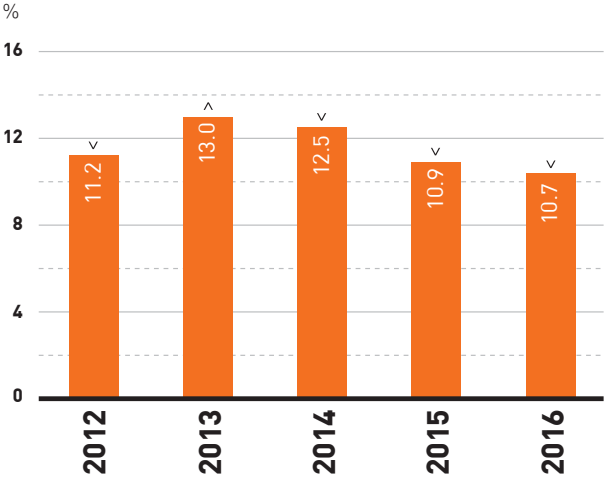
4 Manufacture products and services for GHG emission reduction

Develop products and services that can reduce less GHG emissions, from the production process to transport, and to the end users' side.

5 Make the workforce aware of energy use

Promote and encourage activities to raise awareness about energy usage to our staff by organizing activities consistently and regularly across the enterprise, leading to behavior change at the individual level, and then expanding to colleagues and families.

SCG Alternative Energy



2016 Performance

Reduction of GHG Emissions

SCG has been implementing projects to reduce the use of thermal energy and electricity for a number of years. These range from increasing the share of alternative energy in our energy portfolio, increase energy efficiency in production processes, and the project to produce low-GHG products and services, to meet SCG's own targets of GHG emission cuts, both direct and indirect GHG emissions.

SCG has reduced GHG emissions up to 1.81 million tons equivalent to 7.0% reduction from BAU of 2007

- Refused Derived Fuel (RDF) Projects
  - **- 1,394,000** | CO_2 **-134,200**
- Utilization of Biogas from Anaerobic Digestion as Fuel in Boiler
  - **- 512,000** **- 197,200** | CO_2 **- 60,700**
- Utilization of Biomass and Waste Reject from Recycled Paper as Fuel in Boiler
  - **- 931,300** | CO_2 **- 95,640**
- Utilization of Biomass as Fuel in Cement Kiln
  - **- 246,000** | CO_2 **- 24,200**

Energy Source

Close, Control, Change

Throughout 2016, SCG organized a campaign to heighten energy awareness at the workplace. The 3C Project – Close, Control, Change, campaign has been running for a few years to make our employees aware and active in using energy wisely, until it becomes their ingrained habit in daily life. There are two major activities under this campaign: Mission 1 Energy Best Idea and Mission 2 Energy Ambassador.

Mission 1 Energy Best Idea extends the invitation to employees to propose energy-conservation ideas, with management executives as role models actively communicating through social media. This has encouraged a submission of 546 ideas, grouped into electricity and lighting, lifts and stairs, air conditioning system, transportation and global warming mitigation.

Mission 2 Energy Ambassador invites applications from employees from different Business Units to apply and serve as an Energy Ambassador, and join the Energy Survival Reality Camp at the Marine Command, Sattahip District, Cholburi. The camp is designed to have plenty of fun activities with an energy related theme. For instance, the Energy Bandits Mission, Long Travel Less Fuel Mission; and includes Mangrove Forestation Mission. The aim is for Energy Ambassadors to lead an energy conservation drive, and persuade colleagues to participate in saving energy across the organization.

Some interesting ideas from our staff:

> *Coming in to work on Saturdays and Sundays. Change the work setting from rooms that need electricity and air conditioning to working outside, opening windows to let in fresh air and sunshine, helping save electricity and air-con use.*

> *"Grow" trees around the house instead of "deforesting" so as to cool the house and insulate it from heat, thus there is no need to switch on the aircon while breathing in fresh air.*

> *Before closing the elevator door, check left and right for other riders to join the trip to save energy.*

> *Bike to work on Fridays; at least once a week of cycling will help save fuel consumption, save the world and reduce pollution.*

Sanvarit Visedchitpol

Energy Ambassador, SCI Eco Services Company Limited

"Most important is the Change of old habits, such as automatically using the elevator. Let's walk if it's just two or three stories. Change starts with us, and when people around us see it, they join in, and then the ripple effect of change happens for the better."

Highlights of GHG Emissions Reduction Projects

CO_2 Equivalent to CO_2 Reduction [Ton CO_2 / Year]
Reduce / Replace Coal Usage [Gigajoules / Year]
Reduce / Replace Electricity Usage [Gigawatt-hours / Year]
Reduce Natural Gas Usage [Million BTU / Year]

Waste Heat Power Generation (WHG) Projects
- 651 | CO_2 -378,000

Improvement of Coal Gas Production Systems in Ceramic Tile Plants
- 1,291,400 | CO_2 -127,000

Improvement of Energy Efficiency of Furnace in Olefins Production by Using emisspro® Technology
- 600,800 | CO_2 -35,100

Improvement of Boiler Efficiency in Kraft Production
- 1,424,000 | CO_2 -164,000

Production and Sales of SCG Hybrid Cement
CO_2 -110,000

Solar Energy Generation on Plant Rooftops
CO_2 -1,011

Production Process

Products and Services

SCG Energy Award

The SCG Energy Award was launched in 2014, and it is planned for every two years to encourage innovations and further application of recent ones (Bottom Up Approach). The emphasis is not on an expensive budget. Rather, we aim at supporting excellence in energy conservation, and an outcome that has the potential to enter a national contest, and at ASEAN level and internationally. SCG invites experts from business units within SCG and external experts to join the panel of judges to get diverse perspectives – technical, business and applicability.

In 2016, for the second SCG Energy Award, we received 10 entries, which had the combined potential capacity to reduce greenhouse gas emissions by 365,000 tons per year. There are three categories of entries, namely: Factory-Based Energy Management where we had one top award winner, one outstanding entry and the judges' favorite. In the Creative Energy Conservation category, there was a top prize winner and one for outstanding entry. In the Renewable Energy category, there was no winner.

One of the interesting entries from the Award included "Reduce Energy Consumption by Waste Heat Recovery Project" featuring waste heat recovery output which can reused to generate more heat, without any investment cost to replace any equipment at all. The method featured can reduce fuel use for boilers significantly, while reducing carbon emission.

Other Developments

- In 2016, SCG announced the policy for all units within SCG to switch to LED as a lighting source by 2018. It is projected that a total of 300,000 bulbs will be replaced, reducing GHG emissions by 7,200 tons per year

Pongphat Munkkunk

Executive Director of Energy Human Resources Development Bureau
Department of Alternative Energy Development and Efficiency

"Each entry submitted showed great attention and a well-rounded thinking process. It recognized the importance of energy used, and the importance of product quality. Many measures proposed reflect that in addition to expertise; how they love and cherish the organization by wanting to lower costs lets the organization compete and progress further."

Environmentally Friendly Closed Coal Operation System

Coal is the main energy source for factories of SCG Cement-Building Materials and SCG Packaging, with the annual average consumption of over 2 million tons. The acquisition, storage and transport of coal still carries the risk of impacting the community and environment, mainly air quality issues due to coal dust. From 2013, SCG Logistics Management Co., Ltd. as SCG product transportation operator and SCG Trading Co., Ltd. as an importer and distributor of coal for domestic industry and international end-users, switched the entire coal transport process into the Closed Coal Operation System. The transition completed in 2015, making us a pioneer in Thailand.

The Closed Coal Operation System for Sustainability, Wat Bandai Project, is located along the Asia-Klongsakae Highway, Nakonluang District, Phra Nakhon Si Ayutthaya Province. It is the storage site for imported high-quality coal shipped from Indonesia to Si Chang port. The coal loads onto cargo barges and travels inland via the Chaopraya and Pasak Rivers, to the storage site near Wat Bandai.

Closed Coal Operation System is what sets this 30,000-ton capacity storage apart. The system that governs loading and storage is entirely closed – from handling to downloading from barges that are covered with tarpaulin sheets, with water sprays to trap dust, and controlled shoveling to guard against spills; directly to the warehouse that is also a closed site with entrances that guard against coal dust dispersal.

Inside the warehouse, the water spraying system traps dust and slows smoldering. It is mandated that sorting and piling must be done inside the closed space, and these are done through automation without workers, for the sake of health and safety. Coal from the warehouse is transported from a closed space

along a carousel to a silo to feed into the trucks parked inside the coal dispenser building. Trucks carrying coal are tightly covered to guard against dust dispersal en route to end-users. Before leaving the site, trucks have to pass through a wheels and body cleanup as an environment safeguard.

We have also installed dust trap machines and dust filters along the carousel line and machineries that generate dust. We grow trees surrounding the site to trap dust and high pressure water sprays are activated outside the warehouse to deal with dust. In addition, there is a wastewater treatment system. All these steps are taken to ensure that the operation does not impact communities around us nor the environment.

"Closed Coal Operation System for Sustainability" has been certified ISO9001:2008, ISO14001:2004 and OHSAS18001:2007. It won the Best Practice in Coal Distribution from the Thailand Coal Awards 2015 and the 1st Runner-up from ASEAN Coal Awards for Coal Distribution Category from ASEAN Center for Energy. This is yet another demonstration of SCG's commitment to sustainability and care for the community and environment.

Air Quality Results

	Regulatory Standards	2014 Open System	2016 Closed System
TSP	≤0.33	0.24	0.07
PM-10	≤0.12	0.10	0.05
PM-2.5	≤0.05	0.05	0.01

Unit: Milligram per Cubic Meter

Water Management

Water management represents one of our most important Key Performance Indicators. SCG adapts enterprise risk management to apply at corporate and at business unit levels. It has a policy for optimization of water resources and efficient operation across the entire supply chain in accordance with 3Rs concept (Reduce, Reuse/Recycle, and Replenish) to ensure adequate supply and appropriate use, while taking into account impact on surrounding communities. In one of the key criteria, if water usage for production exceeds 5 percent of total public water sources, then it flags as high risk and could potentially lead to conflict. In addition, we take particular care that the water quality released out to the environment must not harm communities around us.

Formed in 2014, the ***"SCG Water Management Committee"*** *has been active since then, with representatives of all business units in the line-up to jointly chart a clear direction and strategy for water management, to grow our business with innovative and technological applications, and to measure water management efficiency in accordance with the Water Footprint assessment.*

Targets

- Within 2020, reduce water withdrawal by 20 percent per ton of production output in 2014 through implementation of various 3Rs concept.
- Reuse treated water as much as possible in every business with the help of Best Applicable Technology.
- Manage business continuity in the face of water-related risk, to prevent business disruption and resume normalcy within the shortest span of time.

The Late King's Speech

"...The key principles are that there must be water for consumption and water for farming. Because life depends on water, when there's water, human beings can live. Without water, human beings cannot live. Without electricity, human beings can get by. But with electricity, without water, human beings cannot live..."

(unofficial translation)

Excerpts, His Majesty the late King Bhumibol Adulyadej's speech
Chitrlada Palace, on Monday 17 March 1986

Strategies

1 Reduce water-related risks

Manage water-related risks – natural disasters, climate change impact, drought, or floods that may disrupt production or cause conflict with the community.

2 Reduce water use through improvement of production efficiency and products.

Continuously strive to improve production efficiency within the framework of Total Quality Management (TQM) and Total Productive Maintenance (TPM), aiming to reduce water withdrawal from natural sources, and then expanding the sustainable practice throughout the entire supply chain.

3 Reuse treated wastewater

Install high-quality wastewater treatment systems, and apply the Advanced Internal Water Treatment Process to reuse treated wastewater and add value in the production processes, instead of discharge.

4 Develop the capability of water management Personnel

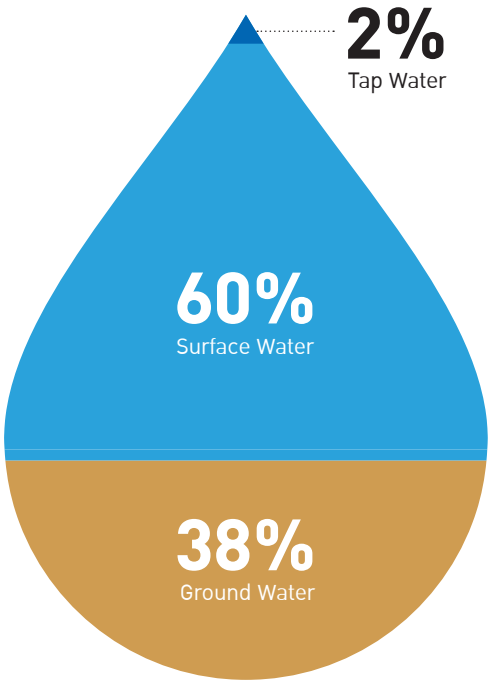
Emphasize on-the-job training and curriculum-based training, to raise awareness and appreciation of the value of water resources and its social and environmental impact. Examples include the Water Footprint Assessment curriculum, Water Resource Management Leadership curriculum to build the thinking process, management and business development skills.

2016 Performance

Fighting Drought

Thailand has increasingly experienced the drought and floods of extreme weather events year after year, as a result of Climate Change. It has the effect of making natural disasters unpredictable and difficult for planned responses. SCG thus closely monitors water and climate to collect inputs for better planning and implementing mitigation such as securing reserved water sources, building water storage facilities or retention-ponds.

In 2016, Thailand went through the worst drought in 20 years, making the vulnerable eastern region, which serves as the manufacturing and industrial heartland. Water shortage poses a serious threat given that the area is largely rain-dependent, against the overall demand of 1.3 million cubic meters per day for consumption, agriculture, industry, and keeping the ecosystem sound. In any case, Thailand has in place a central water management working committee for the eastern region featuring public-private sector collaboration. This committee has continuously implemented integrated management actions including developing the Water Grid and engaging a Supervisory Control Data and Acquisition (SCADA) system to connect critical water sources in the East. With this approach, we can manage water resources efficiently. The aggregated water volume in three reservoirs in Rayong province was above critical level (below 160 million cubic meters is critical level).



Proportion of Water Withdrawals

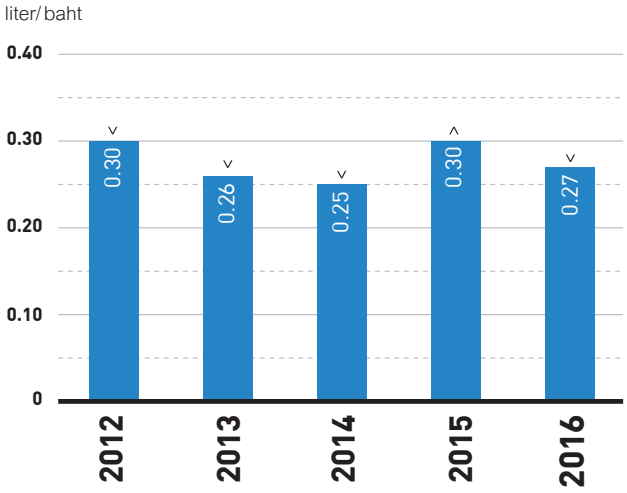
SCG for its part has set up a special task force to deal with the drought and sent representatives to join the Eastern Region's Water War Room. Due to the fact that SCG prepared to secure contingency water supply sources ahead of 2016 helped us through the severe drought of 2016 without any glitch.

In the northeast, the Lamnamphong basin during dry season deals with an overall water demand averaging 500,000 cubic meters per day for all activities, out of which 100,000 cubic meters goes to the manufacturing sector, and this could potentially ignite water conflicts with communities. SCG appointed a task force with the ultimate aim of receiving zero complaints from the community over water resource issues. We undertook the task of drilling ground water wells and reserve wells which enabled us to acquire a reserve of 200,000 cubic meters within the company. For social harmony, we supported the communities' efforts to drill shallow ground wells for agriculture, as well as donating water tanks to store water supply.

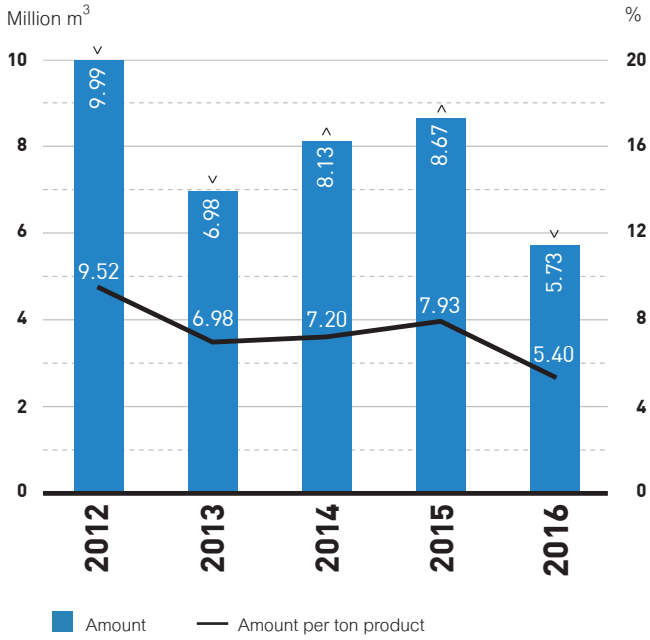
15%

reduction of suppliers' water usage from Supplier Development for Sustainability Project

Water Withdrawal Intensity (Revenue from Sales)



SCG Recycled Water



Li...The Beloved Mine

One could hardly imagine that the reservoir surrounded by a green agricultural area and big trees, was once a coal mine.

During 1996-2002, SCG Cement-Building Materials operated their coal mine in Li district of Lamphun province in order to provide their own supplies. The mine was conducted as Semi Open-Cut Mining model that had the least impact to the environment. Meanwhile, the company planned a sustainable coal mine enclosure. SCG in participation with the government and community sought the recovery scheme that was most beneficial as possible.

Most of locals in the communities around the mine were agriculturists who had been facing severe droughts. In addition, they also would have liked to have a recreation area and places for their activities. These two reasons led to the "Li...The Beloved Mine" project. After the enclosure of the mine, it was adapted to be an agricultural water resource. The landscape around the reservoir was redesigned for its attractiveness. SCG, joining hands with Chiang Mai University, Suranaree Universtiy of Technology, and the Department of Primary Industries and Mines Region 3 Chiang Mai, has studied and improved the water in the mine which already met the environmental regulated standard. The approximately 3 million cubic meters of water was now proven to be safe for use for agricultural benefits.

Moreover, the surroundings have been restored using cover crops, fast maturing plants. The plants grown are focusing on native plants which match the need of community. Li...The Beloved Mine is one of the mines that is an example of the collaboration of various sectors under sustainable development.

Water Footprint Pilot Model

Water Footprint is an impact assessment tool in relation to enterprising water use, to facilitate a water management plan, thereby reducing risks from a supply of water resources and water quality, and eventually enhancing efficiency. In a nutshell, it is an important tool leading towards optimum and sustainable use of water resources, but this tool is rarely used in Thailand. SCG Cement-Building Materials re-cognized its importance, and then initiated a study on how to implement a Water Footprint in the cement industry at the corporate level, in a joint project with the Faculty of Engineering, Chiang Mai University. The study site of this project is at the Siam Cement (Kaeng Khoi) Co., Ltd., where the Water Footprint assessment according to the Life Cycle Assessment of ISO 14046 is piloted.

Currently the research is at the stage of preparing the water inventory, data of inputs and outputs, and the next step will involve environmental impact assessment resulting from water use by the factory. Once the research project is completed, SCG Cement-Building Materials intends to use the findings in part to formulate how to optimize water use in the cement industry, as well as sharing the knowledge and know-how from the pilot program to other companies within SCG.

Water Footprint

Wastewater Treatment for Reuse

Purified Terephthalic Acid (PTA) is the key raw material in the production of polyester for the textile industry, and PET plastic pellets for drinking water bottles. The PTA production process requires the use of acetic acid, and so acetic acid-tainted water must be treated prior to release externally. Siam Mitsui PTA Co., Ltd., part of SCG Chemicals, applies a Reverse Osmosis system to separate acetic acid from the water used in PTA production. The acetic acid recovered is reused in the production process, whereas the treated water is reused as substitute for filtered water where appropriate, per quality of the water within the production process. In 2016, these efforts reduce the intake of external water at the rate of 142,000 cubic meters per year.

142,000

m^3/year

In addition, Siam Mitsui PTA Co., Ltd. is able to maximize water recovery from sludge thickeners. Previously, sludge is regularly drained off the tank, and as a result the contents had a low concentration with a high ratio of water. The company then adjusted the tank draining schedule to provide more time for the sludge to thicken, and for water to gather into a clear layer on top. That way, water can be retrieved to be treated and reused. Through this technique, we need less water from external sources by the rate of 19,000 cubic meters per year.

19,000

m^3/year

Thai Paper Co., Ltd., which produces print and white food-grade paper, treats water discharged from production with a filtering system that uses a special type of material that reuses the treated water to produce Kraft paper (brown paper) at Siam Kraft Industry Co., Ltd. With this, we are able to reduce the use of new water and wastewater before treatment systems by 1 million cubic meters per year.

1,000,000

m^3/year

Other Developments

SCG

- Investing in installation and improvement of water treatment systems above industry standard requirement, and at the same serve as sources of renewable energy such as the Upflow Anaerobic Sludge Blanket system (UASB) that can treat BOD and COD efficiently, and produce biogas. The Online COD system enables us to monitor and check water quality constantly, so that we can address water quality problems instantly when we detect any abnormality.

SCG Packaging

- Investing in installation of high quality machines for the expansion project of paper production at Siam Kraft Industry Co., Ltd. (Ratchaburi) by using the least water consumption technology. The effort reduced water consumption in the conventional production process by 35 percent, therefore the aforementioned technology will be set as a new standard for future production expansion in other companies.

Material Use and Recycling Strategy

SCG is commmitted to mitigating the environmental impact of its activities from upstream to the end-user, by optimizing the use of limited resources, developing and adding value to materials used from the production stage until delivery of products to the consumer. With the risk of a possible raw material shortage, we must plan our resource management efficiently through the Life Cycle Assessment framework, to manage resources and boost our competitiveness.

Targets

- Use raw materials and materials most efficiently in every process
- Increase the share of renewable materials and recycled materials, at the best possible effort

Strategies

❶ Sourcing of raw materials and materials of top quality and environmentally sustainable

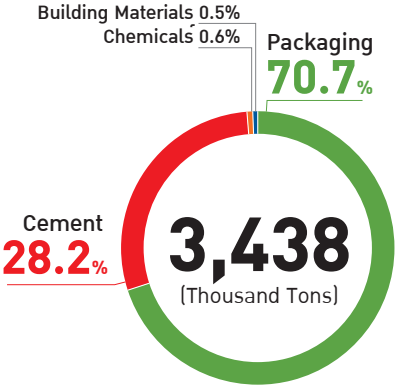
Being attentive to the sourcing of raw materials and seeking materials of top quality and standard. In the procurement process, the Supplier Development Towards Sustainability Committee and procurement units of respective Business Units provide support in the selection process, ranging from raw materials, materials that support production, parts and general material that are of sound quality and environmentally sustainable.

❷ Research and develop the production process to use raw materials and materials at optimum efficiency

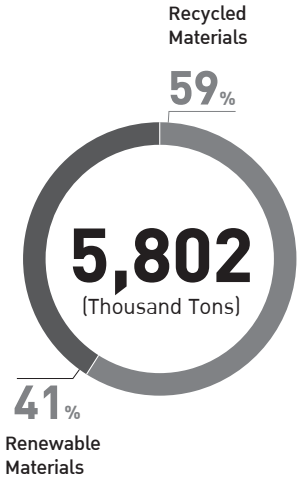
The management and development of the production process assures that there is no unnecessary waste of raw materials and materials incurred, and thereby making the most and the best use of the raw materials and materials.

❸ Use renewable materials and recycled materials

Developing the production process and innovate to use of renewable and recycled materials to substitute the use of natural resources. Informing consumers of this issue.



Percentage of Recycled Material Use



Percentage of Eco-friendly Material Use

2016 Performance

Growing Trees Sustainably

Eucalyptus trees are the main source of wood for pulp production and SCG needs up to 2,500,000 tons each year. Growing eucalyptus trees to meet production needs which increase every year, is thus an important issue. Until recently, we supported large-scale plantations of eucalyptus. However, we have faced difficulties expanding the agroforestry acreage because planters see Eucalyptus as less profitable than other cash crops, if taking into account the timespan and land use. So SCG Packaging shifted strategy to work with small scale farmers. The approach is planting eucalyptus trees along shorter and smaller tracts where space is not normally utilized – for instance, the dividers in the fields, canal banks or along fences. This provides income generation potential. A successful pilot is located in the north under the "Kampaengphetch Model" implemented in 2005-2016. Eucalyptus trees have been planted in areas along irrigation canals, totaling 5,000 kilometers in length.

For large-sized agroforests to provide reserves for wood supply, we now promote the utilization of land that is not appropriate for agriculture such as areas with saline salt, or perennial flooding. The success story for us is the "Dintime Model Project" implemented in 2013-2016 and covering an area of 27,900 rai (44.64 square kilometer). With this strategy, SCG Packaging has invested in developing the Eucalyptus species suitable to conditions of different localities, and we have produced and distributed 50 million seedlings per year to planters.

Currently SCG Packaging has the supply source from small-tracts in agricultural area of 613,350 tons and in agroforest for non-arable land totaling 106,020 tons. These methods helped to generate income to planters of hundreds of millions of baht, thereby helping to ease household debt, minimizing the push factor for migration, and reducing the encroachment of natural forests.

719,370

Tons

Eco-friendly Pulp

The final destination of paper is usually the trash can, or recycling which produces lower-grade paper, brown and coarse and not good as presentable materials. Thai Paper Co., Ltd. has worked to develop an innovation to produce high quality fiber from used paper, putting it through an effective process to turn it around to yield a final output that is as good as paper produced from virgin pulp called EcoFiber. As a result, paper trash is reduced, fewer trees that sequester carbon are cut, even though they are trees specifically planted for paper production.

SCG Packaging uses EcoFiber to manufacture paper under the Green Series line. The product is well received by corporations with an environmental conservation policy such as Thai Airways International, and the Tourism Authority of Thailand. In 2016, Thai Paper Co., Ltd. produced 23,436 tons of EcoFiber for domestic use. This is equivalent to the import of substitute short fibers of 24.1 million baht.

Moreover, the production process of EcoFiber yields sludge that can be used as raw materials for Kraft paper, bringing about an aggregate return of 4.5 million baht per year. Also retrieved from the water discharged after production is the pulp residue that can then be reused to produce EcoFiber, whose value is equivalent to 3.1 million baht per year.

Other Developments

Manufacturing Sand from Compact Soil Layer

Tiny grains of sand may be ordinary to many. But in the concrete production, as raw materials, sand is no less important than cement, and the demand for sand keeps rising. The most common way to acquire it is to dig into soil with sand mix, then wash and harvest the sand. But when drilling arrives at the harder layer of compact soil that no longer has sand mix, then new plots of land must be sought. These days, it gets very challenging to find plots with sand potential, and these sites have become more expensive.

SCG Cement-Building Materials and Corporate Technology office therefore launched a study, research and develop "Manufacturing Sand" project, to manufacture sand from the compact soil layer that lies deeper than the sandy layer in the area of Klong-kiu Sub-District, Banbueng District, Chonburi. At this site, the upper sandy layers about 3 meters thick has been excavated and depleted of raw materials to feed concrete production. Further underneath the exhausted layer lies the compact soil section that is 12 meters thick, with the physical and chemical properties suitable to substitute for natural sand. The deposit is estimated to be 28 million tons, equivalent to reducing the use of new acreage by 3,200 rai (5.12 sq.kms). With our commitment to the environment, we have designed the sand manufacturing through the Dry Process in grinding and blowing for separation, mixed with the Screw Washer method, and to use excavation machinery instead of the most common way of blasting to reduce the noise and vibrations that disturb communities around the site.

The project has produced a byproduct in the form of some new materials including Filler, a very fine dust used the in food industry. The site, once utilization is complete, can be used as a large water reservoir.

28
Million Tons

SCG Chemicals

- R&D and study the problem of loss of catalyst in the Oxychlorination reactor in the production process of ethylene dichloride. The cause is established as due to the damage of the dispenser inside the Sparger reactor. In the next step, we conducted a study and improved the dispenser to be more durable, stronger and better to withstand erosions. In this way, it reduces the damage to the Sparger reactor, and reduces the loss of catalyst in the Oxychlorination reactor by 57%, equivalent to cutting losses of 20 tons per year.

- In the production process of Crude Terephthalic Acid (CTA) key materials are Para-Xylene, catalyst and solvent. Normally after production, the solvent would go to the waste treatment system. We studied how to recover and reuse the solvent, as well as improving the production control aspect while retaining the quality and integrity of CTA according to the required standard. As a result of these efforts, we can now use less raw material namely Para-Xylene, catalyst and other chemicals in production equivalent to savings of 4.67 million baht per year.

Waste Management

SCG has established an Industrial Waste Management Committee since 2007. Consisting of representatives from all business units and researchers, the Committee is tasked with regulating and formulating strategies and measures relating to the management of industrial waste, which represents one of the key performance indicators of efficiency and production cost. The Committee reviews targets and performance through annual workshops.

*The key principle of industrial waste management revolves around the **3Rs** - reduce the volume of wastes, reuse/recycle and replenish- with the intention to mitigate ecological impact and create opportunity in making waste valuable throughout the supply chain.*

Targets

- Reduce waste generation at source.
- Achieve zero waste to landfill.
- Reduce waste disposal to less than 1 kilograms per ton of product.
- Recycle waste to maximize its value.

Strategies

❶ Reduce waste generation at the source

By applying the Total Quality Management (TQM) and Total Productive Maintenance (TPM) systems in planning, selecting raw materials and boosting the efficiency of the production process; in order to minimize waste generation at its source.

❷ Manage industrial waste without sending to landfill

By surveying and collecting waste-related data from every subsidiary to be used for classification and volume estimate. Wastes will be classified into those which can be used as raw materials, fuel substitutes or processed wastes so other units can use, and wastes that require technical and legal compliance. All these are geared towards a zero waste to landfill target.

❸ Research and develop value-adding innovations

Keep investing in R&D, organize technology exchange meetings between waste generators and researchers within Cross-BU Technology Development platform with the objective to turning wastes into value-added products.

2016 Performance

263
Tons per Day

Valuable Waste

It is a matter of perspective. If one does not think carefully, it could be considered as waste. Yet if one believes that there is value to everything, "waste" could be re-labeled as an "asset."

At the factory of Phoenix Pulp & Paper Public Company Limited (PPPC), the pulp production process involves cooking wood chip in digesters wherein chemicals and heat are used to dissolve lignin in the wood. The pulps produced through this process are then bleached with environmental friendly chemicals to make bleached pulp. The chemicals used to dissolve lignin would undergo a "Chemical Recovery" process to be reused in the digesters. However, this process generates a few kinds of waste; namely, unburnt lime, lime mud & grit, and dreg, totaling about 130 tons per day.

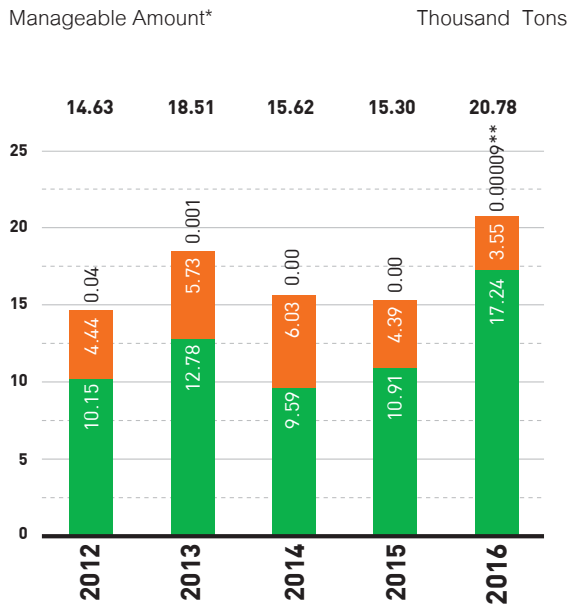
In 2011, PPPC invested in building two units of Lime Kilns to process these wastes into burnt lime (CaO) to be used in Chemical Recovery process. This takes care of about 263 tons of wastes per day. Still, there remains 210 tons of lime mud & grit per day. In 2013, they installed a lime mud filter and built one additional lime kiln unit, due to be completed in 2017. It is expected that within 2018, all lime mud & grit can be reused, leaving no waste that requires management.

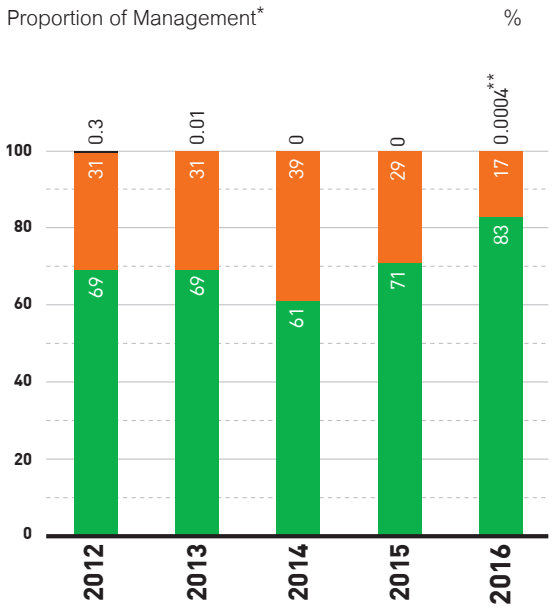
In fact, there is much more value to lime mud; with its main ingredient is calcium carbonate typically used as a filler in many industries, including rubber, paint, and plastic industries. It is also an ingredient in flour and toothpaste. Corporate Technology Office and PPPC thus has a plan to add value through innovations to recondition lime mud into a product with more edge to it than what's available in the market. The aim is so that it can be used as a filler in polymer, which will effectively reduce production costs for plastic and rubber industries.

Apart from turning wastes into valuable materials, this can help reduce particles that result from the transport of lime mud.

Hazardous Waste

- Reuse/Recycle
- Disposal
- Landfill



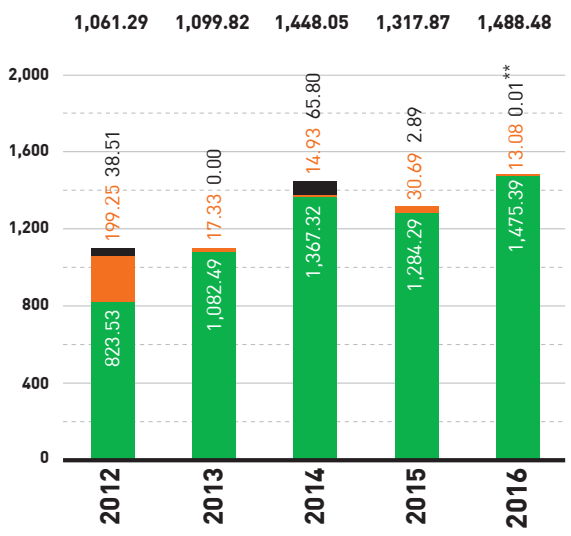


** Waste in the storage waiting for waste management is excluded.*
*** Insulation and light bulb sent to landfill by SCG Packaging.*

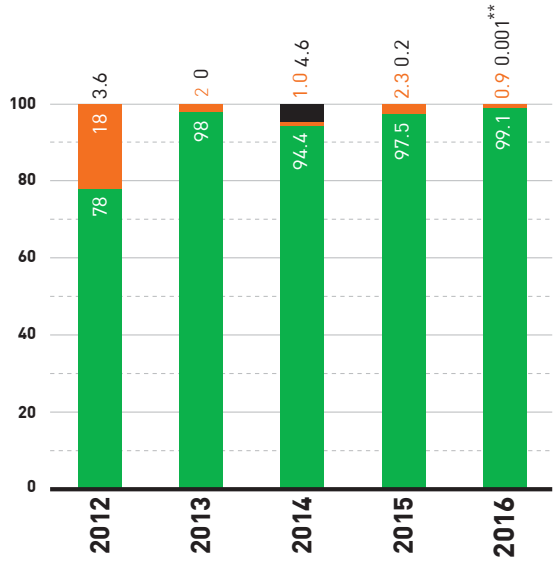
Non-Hazardous Waste

- Reuse/Recycle
- Disposal
- Landfill

Manageable Amount* Thousand Tons



Proportion of Management* %



** Waste in the storage waiting for waste management is excluded.*
*** Coating Cake sent to landfill by SCG Packaging*

From Ash to EcoBrick

Fly ash results from the burning of solid fuel, be it coal or biomass in a power generation plant. Fly ash is trapped in dust collectors and upon amassing into a sizeable volume, gets disposed to landfill. However, disposing it in this way may not be environmentally friendly; due to the potential contamination of soil in the vicinity of the landfill site, possible contamination of water sources, or causing soil degradation. Air pollution from transport and micro particles of fly ash poses another concern.

Dealing with fly ash is a worldwide challenge, and efforts have been made to find ways to reuse it. In 2014, SCG attempted to transfer fly ash from its paper production facilities to be disposed at cement plants. Nonetheless, this effort could only achieve small limited volumes and could not eliminate particle problems during transportation. In a relentless commitment to industrial waste management, Corporate Technology Office, SCG Packaging and SCG Cement-Building Materials came up with innovations to transform fly ash with volatile properties into a valuable construction material under EcoBrick technology. The EcoBrick line features bricks for construction, wall brick, load-bearing wall brick and decorative brick. These are produced with a special formula and steam incubation, which is most energy efficient. SCG has also developed a formula and process to use industrial wastes such as bottom ash, lime mud, slag and grit in as much as 50 to 70% in the mix. These products have yet passed different quality certification tests.

EcoBrick is thus an innovative option to managing fly ash from industrial production that can help mitigate environmental problems, and at the same time add value to wastes.

In 2016, SCG has managed to turn 4,275 tons of fly ash into a raw material to produce 9,101 tons of EcoBrick. EcoBrick has also been produced and given as donations to build public goods, including the foundation of a Buddha statue at Wat Nongsua, Ta-muang District in Kanchanaburi province, and a dormitory for hilltribe school children in Mae Sariang District, Mae Hong Son province.

4,275
Tons

Khu Din Fertilizer

From a tree, and back to a tree. From soil, and back to soil. That is perhaps the most accurate product description of "Khu Din" organic fertilizer. The product is the result of a collaboration between the Siam Forestry Co., Ltd. the Product and Technology Development Center of SCG Packaging and the Department of Soil Science, Faculty of Agriculture, Kasetsart University Kampangsaen Campus. The production processes of pulp and paper from the cellulose fiber of the Eucalyptus tree incur black and white lime grit, dreg and micro-organisms, a disposal which costs several million baht per year. These production wastes in fact contain organic matters and rich nutrients for crops. They can be developed into organic fertilizer through fermentation and adding of natural microorganisms, resulting in enriched nutrition which also increase accessibility for plant, more nitrogen fixation, and reduced the usage of pesticide, herbicide and fungicide.

The production of Khu Din fertilizer, inducing the royal initiative of His Majesty King Bhumibol Adulyadej's Sufficiency Economy, therefore helps reduce the volume of waste meant to be disposed, while adding value responding to the needs of farmers. Its properties improve soil quality and composition, conserves the environment, and substitutes chemical fertilizers or hazardous chemicals.

In 2016, Khu Din fertilizer production helped to reduce all categories of grit by 57,000 tons per year

57,000
Tons per Year

Micro Eater

Wastewater from factories usually holds contaminants. Typically, treatment of wastewater involves the elimination of, or separation of contaminants and consolidated into solid mass. Then the treated water will either be reused or released out of the factory. One treatment option uses bacteria to digest contaminants.

In 2016, the research unit of SCG Chemicals and Siam Mitsui PTA Co., Ltd. entered into a collaboration with BIOTEC for a research; with the provision to add nutrients to bacteria thereby increasing treatment performance and enabling the continuous operation of anaerobic digestion, and preventing excess silting. The innovative solution can treat 12,000 tons of waste water continuously per year, and can reduce energy use in pumping air into the waste water tank by 145,800 gigajoules per year.

12,000
Tons per Year

Gutters - Deceptively Simple

Nowadays gutters are one of the building materials that is required for house roof. Despite its simple look as housing material, a gutter has a complicated pattern, whose thickness and size varies according to the house it serves. Until now, PVC is the main plastic used to produce gutters. However there are some loss during its production process due to the high viscosity of PVC and its low heat tolerance. Production must use high temperature to inject PVC to fill a large and complicated mold. The PVC may degrade along the way, or in a worse case, it could turn to be acidic and erode the mold. Furthermore, the color of the gutter will turn to yellowish-white after PVC degrade, giving it an unappealing look.

In 2016, Nawa Plastic Industries Co., Ltd. and Thai Plastic and Chemicals Public Co., Ltd. jointly developed a new grade of PVC with reduced viscosity and a K value at 50, mixing it with normal PVC, following a ratio of 20:80. The formula makes it easier to use with injection molding in that compound without using high temperature. As a results the color of finished product is whiter. Moreover, it can reduce waste generated from the production process up to 50% that are estimated to be equivalent to 6 tons per year.

Sustainable Products and Services

Fierce market conditions on both pricing and quality cause SCG to commit to products and services differentiation. We differentiate ourselves by developing products and services that respond to consumers' behavior and their genuine needs. These evolve along social determinants that include Thailand's demographic trend towards an aging society and more attention to wellness. We also focus on the application of innovations to develop products and services that are safe, eco-friendly, and enhance a quality of life.

With the concept: ***"We Innovate for Better Human Living"***

Targets

- Increase the sale of products and services with SCG eco value by one third revenues from sales in 2015.
- Increase the sale of High Value Added products and services (HVA) by 50 percent in revenues from sales in 2015.
- By 2018, all Business Units must have the capacity to conduct product and service liability.

Strategies

❶ Develop products and services that meet the consumer's needs

Assess and analyze market demand, while taking into account emerging social trends to develop products and services that can address problems or respond effectively to what the consumer wants and the consumer's diverse needs. The focus is on development of a solutions-based system, rather than only products.

❷ Innovate sustainable products and services

Collaborate with research institutes and universities in research and development of products and services for product improvement, and generate innovations that are commercially viable, environmentally friendly and added high value, while raising the competitiveness of the customers and end-users.

❸ Build the standard for environmentally friendly products and services

Develop environmentally friendly products and services under a self-declaration system with the SCG eco value label, and seek certification from credible and competent certification bodies on environmental standards. Building on our strong track record in the environmental field, SCG has expanded its business to construction advisory services in compliance with international standards. These include the "Green Building" standard, according to the Leadership in Energy and Environmental Design (LEED), and Thai's Rating for Energy and Environmental Sustainability (TREES).

❹ Raise the safety standard of products and services

SCG has conducted assessments of the product and service liability management system continuously since 2013. The coverage has been expanded so that ultimately all subsidiaries within SCG are able to conduct products safety management system on their own, to ensure delivery of safe products to the customers.

90 percent of assessed company with product and service liability management system.

2016 Performance

SCG Eldercare Solution for Aging Society

Aging has an impact on senior citizens' health and their daily routine. Family members need to provide care for the elderly. Thailand will become a full-blown Aging society in 2021, where the population aged over 60 accounts for 20 percent of the total population.

SCG Cement-Building Materials fully recognizes the implications of an aging society as an emerging and substantial market segment in the future. Since 2013, we started the development of home innovations. The first step was an in-depth study to understand how Aging impacts physical competency, behavior, psychology, and the society. The study was conducted as a multi-disciplinary collaboration involving experts in different fields like behavioral science, ergonomics and architecture. The study findings then formed a basis to generate innovations that aim to bring happiness and harmony to the elderly so they can live in safety, comfort, and sustainable well-being with a high quality of life with their family.

To fully respond to the needs of the typical extended family with elderly in Thailand, SCG has developed the SCG Eldercare Solution line of products and services. What we offer ranges from advice on how to design a new residence or renovate an existing home to making it elderly-friendly, thereby reducing the risks of tipping over and injuries. Recommendations are also given for appropriate choices of products and installation by our team of experts.

In 2015-2016, SCG launched a public relations drive to make SCG Eldercare Solution known widely, and at the same time bring attention to the issue of caring for the elderly and the strength of its social fabric.

In 2021,
the population
aged over
60
accounts for
20
percent

Key Value Offering

Prevent and reduce possible accidents

Making life easier and more convenient

Supporting a quality of life

Number of the Aging population in Thailand

9.9 in 2015 million

15.3% 2015 · **20%** 2021 · **28%** 2031

Rising of percentage of the elderly

Over 75 years old Twice the likelihood to fall and face injury at home

40%

Injury from fall

SCG defines senior citizens into three groups

Green
signifies those who can live and do activities with full function of body capability.

Yellow
means those with a few minor health problems yet capability of doing daily living activities and may need help outside of home.

Orange
denotes those with more health problems, mostly staying home, and requiring assistant equipment and personal care taker.

Care Wash Basin.
Designed to accommodate wheelchair access, with reinforced strength.

Handrail.
Providing support when moving up or down a staircase, can be installed in any area, to help with balance and prevent falls.

Odor and VOC Absorbing Tile.
Restoring moisture balance, dehumidifying, stemming dark moldy spots, reducing damp and toxic volatile compounds matters, to keep the ambient air fresh for the elderly.

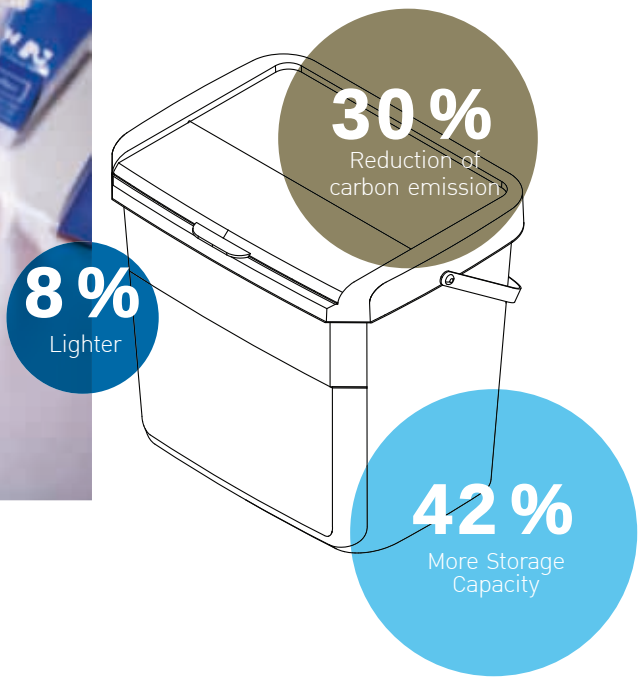
Automatic Night Light System.
Automatically switched on and off with appropriate color and brightness, detecting motions of stepping down from the bed and switched off when in bed. It can be adjusted according to usage behavior.

Shower Seat.
Designed to reduce slips and falls by sitting, instead of standing in showers.

Care Sanitary Ware.
Designed with a lever or button that requires minimal strength to push, at appropriate height, and wider seat for safe weight shifting.

Rinsing Spray.
Designed according to end users' physiology. with big handle and easy to use buttom

Shock Absorption Floor.
Mitigating the extent of injury from a fall through a layer of shock absorption foam.



Sharps Disposal Containers... Extraordinary

Each day hospitals have to safely dispose many used needles. Sharps disposal containers are essential and a large volume of them has been imported. SCG Chemicals has teamed up with N Health, the medical services expert part of Bangkok Dusit Medical Services Hospital, BDMS, to develop Thai version of sharps disposal container. They have to be safe, and enable those handling them to singlehandedly dispose of needles straight into the bin without having to remove the needle from the syringe. In yet another safety feature, the container lid can open and seal using the weight of the needle and syringe, thereby reducing risk of contamination from having to manually open or shut the lid. Once full, the container can be tightly sealed, and with a handle, it is easily portable.

Production-wise, the team chose a special type of plastic that is of equal strength with an imported material, and the design requires use of less raw materials. The container is square-shaped to provide more storage space.

The project was initiated in 2015, through the process of searching for ideas, developing prototypes, and actual trial with end users. Production for delivery to N Health according to a five-year contract worth 48 million baht started in 2016. The project helped to reduce imports, reduce the occupational hazard of removing needles, reduce the volume of containers used due to expanded storage capacity, and at the same time can also be exported.

The World's Latest Dental Plaster

Every year,Thailand imports about 4 billion baht in dentistry materials. Dental Plaster, the key material used in making Dental Models is priced at 100-150 baht per kilogram. One challenging issue in making Dental Models has to do with the infection of bacteria and fungus on the Dental Plaster, and poses an occupational hazard for dentists and dental assistants. The infection also shortens the lifespan of the Dental Model. SCG Cement-Building Materials which produces plaster from natural gypsum rock initiated a project on Anti-Microbial Dental Plaster. The Project is a Co-Innovation among three partners namely The Corporate Technology Office of SCG, Noritake SCG Plaster Company Limited, and Mahidol University. The outcome is Dental Plaster that has the property to stop the infection while expanding the lifetime of a Dental Model – a High Value Added product. It is projected that within the next five years, this Dental Plaster can capture 20 percent of market share in Thailand, and generate a revenue of 250 million baht per year for SCG. As an import substitute, it is expected also that it will help to reduce treatment cost, while advancing the quality of Thailand's public health service.

New Option for Food Packaging

The survey of food markets in Thailand found that in 2015, people used 34 million pieces of Styrofoam boxes per day. This rate is projected to increase to 61 million pieces per day by 2020. Moreover, Thais tend to pack food using plastic bags and paper tainted by harmful substances. This poses health risks and environmental stress given that it will take hundreds of years for these types of non-biodegradable waste to go away.

SCG Packaging recognizes the extent of the problem. It intends to develop innovative packaging materials that are hygienic and eco-friendly to replace Styrofoam boxes. The first step involved thorough market surveys to investigate vendors and consumers' behavior. We found that Thai people increasingly eat outside the home. The types of food they eat are hot, soupy or oily. Vendors want the kind of packaging materials they are accustomed to, and are easy to source and use. SCG Packaging applies the knowledge and experience from its 40 years in the industry to develop Food-Grade packaging materials that have passed the GMP-EU Standard and FDA Food Grade Standard certification. Next we designed a mold that is shaped out of a single sheet of paper to give it durability, heat-resistance, ability to handle soup and oil, and in the shape that vendors prefer. We have also come up with other related packaging materials to add more value to food such as Fest paper tray in the shape of a boat, or in a banana-leaf motif.

These high value added products called Fest. Fest now offers 40 varieties that serve as new options of safe and hygienic food packaging materials suitable for all categories of food establishments, from street food stalls to restaurants. Fest has set a sales target of 950 million baht in 2021. SCG Packaging is raising public awareness online, organizing activities to introduce eateries that use Fest, taking part in exhibition booths and offering of special prices, as well as holding workshops to share with suppliers and consumers about safe and eco-friendly food packaging products. In 2016, we joined the "Let's Give Up Styrofoam" campaign organized by the Department of Health, Ministry of Public Health to introduce Fest as options for vendors operating in over 100 municipalities nationwide.

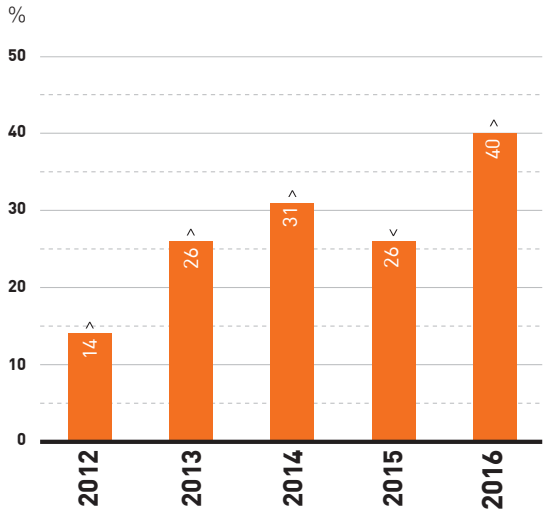
In 2016, SCG implemented the policy to terminate the use of Styrofoam as packaging materials within the vicinity of the Corporate Headquarters. We intend to impose the band across all business units within 2017.

Green Building...
Help Us Save the World

A building can consume energy so much more than we believed. In this case, if we pay attention from the stage of design to construction and use, we can be energy efficient, water efficient, and environmentally friendly. Many building owners wish to have a "Green Building" but they lack know-how to implement it.

In 2012, SCG, who has been continuously interested in environmentally friendly construction materials, set up the SCG Green Building Solution, a business unit dedicated to Green Building advisory services in compliance with international Green Building standards. SCG Green Building Solution offers integrated services starting from a feasibility study, assessment and analysis of energy consumption using computer programs, an advice on choices of appropriate materials, and guiding on how to apply for Green Building certification to the Project owner, building designer and business partners in a systematic and efficient manner for standards such as US certification for LEED, and TREES of the Thai Green Building Society. We have a team of experienced architects, engineers and material scientists trained locally and internationally.

Revenue from sales of SCG eco value Products and Services

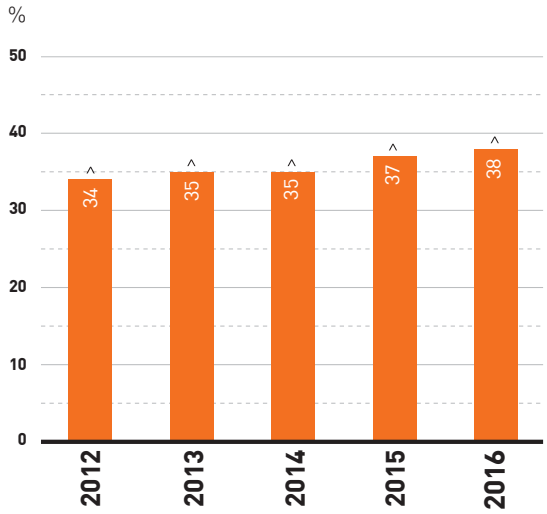


Pipatpong Israsena Na Ayutthya

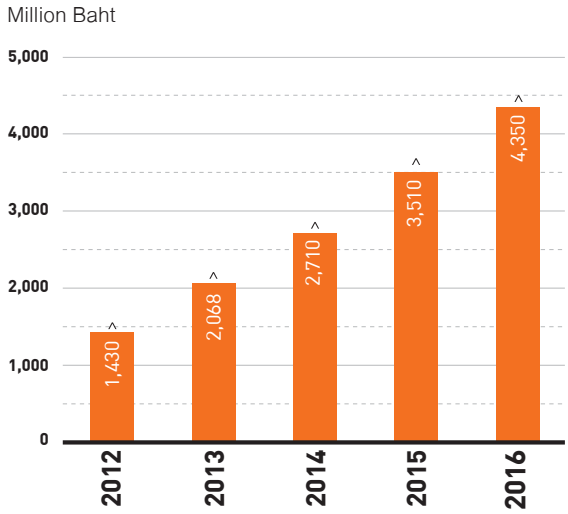
President and CEO Doi Kham Food Company Limited

"We at Doi Kham intend to turn His Majesty the late King Bhumibol Adulyadej's environmental commitment into a living, concrete example that people can touch, feel, and learn. And to know what to do in order to make this building a Happy Work Place, with good hygiene, eco-friendly, able to reduce water consumption by 43 percent and energy consumption by 28 percent.

Revenue from sales of HVA Products and Services



Investment in R&D



We take pride in our work for Doi Kham Food Company Limited. In 2015, Doi Kham Food Co.,Ltd. wished to renovate its 4-storey office with floor space of 1,895 square meters on Ratchathewee Road to use as a head office, as well as a display shopfront under the "Happy Work Place" concept. It considered to use LEED standard to guide the building design and sought the help from the SCG Green Building Solution.

The renovation project involved improving the building envelope, focusing on insulating it from heat by shading, heat insulation under the roof, the use of lightweight brick wall inside and outside the building. All facilities are geared towards water conservation, a lighting system with sensors for automatic on and off switching, an energy-efficient air conditioning system and good airflow for occupants' health, and the provision of green spaces in the building.

Upon completion of the construction, SCG team has conducted the performance test and submitted a report to the United States Green Building Council (USGBC). The office building of Doi Kham Food is certified LEED at the Gold level in 2016.

Products and Services that are environmentally-friendly certified

SCG eco value
78
Products

Carbon Footprint Reduction Label
46
Products

Green Label
176
Products

Carbon Reduction Label
29
Products

Carbon Footprint Label
456
Products

With our confidence in its quality and services, we have engaged SCG as our advisor and sought LEED certification at Gold level in 2016. Even with the recognition, the mission is not over yet. We have to keep up being environmentally friendly and serve as an example to inspire others to do the same."

Sustainable Value towards Customer

SCG manages its relationship with two categories of customers: Business-to-Business and Business-to-Consumer segments. We cultivate our relationship closely and consistently with a view to understand diverse characteristics and needs of the customers. This leads to our ability to respond to those needs most appropriately.

With Business-to-Business customers, SCG seeks to enhance our cooperation with them and to deepen their trust in our relentless efforts to develop products and services. For the Consumer segment, SCG focuses on offering direct experience with products and services that are interlinked through every channel - online and at physical stores or points of sales in order to optimize client satisfaction.

SCG is oriented towards becoming a Customer-centric Organization.

Targets

- Increase revenues through repeat purchasing products and services from the customer, and reduce costs of new customer acquisition.
- Increase customer satisfaction towards products and services, build good relationships between brands and customer, and enhance our brand image through positive word of mouth.

Strategies

❶ Engagement with Business-to-Business Group (B-to-B Group)

Maintain long-term relationships with Business-to-Business customers through a wide range of activities for both executive and operational levels, including overseas study visits, workshops/seminars on economic issues and products, friendly sport matches, special sales and promotion, as well as corporate social responsibility activities such as check dam building activity for water management. We compile feedback and conduct a post-activity satisfaction survey for analysis and planning in subsequent years.

❷ Engagement with Business-to-Consumer Group (B-to-C Group)

Comprehend the real needs of different consumer segments. Organize the customer database and classify customer according to characteristics and behavior of customers in order to serve them most efficiently. Create a direct users' experience by allowing customers to touch and feel the products through all interconnected channels, creating a bond and positive impressions between brands and customers. Listen to customers' feedback as important inputs to improve products and services that will better respond to their needs.

❸ Engagement with B-to-B Group for B-to-C Group

Customer relationship with the B-to-B group goes beyond a provision of our raw material support, maintenance techniques, or brand building. Collectively, we emphasize surveys to identify problems and needs of the consumers. Then we use those as inputs to co-generate innovations. We also provide advisory support to enable our B-to-B customers to produce goods responsive to the consumer's needs in the long run.

2016 Performance

Seamless Experience

SCG conducted an in-depth study in 2014-2015 leading to prioritization of customer segments. The study looked into consumers' behavior, lifestyle, access to and choices of construction materials, and attitude towards home construction. The study found that customers have greater access to information through an increasing variety of sources both online and offline, before making decisions to buy construction materials so that the purchase gives them exactly what they have in mind.

To respond to our target segments of customer, SCG applies the Omni-Channel Strategy. Omni-Channel Strategy is a retailing strategy through every possible channel – online and points of sale, with all channels linked to one another to service the customer from the stage of pre-purchase information seeking, through purchasing and post-purchase servicing. Customers can switch to different channels when interacting with SCG throughout their purchasing journey continuously – making for a "Seamless Experience".

SCG has enhanced its online platform by aggregating over 30 websites under a single SCG portal for ease of use: www.scgbuildingmaterials.com. The portal features content about homes, offers consultation service from specialized architects, product information, and a list of distribution outlets, as well as online orders of certain items processed through www.scgshoppingexperience.com. In addition, SCG Contact Center is a channel to answer consumers' queries about products and services, through telephone, fax, email, LINE and Live Chat. The result of overall customer satisfaction survey in 2016 is 99 percentage.

Regarding service delivery points, SCG has over 500 stores nationwide such as SCG Experience, SCG HOME SOLUTION, COTTO Studio, Home Mart and SCG Authorized Dealers. SCG's flagship store is SCG Experience, established in 2011 as a knowledge center and exhibition space for construction-related innovations through displays of product installation and application. In 2016, SCG Experience organized an idea exhibit under the title SCG Village. We showcased four model homes invented and designed by SCG to address the latest trends on housing. SCG Village features houses that give importance to SCG eco value, and to respond to an aging society – "Inspiration House" "Comfort House", "Acoustic House" and "Elderly House". SCG has also produced over 100,000 books on houses, with the e-book version available for free download from the website. SCG HOME SOLUTION is an integrated center for services and sales of construction materials. It also provides advices from experts, cost estimation for budget control, and an installation service by professional contractors. Currently SCG HOME SOLUTION has over 42 branches nationwide.

B2B for C

In B2B dealings, SCG sells goods for enterprises to produce products and services to their customers and consumers. Yet lifestyle and consumer behavior have been changing very rapidly. At the same time, trade competition has intensified. Against this backdrop, innovations and development of products that respond to what consumers want have become our priority. SCG strongly believes that collaboration between SCG and our B-to-B customers in identifying issues and needs of the B-to-C customers will lead to development of new products that are competitive. Such is the rationale for the B2B for C concept that SCG is about to roll out in full operation across all functions and business units.

Voice of Customer-Driven Development in 2016

Customer's Voice

SCG operates a system called Voice of Customer Management, collecting inputs and feedback from online and points of services where we interact with customers. These include negative feedback such as complaints, requests for damaged product replacement, positive feedback showing appreciation towards products and services, and advices. We compile this feedback in order to analyze the source of issues, find the right resolution and improve our new products and services.

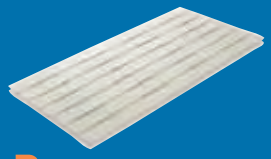
- VOC -

"Modular Green Hive should be sold accompanied by an installation kit for ordinary customers who have difficulties finding a technician, so that they can install themselves."

Response :
Selling as DIY set

- VOC -

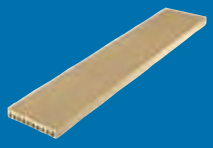
"Smartboard ceiling ventilation should come with an insect screen to save me from making another trip to get one."



Response :
The new line of ceiling ventilation board "Protection Series" has been embedded with an insect protection screen.

- VOC -

"The flooring material is very beautiful and looking so much like real wood. But it's rather heavy. If I have a choice, I prefer something lighter and stronger."



Response :
Producing a new line using Extrusion Technology resulting in a lighter and more efficient product.

Other Developments

SCG Packaging

An example to demonstrate this is the forming of a designers' team under "Inspired Studio." This features collaboration between SCG Packaging and B-to-B customers to design top-quality packing that adds value and boosts the image of products of the individual business client. The collaboration seeks to assist customer throughout the entire stages starting from raw materials selection to structural packaging design and product manufacturing. On board the collaboration will be the product design team, marketing team, product R&D team and support units from networks inside and outside SCG, and manufacturers of international standards.

- Organized an exclusive seminar for top management executives under the theme "Growing Together 2016 seeing, knowing and responding to an economic trend." The seminar featured a keynote presentation on packaging industry trends by Miss Wanna Suthat Na Ayutthaya, Vice President for Academic Affairs of the Thai Packaging Association. A number of prominent speakers and key industry leaders shared their perspectives on the economic outlook of Thailand and ASEAN and the impact of global economy, including Mr. Chen Namchaisiri, Chairman of the Federation of Thai Industries, Mr. Wichai Asarasakorn, Vice Chairman of the Thai Chamber of Commerce, Mr. Boonchai Chokewattana President of Sahapatanapibul Public Company Limited, Dr. Sutapa Amornvivat, First Executive Vice President of Siam Commercial Bank. Approximately, there were 300 participants attending the seminar.

Create Sustainable Value towards Supplier

Sustainability in the supply chain from upstream to downstream is essential to sustainable business operations. SCG therefore intends to the selection process of suppliers with the capacity to conduct business ethically, with professionalism and preparedness to adapt to changes that impact sustainability under the risk management plan. We also value co-generation of opportunity with our suppliers, under an efficient assessment program. Among others, Contractors in the production process must undergo the SCG Contractor Safety Certification System. Suppliers vending eco-products must be certified and registered under the Green Procurement list. All these arrangements are in place to manage risk by making our resources secured from few suppliers, critical suppliers and suppliers who fail to comply with rules and regulations, or stakeholders' expectations. These risks can ultimately harm our reputation and disrupt our business.

Targets

- All suppliers must demonstrate commitment to complying with the SCG Supplier Code of Conduct.
- All Critical Suppliers enroll the Supplier Development Program for Sustainability by 2020.

Strategies

❶ Select and assess suppliers with the capability for sustainable business

Establish the supplier selection policy and focusing primarily on the commitment to comply with the SCG Supplier Code of Conduct, as well as the capability to grow the business sustainably. Suppliers consist of General Suppliers, Green Procurement Suppliers, Contractors in Production Processes, and Fleet Carriers. SCG conducts assessments of suppliers annually and continuously in order to reduce any risk in the supply chain.

❷ Assess risks and classify suppliers into groups

Conduct Spend Analysis as inputs for risk analysis, then prioritize the risks and impacts on SCG's business from a range of perspectives including economic, environmental, and social aspects. The results are then used to segment the supplier into Critical Supplier group and General Supplier group to customize strategy and development plans corresponding to the risks.

❸ Develop supplier's capability towards sustainability

Organize and plan a development program aligned with the risks, while seeking to strengthen the competitiveness of suppliers to facilitate their growth alongside SCG. With the Critical Supplier group, there is the Supplier Development for Sustainability Project. For the General Supplier segment, we arrange the Greening the Supply Chain program and the SCG Contractor Safety Certification System and a Public Training Program.

❹ Raise awareness, knowledge and people competency

A procurement specialist committee has been established with the aim to enhance the capacity of employees and knowledge sharing by coordinating with government and private sectors in topic of procurement and sustainability. We aim to make our people well-versed and operate effectively in line with SCG's targets.

2016 Performance

Supplier Selection and Assessment

Annually, SCG conducts supplier assessments, using both on-site and off-site audit approach, interviews with executives and operational staff, and consider their performances. The set of criteria that we assess, include delivery of products and services, compliance with labor law and regulations, human rights, environmental actions and safety. Results are used to review and update our Approved Vendor List, which we do annually, in order to minimize risk within the supply chain, and to motivate suppliers to improve their efficiency and be ready to grow together with SCG.

2016
Green Procurement

9.936 Billion baht
of Green Purchasing volume

75 Products
Number of products registered in Green Procurement List

Supplier Assessed in 2016

6,961 Suppliers

General Suppliers committed to SCG Supplier Code of Conduct

> Conduct business with ethics, transparency, labor caring practices, Human rights, safety, compliance with laws and responsibility to society and the environment.

197 Suppliers

Green Procurement Suppliers

> Regulate their production process, water, energy, and waste management systems to be environmentally friendly, and promote the use of recycled materials.

473 Contractors

Contractor certified under SCG Contractor Safety Certification System

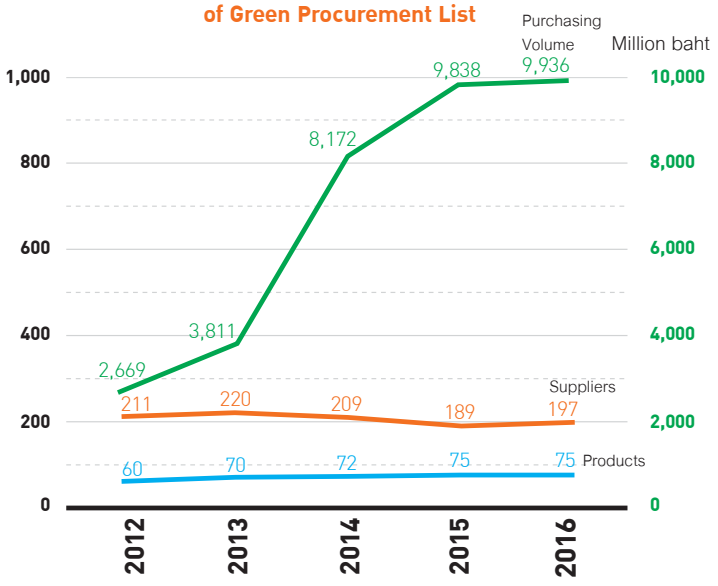
> Comply with occupational health and safety laws, and mitigate risks related to accidents.

102 Carriers

Transportation Contractors certified Fleet Carriers Standards

> They passed various SCG management standard assessments, including matters of Driver, Safety, Vehicle, Journey, organization and customer services.

Green Purchasing Volume and Number of Green Procurement List



Green Procurement Product Status 2016

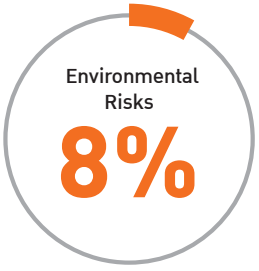
	Products	Suppliers
Office and General Items	28	54
Raw Materials	25	77
Supply Materials	18	55
Spare Parts	4	11

Supplier Risk Assessment and Segmentation

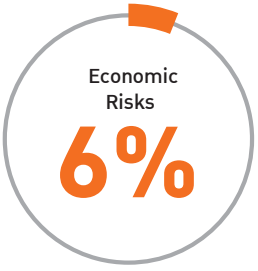
To manage risks in the supply chain, SCG Enterprise Management Risk Framework with spend analysis are utilized to assess risks in various aspects covering direct and indirect impacts on economy, social and environment aspects. SCG has assessed significant aspects regarding impacts on process in main production, customer satisfaction, shortage of supply/few suppliers. The result of assessment is used to prioritize and classify risks, develop plans to mitigate risks and be prepared to handle with new incoming risks to ensure that SCG responses to customer needs and manages supply chain in SCG sustainability manner.

For supplier management, SCG has used the result of assessment to classify suppliers and contractors into 2 groups which are critical suppliers and general suppliers to develop suitable supplier development strategy towards sustainability of supply chain management.

Ratio of suppliers with different risk types compared with the total of suppliers in 2016

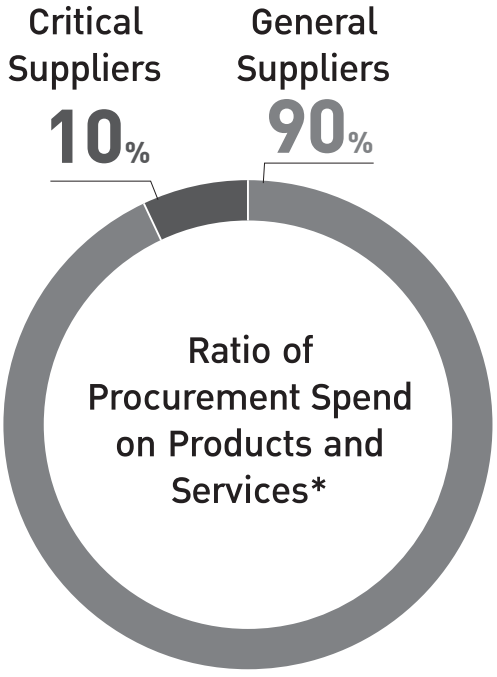


Water management, waste management, energy, chemical, efficient resource utilization



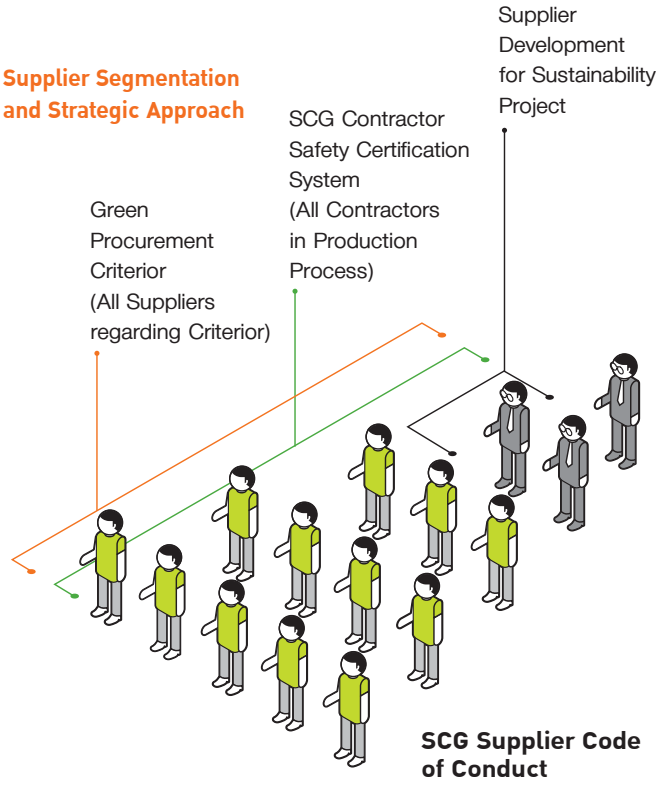
Volume of procurement, bargaining power, product shortage, product quality, impacts from foreign exchange rate

Labor practices, human rights, occupational health and safety, compliance with the laws and regulations



*Exclude oversea operations, feedstock and fuels

Supplier Segmentation and Strategic Approach



Pallet Maker, Sufficiency to Sustainability

A decade ago, Pichit Jiamcharoen started his own enterprise of making pallets (product stands for transport purposes) and has developed to a factory producing pallets for export. A true believer and practitioner of His Majesty King Bhumibol Adulyadej's Sufficiency Economy Philosophy, he manages his business on the basis of three values: Clean (transparent, compliant, non-corrupt), Green (environmentally sound, energy efficient) and Peaceful (happy, responsible and conscious).

Since the founding of the company until today, Pichit – as the person at the helm of the enterprise – has set himself as a role model, as someone who walks the talk. He committed to anti-corruption, he supported employees who have the potential to become supervisors by giving them scholarships to pursue a BA with no strings attached, and for employees to engage in livelihood activities, such as growing organic rice and vegetables within the company-owned farm plots.

On the product quality issue, Phichit has defined this as the foremost mission of the corporation, resulting in the Pallet Maker Group achieving certification under ISO9001 for quality management system and ISO 14001 for environmental management system.

With its Sufficiency Economy Philosophy-based business, which is compatible with the sustainability framework, Pichit accepted the invitation for his Pallet Maker Group to join SCG's Supplier Development for Sustainability Program in 2014. SCG teams have from then on provided coaching and the facilitating of knowledge, as well as advices for the Company to be able to think, analyze and solve problems systematically, in order to minimize risks, build resilience and business opportunities for sustainable growth.

The journey with SCG started with defining the Key Performance Indicators for each division to streamline company-wide operation, to achieve efficiency and effectiveness, while diversifying risks and insulating the business from the impact of global volatility. Pallet Maker Group expands its clientele into 8 business groups, and it has joined as a supplier of these business groups, resulting in the regular intake of customers and revenue stream. In addition, it has to differentiate itself from among its peers of 800-strong competitors. The company focuses on quality, speedy production and the variety of designs to respond to its customer's needs. It has managed to retain long-term loyal customers and to acquire new ones.

The Company has grown in a balanced and sustainable manner, thanks to its application of the Sufficiency Economy Philosophy and participation in the SCG Supplier Development for Sustainability Project. Its workforce is happy, and the company is a knowledge-driven organization that gives back to the society, and conserves the environment. Currently, Pallet Maker Group is certified Green Industry Level 3 for Environment Management Performance and on the way to being certified Level 4 for Green Culture.

Pichit Jiamcharoen

Managing Director, Pallet Maker Group

"From our participation in the SCG Supplier Development for Sustainability Project, the Pallet Maker Group has learnt from the experience and thinking of SCG and its application of the Sufficiency Economy Philosophy. SCG has taken it a step further to partner with the supplier so that we grow together in a sustainable way."

Processes of SCG Supplier Development for Sustainability Program

Program Opening
Define key persons of Supplier and SCG as a team, identify targets and scope of the work

↓

Identification of Material Issues
Analyze risks, opportunities and stakeholders. Prioritize issues

↓

Analysis of Material Issues
Conduct Gap Analysis and Root causes, Benchmark, Define expectation and its Development plan

↓

Supplier Development for Sustainability Plan
Implement the project by a QC Story
Embed SD Mindset
Facilitate the process and knowledge system that is suppliers' self-generated

↓

Monitoring and Evaluation
Valuate Direct and indirect benefits to Suppliers and SCG

Other Developments

- SCG has plans to improve from the Supplier Assessment Plan in 2017 towards Supplier Performance Self-Assessment and to apply for development plans of supplier development for sustainability project.
- In 2016, we organized Networking Activities for employees to share and learn together on operations relating to procurement, acquisition, and the application of sustainability in business. We also organized a study visit on the theme of sufficiency agriculture at Ban Hua-ao Learning Center, Sampran District, Nakhon Pathom province. This enabled our staff to visualize the Sufficiency Economy Philosophy in action and on the ground for the empowerment of the community and community-based enterprises, leading to genuine self-sufficiency.

Biodiversity and Ecosystem

In our business, certain activities such as limestone quarrying may affect the ecosystem and biodiversity. SCG applies biodiversity management principles as part of an environment-friendly business practice, in order to restore and conserve the ecosystem in the locality. We supervise our work closely to assure compliance with international standards in biological resources, and we foster cooperation with all stakeholders under the philosophy that ***"Business, Community and the Environment"*** *must co-exist sustainably. In every process, we seek the Net Positive Impact for the ecosystem.*

Targets

- Rehabilitate biodiversity to its best at all SCG limestone quarry sites. Achieve complete 100% coverage of the Biodiversity Management Plan for all SCG quarries in Thailand by 2019.
- Expand the approach of quarry rehabilitation and biodiversity management to quarry sites in ASEAN countries, until achieving complete coverage.
- Have at least 10% of acreage of agroforestry (currently two sites in Kanchanaburi and Kamphangphet) established as biodiversity conservation zones, according to the Forest Stewardship Council (FSC) standard by 2021.

Strategies

❶ Develop the biodiversity baseline data and monitoring program

Conducted the study, survey and research to generate the knowledge and understanding of the site from geography and biodiversity perspectives, namely, wildlife species, flora, fauna, plant varieties, and communities. The data collected will support the risk management and environmental impact assessment and to shape the quarry rehabilitation and biodiversity management plan and actions.

❷ Engage with communities and stakeholders

Communicated regularly with the communities and stakeholders, to build trust between SCG and the community that will lead to collaboration in the management and conservation of biodiversity whereby the community stands to gain from the joint effort. Worked with multi-disciplinary experts to make sure the quarry rehabilitation and biodiversity management plan suitable for local context, the indigenous ecosystem and biodiversity.

❸ Implementation of sustainable biodiversity management

Implement actions as prescribed by the rehabilitation and conservation plan for specific locality. There are clear indicators to track progress, including indicators on the success of community engagement, such as an ecosystem valuation to use results to modify and further develop the implementation. Able to become a prototype of conservation and learning center, and a model that can be scaled up to other sites of SCG and other mines.

2016 Performance

The Living Quarry

The familiar sight of a typical limestone quarrying in mountains –blasted off, with piles of stones, arid and lifeless. This is bound to change, with SCG's efforts spanning a number of years to rehabilitate biodiversity to quarry sites. The aim is for the entire lifespan of quarrying to become environment-friendly and to be Net Positive Impact for ecosystem. The lifeless look has to be replaced by the greenery of trees which provide the local plants to build up suitable habitat for wildlife. SCG Cement-Building Materials is undertaking this according to the Guidance for Quarry Rehabilitation and Biodiversity Management of WBCSD-CSI.

SCG in cooperation with the Forestry Research Center of the Forestry Faculty, Kasetsart University, conducted a biodiversity study at two limestone quarry sites in Saraburi of Siam Cement (Ta Luang) Co.,Ltd., and of Siam Cement (Kaeng Khoi) Co.,Ltd., collecting data from 2006 until now. The research team has managed to collect samples of 30 indigenous forest species including some very valuable ones. The results of the study are used to develop a quarry rehabilitation plan and prepare the seedlings for rehabilitation work. In another similar effort which is a collaboration between Siam Cement (Thung Song) Co.,Ltd. and the Faculty of Science, Prince of Songkla University, they now finalized a list of indigenous plants that can be grown to rehabilitate the quarry at Nakhon Si Thammarat. In 2016, a new component of work has been added to survey the diversity of insects and butterflies to supplement the biodiversity data, which will be used to measure/indicate the success of quarry rehabilitation over time.

The Siam Cement (Lampang)Co.,Ltd.,in working with the Forest Restoration Research Unit, Faculty of Science, Chiang Mai University conducted a biodiversity study and the team finalized a list of appropriate tree species to grow for quarry rehabilitation. In addition, we initiated a joint project with the Biodiversity-based Economy Development Office (BEDO), BEDO Foundation and the Global Nature Fund (GNF) to conduct a Business & Biodiversity Check of the entire supply chain. Furthermore, This particular project focuses on the survey of bird species. Initial findings show that in the quarry sites of Lampang, the bird species found have been increasing steadily, indicating gradual and sound revival of ecosystem.

Learning from "Father of the Land"

For the implementation of quarry rehabilitation and biodiversity conservation, SCG has studied extensively from projects initiated by His Majesty the late King Bhumibol Adulyadej as showcased by regional branches of the Royal Development Study Center located in different regions, including ones at Khao Hin Son in Chachoengsao, in Phuphan of Sakonnakhon, Huayhongkrai in Chiangmai, and Huaysai in Phetchaburi.

SCG has adopted His Majesty King Bhumibol Adulyadej's pioneering efforts in water, soil and forestry conservation to apply according to local contexts. Some key ideas that are relevant and applicable to use include the soil conservation technique of growing vetiver and other plants to protect against erosion; the principle of growing 3 types of forestry for 4 benefits; the method of forestation without planting; technique of multiplying indigenous seedlings; rainwater management for long-term rehabilitation of quarry. SCG has also collected our knowledge and experience by implementing these and shared them as a Learning Center accessible to the general public.

The success and progress resulting from putting the King's initiatives in practice in quarry rehabilitation is one example of sustainability Thailand benefits from, through the kindness and ingenuity of His Majesty King Bhumibol Adulyadej, Rama IX.

Biodiversity in Limestone Quarry

Butterflies in Thung Song Quarry
50
Species

Insects in Khao Wong Quarry
263
Species

Insects in Kaeng Khoi Quarry
298
Species

Resident
Migrant

per 20 Species

	1992	2002	2012	2016
Total (Species)	78	98	157	169
Resident	65	70	106	110
Migrant	13	28	51	59

Increase of Bird Species in Lampang Quarry

Seedlings to Forests

Preparation of seedlings of indigenous species to reforest quarry sites represents another important step of the effort. SCG collaborates with members of the community for the task through "From Seedlings to Forests" project by the Siam Cement (Thung Song) Co.,Ltd. Partnering with Ban Na Ta Yaem School, resulting in 2,000 seedlings per year. The same counterpart project between the Siam Cement (Kaeng Khoi) Co.,Ltd. in Saraburi and schools around the factory can produce 3,000 seedlings per year.

Both projects create opportunities for school pupils to know local plant species and learn hands-on how to prepare seedlings. The company supports equipment and seeds for the youth to take home and nurture those seedlings until they become healthy young trees, at least 30 centimeters tall. Then the projects would buy back those seedlings to be used in reforesting the quarry sites. A portion of seedlings is also made available for communities that are keen on adopting them.

Besides raising awareness on conservation of local species, the projects contribute to community income generation, while communicating SCG's message of social and environmental accountability to the community.

2,000 seedlings per year
at Thung Song limestone quarry

3,000 seedlings per year
at Kaeng Khoi limestone quarry

The Garden Variety at Kampangphetch Agroforest

Agroforestry for pulp production at SCG Packaging complies with the sustainable forest management framework of the Forest Stewardship Council (FSC) that tends to 3 aspects of sustainability – economy, society and environment. A prime example is the agroforest of Siam Forestry Co.,Ltd. at Prankratai District, Kampangphetch province. The site (covering an area of about 9,200 rai – or 14.72 sq.km.) has 84% coverage of Eucalyptus trees, and 10% (about 923 rai or 1.48 sq.km. rai) is earmarked for conservation according to FSC standards.

The conservation area is primarily Dry Dipterocarp Forest which has a high biodiversity value. Siam Forestry Company Limited has engaged the community to be on board joint conservation efforts. Villagers can have access to collecting edibles such as mushrooms, bamboo shoots and others. They use some for household consumption and sell some of them as an income supplement for the community.

In a survey of plant and bird varieties within the conservation zone in 2016, a team of experts from the Forestry Faculty of Kasetsart University, documented the discovery of 63 plant varieties of 31 families, some of which are prominent ones. The conservation zone is densely covered by mature, young trees and saplings. The bird count documents 82 species from 43 families and 12 classes, of which 6 species are newly discovered for the area, and the team found one endangered species that is the rufous-winged buzzard.

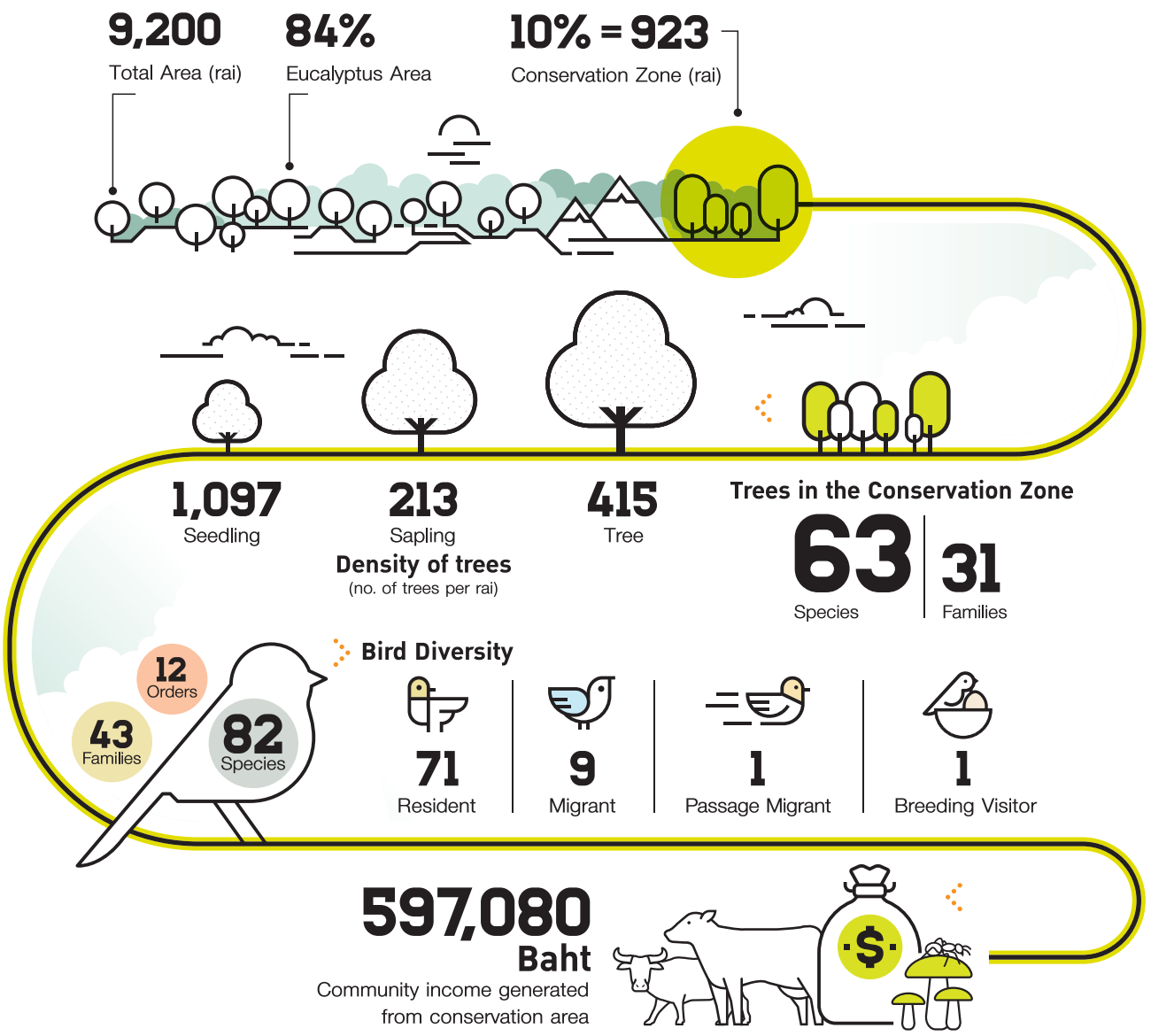
Data documented from the survey will feed into different aspects of the management plans including forest fire prevention, prevention against poaching and logging, prevention against alien and invasive species. They also form part of our baseline data to continue monitoring and surveying biodiversity in the long run.

Cha-oom Kalapapruek

Villager, Nong hua-wua Sub-District Prankratai District, Kampangphetch

"The villagers here have very good feelings towards SCG. Apart from jobs and livelihood opportunities such as cutting trees to feed the factory; SCG allows us to use the land for cattle grazing, and to pass through without having to ride roundabout, and allows us to pick seasonal mushrooms and vegetables. SCG land is the food source and income source for people living in harsh lands like this area."

Kampangphetch Agroforest



Other Developments

SCG Cement-Building Materials

- Thung Song quarry Nakhon Si Thammarat province and experts from Prince of Songkla University studied the symbiosis between certain fungus species (Ectomycorrhizal fungus: Hopea Ferrea) and the roots of the Takhian-hin Tree (Hopea ferrea Laness), the indigenous forest tree, conducting a comparative study between a natural forest and a rehabilitated forest. It is found that the Ectomycorrhizal fungus thrives better in a natural forest and the findings generated by this research will help to increase the survival rate and enhance the growth rate of seedlings.

Concern for Society and Community

*At **SCG**, we believe that for business to grow sustainably, the community and society must develop and prosper together. We are aiming for creating values for social development in multiple aspects, focusing our efforts on problems that affect the quality of life for people. We also actively engage with other stakeholders, for advocacy and actions that lead to improving the quality of life in every aspect, here in Thailand and in the Region.*

*SCG determines the **CSR Committee for Sustainable Development**, consisting of the Company's Directors and top Executives, to supervise CSR policy and direction for sustainable development, to come up with concrete actions for key challenges of the society, so as to advance the people's life quality and strengthen Thailand's capacity. SCG Foundation, meanwhile implements its key mission to maximize the potential of human capital and to equip them with integrity so that they can contribute to the development of the country. On the ground, we have a structure called **"Community Relation Units"** at sites around SCG's manufacturing facilities. These units engage the local communities in activities that promote the potential of community members, improve their quality of life so they advance along with our businesses, and they can be self-sufficient in the long run.*

Target

- The community and society develop and grow sustainably, possess a mastery of vital knowledge and skills together with systematic problem solving, become self-reliant and ready to be a role model of sustainable development for others for a broader coverage.

Strategies

SCG formulates the following four strategies by considering the characteristic of projects and SCG's involvement, taking into account the competency and capacity of the organization in terms of knowledge, capital and collaboration.

1 A role model for sustainable social development

To tangibly solve the problems of Thailand and emerge as a project model for other companies to replicate, SCG is involved from the first step of problem diagnostics, developing a work plan, and participating in implementation process until the objectives are achieved.

2 Capacity building and improving the quality of life by specialists

For problem solving or to raise the quality of life of people in the society, tapping into certain kinds of expertise or specialization, SCG may take part on selected issues, and outcomes can be built upon or scaled up.

3 Capacity building and improving the quality of life, with Employees' Involvement

To raise quality of life or build the capacity in different aspects of the society, whereby SCG employees participate in driving the projects until achieving successful outcomes that are then replicated elsewhere.

4 Alleviation of social situation and suffering

To do relief work when the society faces pressing problems, and contributing to better quality of life of the people, by supporting organizations with proven track records in doing philanthropic and public service.

SCG's Strategy for Social Responsible Project

2016 Performance

1. A Role Model for Sustainable Social Development

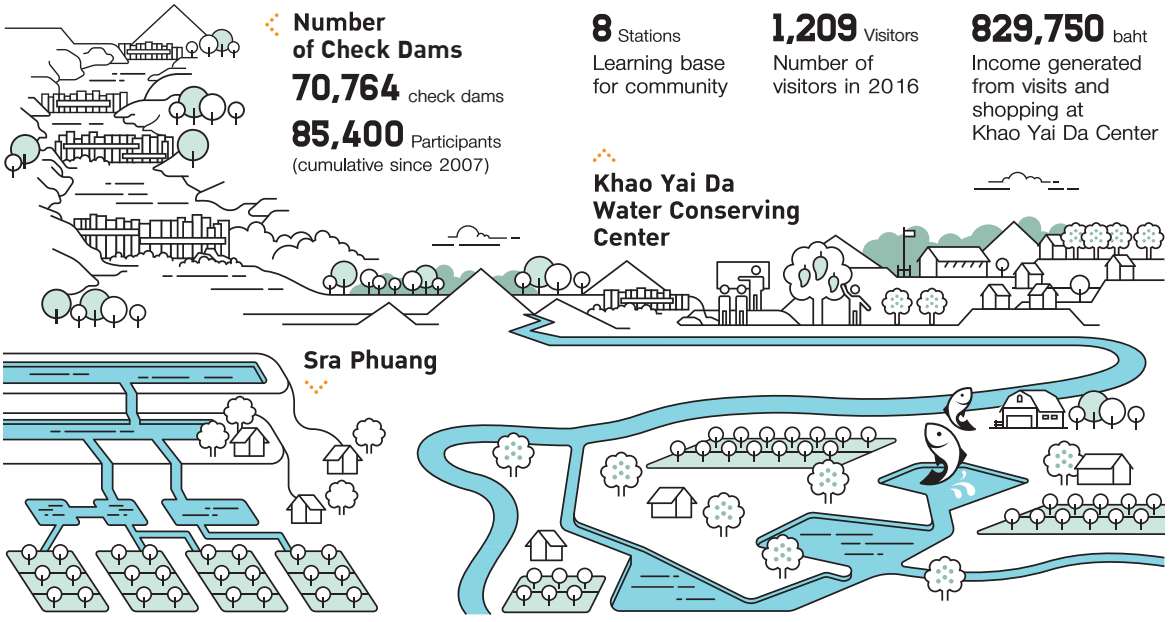
SCG Conserving Water for Tomorrow

Thailand had to face El Nino-induced drought since early 2016. Yet communities that have partnered with the "SCG Conserving Water for Tomorrow" project which puts in practice His Majesty King Bhumibol Adulyadej's sustainable water management initiative have the resilience to cope with the drought. The approach prescribes rehabilitation of watershed through the function of the check dams, and this Royal Initiative has been implemented since early 2007 at multiple sites. The check dam system is now proven to bring back water. Some communities enjoy so much excess that they share with their neighboring communities. This practice has been replicated in other locations including:

"Satanee Rak Nam Khao Yai Da, Rayong Province", a Community Learning Center has evolved from the successful application of check dams as a tool to manage the water supply for fruit orchards. These days, the site has become one of the prime agro-tourism destinations of Rayong. The collaboration between SCG and Khao Yai Da community in developing the check dam system shielded the community against serious drought in 2016, but best of all, fruit orchards around Khao Yai Da yielded exceptionally abundant outputs, generating more income than ever to community members. This whole community outreach also inspired a conservation curriculum development for schools in Khao Yai Da vicinity, to raise the youth's awareness of the importance of the environment and way of life in their hometown.

"Sra Phuang" Approach to Water Management for Agriculture has been implemented at Ban Sa-phae village, Jae Hom District, Lampang, following an SCG-sponsored study visit for community representatives to the Royal Project Discovery Site in Nan province. This allows the community located on a mountain ridge learning how to collect water from the check dam for storage in one of the Sra Phuang ponds to feed agricultural activities for the whole village. At the same time, villagers themselves adapt by turning to less water-consuming plants and use drip water technique to economize on water. This way, they have been able to grow an array of cash crops, and

SCG Conserving Water for Tomorrow Project



* Calculated on the basis of area 200 rai x output of 600 kilogram/rai x 10 baht/kilogram

propagate seeds such as pumpkin, gourd, bitter melon, and others to sell to buyers. To date, the community managed to generate over 10 million baht from seed sales.

Canal dredging, and connecting with marshes and the Chi River to form a "Monkey Cheek" system at Ban Nonkewa in Waengnoi District, Khon Kaen province. This is a collaboration of SCG, the Hydro and Agro Informatics Institute (Public Organization) and Utokapat Foundation under Royal Patronage to develop water reserves and a context-specific water management system that can provide relief from drought.

"Thailand Sustainable Water Management Forum 2016," organized by the SCG together with Utokapat Foundation under Royal Patronage and the Thai Journalists Association, served as public-private and civil society sector platform to explore integrated water management practices. The Forum also heard from experts from Israel, Singapore and the Netherlands, countries known for their successful dealing with water challenges, so that Thailand learned from international experience.

And in gratitude to His Majesty King Bhumibol Adulyadej, SCG in following the Royal Footsteps would like to be the model institution of sustainable water management by building more check dams to reach 70,000 units as part of "Succeeding the Royal Initiative by Building 70,000 Check Dams to Conserve Water Nationwide project" in six provinces, namely, Lampang, Khon Kaen, Kanchanaburi, Saraburi, Rayong, and Nakhon Si Thammarat, as a durable solution to floods and droughts. In 2016, we built an additional 2,319 check dams involving 4,400 volunteers

Synthesis of Water Management Approach in Thailand From Thailand Sustainable Water Management Forum 2016

1. A national water committee is required to be set up and take a role in planning and coordinating integrated water management in the short, medium and long term, in an institutional arrangement Similar to the National Economic and Social Development Board

2. Multiply the number of communities that succeed in water management by sharing knowledge with others, with support of local administrative agencies

3. Conduct a comparative review of laws and regulations governing Forestry Zone, National Reserve Forest and National Park Authority. Due to inconsistencies in these laws and regulations, communities face serious hurdles in collaborating with State agencies

4. Restore and increase the capacity of original water sources, canals, streams, underground wells, and build a defense line to protect against encroachment. Concentrate efforts on renovating old water sources instead of building new ones

5. Put in place a system and tools to ensure efficient water use. For instance, water recycling, in which water used in a rice field can be used for other purposes than just discharge.

Temporary Public Toilets

SCG in partnership with Bangkok Metropolitan Administration and the Ministry of Industry built provisional knock-down public toilets at Sanam Luang for crowds of people who have been gathering to pay respect to His Majesty the late King Bhumibol Adulyadej Rama IX. For this project, we employed innovative products from SCG and 12 other suppliers. We modified the SCG Heim modular structure, assembled with roofing, wall, smart board and SCG construction materials, COTTO ceramic and sanitary ware and Willy toilet partitions. We have tried to accomplish as many steps as possible, including the electricity and sanitation system from factories to shorten the time required for on-site assembly and installation. Then, we trucked them to Sanam Luang, where a crew of 150 technicians worked 3 days, to make ready public toilets for men, women, and accessible toilets for the elderly and people with disabilities.

The first location of public toilets opened since 29 October 2016 near the Royal Grand Palace. Subsequently, more serviced at Suan Santiporn, Thammasat University Taprachan Campus, the north end of Sanam Luang, and near the holding site *Gor* and *Jor* where people queue, with a cleaning crew service on the facilities 24 hours a day.

300,000

people using the public toilets

(From 29 October 2016 - 31 December 2016)

Skilled Professionals of the Future

Demands for skilled workers in the manufacturing and service sectors in Thailand have risen significantly. However, the Thai society assigns greater value to university degrees over the vocational track, and hence the shortage of vocational specialists. This has long term implications for Thailand with greater mobility within ASEAN in the future. Against such a backdrop, SCG Foundation has implemented the "Skilled Professionals of the Future" project that aims to raise the number of students enrolled in vocational education, by offering no-strings attached scholarships in the fields of industrial mechanics and service until the scholarship grantees complete the Advanced Vocational Certificate level. We have also worked hard in public communications to project a positive image for vocational education to get across key messages such as choices of specialization, paid-internship, entrepreneurship prospects, or job mobility to work outside Thailand.

Beside, we have also participated in the current government's Public-Private- Partnership Project to improve vocational education quality and expand public-private sector cooperation to align vocational education with the national strategy. Tasks include a standardization of professionals and development of a vocational school to be an excellence model school, so that Thailand has the human capital required to take the country forward.

1,285	scholarships	under "Skilled Professionals of the Future" scholarship (Vocational Certificate 1-High Vocational Certificate 1)
74	provinces	where there are students under "Skilled Professionals of the Future" scholarship
243	colleges	(public and private) with students under "Skilled Professionals of the Future" scholarship

SCG Badminton Academy

Co-founded by SCG and the Crown Property Bureau in 2007, SCG Badminton Academy aims to advance the capacity of young promising badminton athletes in a systematic approach following the sports sciences to be the main force of Thailand's national badminton team. The Academy, located at the Crown Property Bureau's Badminton and Sports Sciences Training Facility, offers full time program for athletes' development under its comprehensive program ranging from education, training, nutrition, psychology, tournaments and travelling. Athletes at the Academy are divided into three group: Group A consists of National team players and players with university education, Group B are athletes who are in primary and secondary schools, and Group C are potential athletes on trial.

To keep athletes in shape at all time, the Academy organizes 4 fitness tests per year, quarterly. Group A athletes are required to have aggregate score of 80%, 75% for Group B and 70 % for Group C. Group A's performance is measured by their spots in the world ranking, and in SCG All Thailand Badminton Championship. For Group B, their performance is assessed at the SCG Junior Badminton Championship. In 2016, the Academy's top performers are Women's Doubles, Puttita Supajirakul and Sapsiri Taerattanachai who were qualified to compete at the 2016 Olympic Games.

9	BWF World Ranking of Women's Doubles	Puttita Supajirakul and Sapsiree Taerattanachai
10	BWF World Ranking of Mixed Doubles	Dechapol Puavaranukroh and Sapsiree Taerattanachai
40	athletes	trained at SCG Badminton Academy in 2016
10	coaches and staff	at SCG Badminton Academy in 2016

207
patients
received cataract surgery
in 2016

2. Capacity Building and Improving the Quality of Life by Specialists

SCG Sharing a Brighter Vision

Working to improve the quality of life of people in ASEAN is yet another mission that SCG determines to undertake to bring about sustainable growth to the host countries where SCG operates. In 2016, SCG in partnership with the Crown Property Bureau and Ban Phaeo Hospital (Public Organization) implemented the "SCG Sharing a Brighter Vision Project" in Myanmar for the second time to delegate ophthalmologists with modern equipment to perform pro-bono cataract surgery. In this second year of the project, over 50 SCG employees who are Myanmar nationals helped to take care of beneficiaries. The 2016 SCG Sharing a Brighter Vision were able to treat 207 patients from Mawlamyine, Kyike Mayaw, Mudone, Paung and Chaung Son successfully with results of vision improvement.

The team has also handed over Phacoemulsication (Phaco) equipment set to Mawlamyine General Hospital, which will enable its medical team to deliver effective treatment and services.

The project has been warmly welcomed by the local people because it helped them reduce the long distance they have to travel to seek treatment. At the same time, it contributes to the strengthening of Thai-Myanmar bilateral relations.

50
Myanmar
employees of SCG
volunteered to facilitate
surgery arrangements
for patients

3. Capacity Building and Improving the Quality of Life with Employees' Involvement

Fish Home for a Sustainable Community

There are many ways we can take care of the environment – to use less resources and creating value to waste that is recyclable. That is the background to SCG's Waste to Value efforts that benefit both the community and the environment at the same time.

"Pristine Beach: Bringing the Fish Home Project by SCG Chemicals" began with a series of dialogue with local fishermen whose livelihoods depend on coastal fishing along the beachfront of Rayong. Through this, we came to know of fish stock depletion at an alarming rate due to aggressive overfishing by trawlers and push nets.

SCG Chemicals started to develop a fish nursery "home" by assembling PE100 pipes from a plastic pellet testing process into a pyramid-shape house. This structure is placed onto the seabed to serve as an aquaculture nursery to breed resources that will sustain the livelihoods of fishermen. These pipes have been tested as non-toxic, able to withstand pressure and erosion, and durable.

The entire process of building the fish nursery is participatory and engaging stakeholders in every step of the way— from joint site selection survey with the villagers, assembly and installation by volunteers who are SCG's employees, local community members and officers from government agencies. There is a system to monitor and collect data quarterly. After a year of placing the nursery at the mouth of Klong Klaeng area, the site is a bustling habitat of barnacle, green mussel and various valuable fish and sea creatures e.g. yellow-stripe scad, grouper, batfish and cockfish.

The Project kicked off in 2012 and in 2016 alone, 420 more fish homes were added along the coastal areas of Rayong and Chonburi. We also supported Noen Kho community to set up a learning center for coastal fishing to keep the practice alive for the next generation, along with restoring the undersea ecosystem to be healthy and sound again. This project exemplifies stakeholders' engagement between SCG Chemicals and the coastal communities along Thailand's Eastern region.

7	types	of increasing sea creatures (yellow-stripe scad, grouper, batfish, cockfish, frog crab, rock crab, green mussel)
10	%	income increase per year to the local fishers
26	groups	of local fishermen participating in the Project from Rayong and Chonburi.
1,000	participants	active in the eco-conservation groups
420	fish homes	built in 2016
790	fish homes	accumulative number of fish home from 2012-2016
1,600	square meters	increase area of fish habitat

Sharing Opportunities, Drawing the Future

SCG Foundation provides opportunities for SCG employees to participate in public service and social contribution. We invite proposal from our employees, and support implementation of what have been chosen as creative and beneficial to society wherever in Thailand. With this, we hope to motivate our staff to be public service-minded, and willing to volunteer working with communities in need. In the last 10 years, SCG employees have taken part in 1,634 community-based projects. Still our workforce is enthusiastic about social contribution as we receive an average of 340 project proposals per year. SCG Foundation has to date contributed about 170 million baht to this type of employees' initiative while SCG employees themselves have contributed a total of 6.6 million baht out of their own pocket.

An interesting example

The Bookworm Mobile Library Project, *in its 5th year is the initiative of employees in the labor relations unit, The Siam Cement (Lampang) Co., Ltd.. The team would put together a collection of reading materials and bring them to children who do not have access to good quality reading materials. Besides the books, the team organised activities such as eco-camp for children to educate them about the nature and the environment around them, and hazardous behaviors such as burning farm plots for land clearance that causes smog. It is hoped that children will share and create rippling effects of what they learn with their parents and other members of the community.*

Projects in 2016

190	projects	completed in 2016
21.6	million baht,	the budget for the approved projects in 2016
207	sites	hosting the projects in 2016 (57 communities; 129 schools, 16 Buddhist temples, 5 hospitals/ health centers)
More than 2,500		SCG employees participating in 2016

SCG Sharing the Dream Scholarships

Education is the foundation of sustainable development. SCG has started a scholarship project in Thailand since 1981, which later covered Vietnam, Indonesia, Myanmar, the Philippines, Cambodia and Laos from 2007 onwards. The scholarship program makes it possible for a large number of students to live their dreams about education and career aspiration.

In Thailand, SCG scholarship program targets marginalized children and youth who live in remote area of the country. To date, SCG has given 70,000 scholarships. In recognition of people who are active in public service, we have started a new category of scholarships for children of public service providers, including children of forest rangers who have made great sacrifice to protect forest resources. In another aspect of the work, we also instilled a spirit of volunteer to scholarship recipients through volunteer activities by employing their skill and competency as well as being the role model to inspire others to do the greater good to the society.

Within ASEAN, SCG has awarded more than 1,770 scholarships per year in Indonesia, Vietnam, Cambodia, Myanmar, the Philippines and Laos. We encourage SCG employees in ASEAN to actively seek young people with good behaviors but in need of scholarship, to help these young people with application process, and coaching them about education as well as life skills. In 2016, about 350 ASEAN SCG employees have volunteered to join us in this undertaking.

Thailand

4,000	scholarships	for primary to college and vocational education until now.
70	million baht	the scholarship budget in 2016

ASEAN

1,805	scholarships	for students in 6 ASEAN countries
24.915	million baht	the scholarship budget in 2016

One-Million-Square Meters CPAC Courtyard Project

Contributing to the communities around us through a collaboration among our workforce, suppliers, and communities for a better quality of life is our aspiration towards conducting business alongside community development at Concrete Products and Aggregate Co., Ltd. (CPAC), part of the SCG. We came up with the idea to maximize the resource utilization according to sustainable consumption scheme. We turns remaining concrete in the concrete trucks into concreate slabs and give to communities for public use.

The CPAC courtyard project aims to reach a 1-million square meters' space as recreational park over a period of 7 years (2014-2020). Our employees, suppliers, and surrounding communities lend a hand to lay concrete sheets to form a "Courtyard" which will be served as public space for communal activities.

20,000 community members joining the CPAC Courtyard Creation*

25,000 cubic meter Volume of concrete used to assemble this space*

550,000 square meter Courtyard space accomplished*

* cumulative from 2014-2016

The Challenge 2016

Fostering innovation and creativity is an important driver of Thai society. Likewise, as SCG Packaging strives to become a sector leader, it has to play a part in raising the standard of Thailand's packing industry, especially by promoting new generation of young talents. SCG Packaging teamed up with *Wallpaper** magazine for the "SCG Packaging x *Wallpaper** The Challenge 2016" in September 2016.

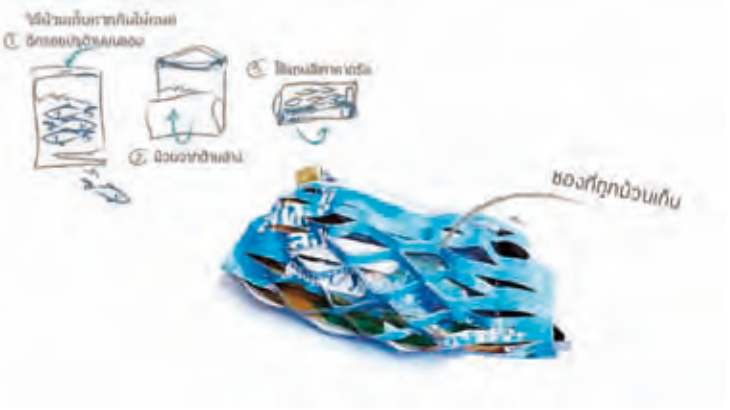
Under this project, young designers entered into a contest to design packaging for 10 products selected from community-based enterprises across Thailand. These include spicy paste from Bansrakosinarai, Ratchaburi, dried longan from Bansanpahiang in northern Lamphun, frozen seafood from the Fisher Folk groups in Prachuakirikhan and Nakon Si Thammarat, and berry rice product from Baan Kudnamsai, Khon Kaen. For the Challlenge 2016, the packaging must be applicable in real life, and with added value, thereby generating more income to the communities many of which are in need of better packaging for what they produce.

The Challenge 2016 generated enthusiastic feedbacks, as 27 universities participated in the project which eventually attracted over 350 entries. Of these, one has actually been implemented for commercialization of the product from Kudnamsai Community Enterprise and several others are in the pipeline of refining towards actual commercial purpose. SCG Packaging offers the design for real production free of charge. The Challenge 2016 has also created a network and alliance of new designers who can contribute to advancing Thailand's packaging industry's competitiveness.

1 packaging design commercialized (for Berry Rice from Kudnamsai Village, Khon Kaen)

27 universities from which students participated in the Challenge 2016

350 entries of packaging design



4. Alleviation of Social Situation and Suffering

Channel 7's Drought Relief Program

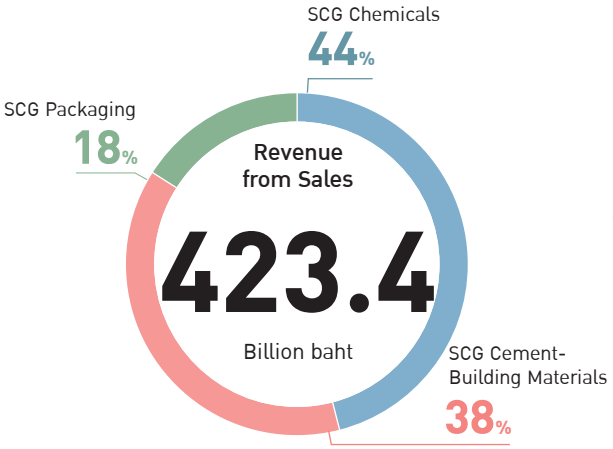
SCG fully recognizes the importance of water to living, the magnitude of drought impacts on the people and the need for immediate assistance. Along with the Royal Thai Army and the Crown Property Bureau, we joined up with Channel 7 under "BBTV Channel 7, United against Drought" project to relieve suffering of the affected communities. Under this campaign, water storage tanks with 2,000 liter-capacity were distributed to villagers suffering from severe drought disasters. These tanks are made of SCG Chemicals materials with a life span of 10 years, and they are safe to store water for consumption.

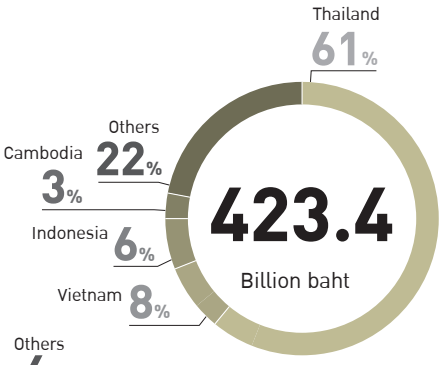
93
sites
the geographical coverage for water storage tanks distribution

622
tanks
distributed to affected communities.

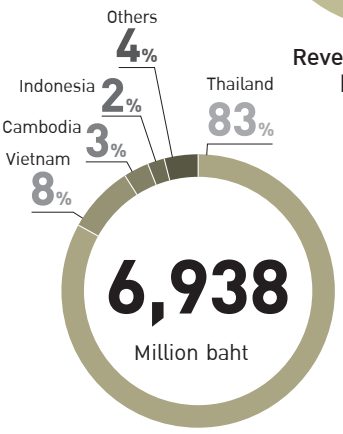
Appendices

Sustainability Performance Data 2012-2016

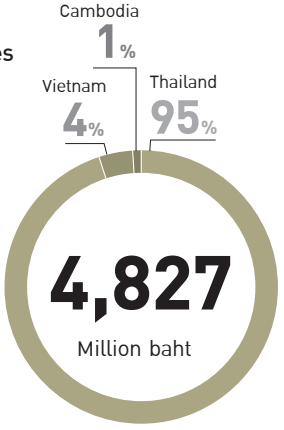




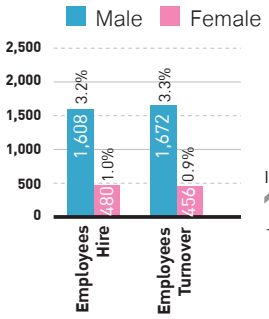
Revenue from Sales by Country



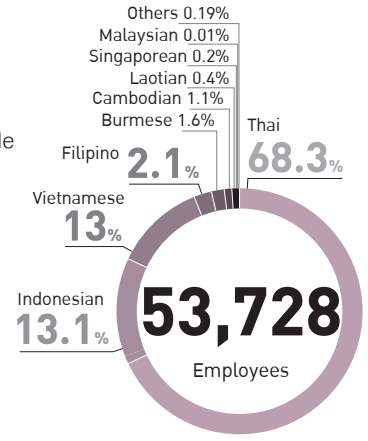
Taxes to Government



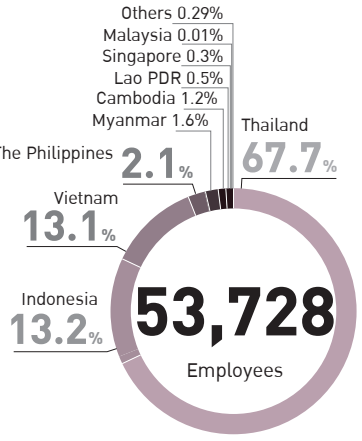
Tax Benefits



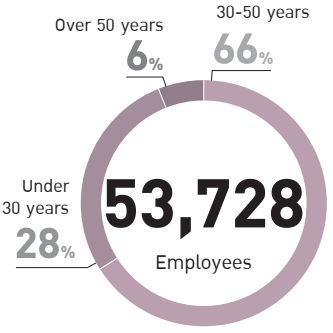
Number of New Employees Hire and Turnover*



Proportion of Employees by Nationality



Proportion of Employees by Country



Proportion of Employees by Age

*Employees turnover includes resignation, dismissal, retirement and death.

Performance Data Economic Performance	2012	2013	2014	2015	2016	G4
Revenue from sales (Billion baht)	407.6	434.3	487.5	439.6	423.4	EC1
Profit for the year (Billion baht)	23.6	36.5	33.6	45.4	56.1	EC1
EBITDA (Billion baht)	45.7	61.3	66.5	82.7	96.2	EC1
Benefits to employees comprising salary, wage, welfare and regular contributions (Million baht)	27,361	32,417	35,356	40,172	42,458	EC1
Divident to shareholders (Million baht)	13,200	18,600	15,000	19,200	22,800	EC1
Interest and financial expenses to lender (Million baht)	6,321	8,193	7,266	9,076	5,984	EC1
Taxes to government and local government authorities such as income tax, local maintenance tax, property tax and other specific taxes (Million baht)	5,567	5,792	5,362	5,430	6,938	EC1
Privilege tax and others from investment promotion, and research and development (Million baht)	1,277	1,156	1,294	3,599	4,827	EC4
Investments and expenditures regarding community development, social infrastructure and environment (Million baht)	563	525	555	591	710	EC1
Environmental expenditures (Million baht)	1,964	2,687	2,542	3,016	2,686	EN31

Performance Data Social Performance	2012	2013	2014	2015	2016	G4
Employee Information						
Number of Employees	38,883	49,287	51,100	53,096	53,728	G4-10
Proportion of Employees by Level						G4-10
• Management	3.8	3.4	3.4	3.5	3.5	
• Supervisor and technical staff	30.3	27.4	28.3	28.1	28.6	
• Operator	65.9	69.2	68.3	68.4	67.9	
Proportion of Employees by Gender						LA12
• Male	78.5	77.8	77.5	76.9	76.9	
• Female	21.5	22.2	22.5	23.1	23.1	
Proportion of Basic Salary of Female to Male						LA13
• Management	0.83:1.00	0.83:1.00	0.83:1.00	0.83:1.00	0.83:1.00	
• Supervisor and technical staff	0.93:1.00	0.94:1.00	0.94:1.00	0.93:1.00	0.93:1.00	
• Operator	0.95:1.00	0.95:1.00	0.94:1.00	0.89:1.00	0.89:1.00	
Proportion of Local Senior Management*	20.5	18.3	20.8	20.5	20.8	EC6
Proportion of Absence by Type						LA6
• Sickness	15.1	14.0	15.0	15.6	14.4	
• Work-related injuries	0.3	0.2	0.3	0.2	0.1	
• Others	84.8	85.9	84.7	84.2	85.4	
Return to Work after Parental Leave of Female Employees						LA3
• Number of employees that took parental leave	217	202	235	330	210	
• Number of employees who returned to work after parental leave ended	210	202	231	325	203	

* Calculate from percentage of overseas senior management and supervisor over total overseas staff.

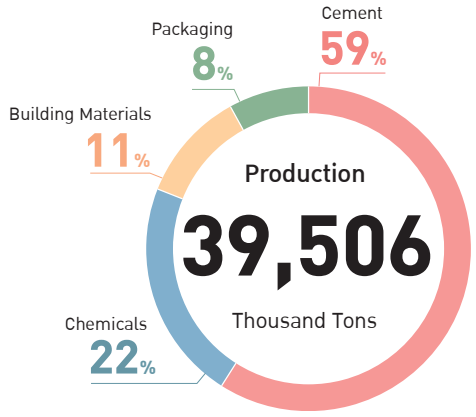
Performance Data Health and Safety Information	2012	2013	2014	2015	2016	G4
Total Incident Rate (Case/200,000 Man-Hours)						LA6
• Employee	0.364	0.361	0.319	0.235	0.200	**
• Contractor	0.224	0.218	0.201	0.235	0.165	**
Incident Rate (Lost Time Case) (Case/200,000 Man-Hours)						LA6
• Employee	0.071	0.067	0.048	0.073	0.041	**
• Contractor	0.049	0.060	0.060	0.055	0.045	**
Severity Rate (Day/200,000 Man-Hours)						LA6
• Employee	0.841	1.695	1.629	1.273	0.906	
• Contractor	1.149	1.577	1.955	1.430	1.334	
Number of Fatalities (Case)						LA6
• Employee (male : female)	0:0	1:0	0:0	0:0	2:0	**
• Contractor (male : female)	11:0	11:0	7:0	12:0	10:0	**
Number of Fatalities from Motor Vehicle Accidents (Case)						LA6
• Employee (male : female)	0:0	1:0	0:0	0:0	1:0	
• Contractor (male : female)	6:0	8:0	4:0	8:0	7:0	
Number of Chemical Spillage (Case)*						EN24
• Level 1 : High Severity	1	0	1	1	0	
• Level 2 : Moderate Severity	2	2	1	1	4	
• Level 3 : Low Severity	1	6	2	0	8	

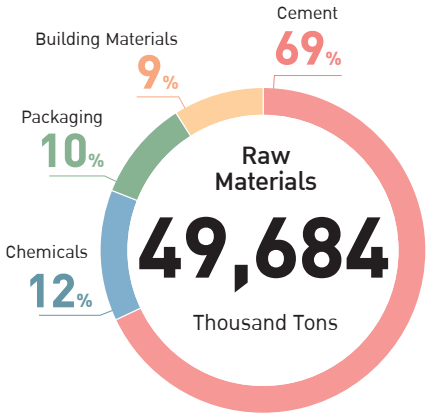
Level 1 : High severity means that the volume of chemical spills is more than 2,500 kg (plastic powder or granule is more than 5,000 kg) that leak from primary containment or any spills to environment or causes injury.
Level 2 : Moderate severity means that the volume of chemical spills is between 500-2,500 kg (plastic powder or granule is between 2,500-5,000 kg) that can be contained (not reaching the environment), and no injury occurred.
Level 3 : Low severity means that the volume of chemical spills is between 50-500 kg (plastic powder or granule is between 500-2,500 kg) that can be contained (not reaching the environment), and no injury occurred.

* Excludes flammable gases and utility chemicals, e.g. raw water, filtrated water, distilled water, nitrogen gas, instrument air, service air, or carbon dioxide.
** Within KPMG's limited assurance scope (page 119)

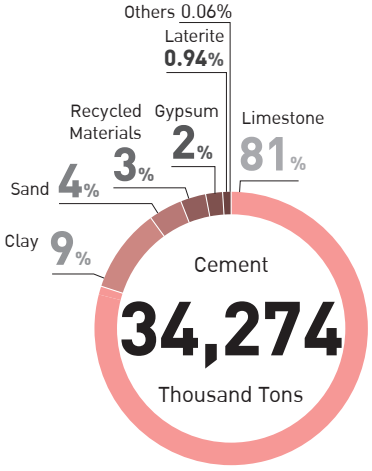
Performance Data Environmental Performance	2012	2013	2014	2015	2016	G4
Production (Thousand Tons)	39,343	39,244	40,471	40,770	39,506	
Raw Materials (Thousand Tons)	46,919	45,541	47,294	49,432	49,684	EN1
Recycled Materials (Thousand Tons)	1,567	1,814	2,932	3,253	3,438	EN2

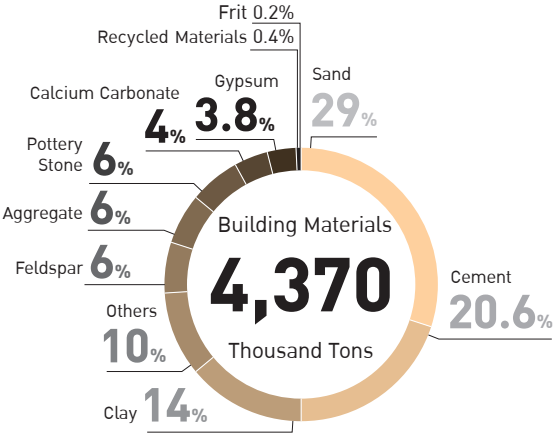
Production and Raw Materials

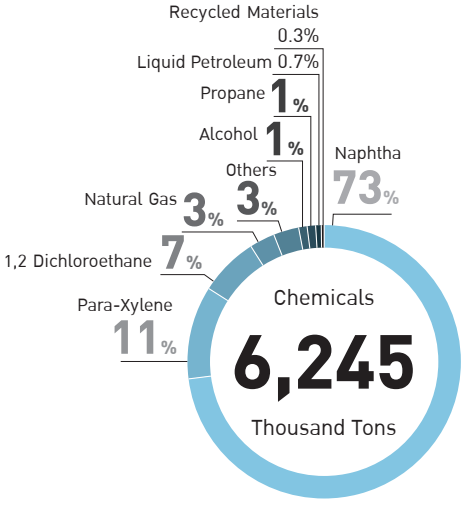


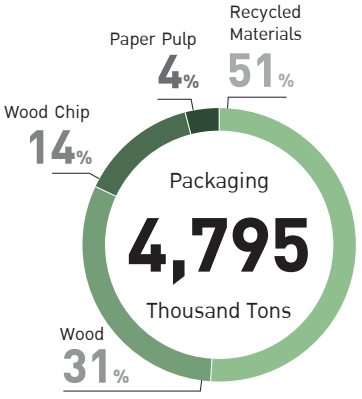


Proportion of Raw Materials





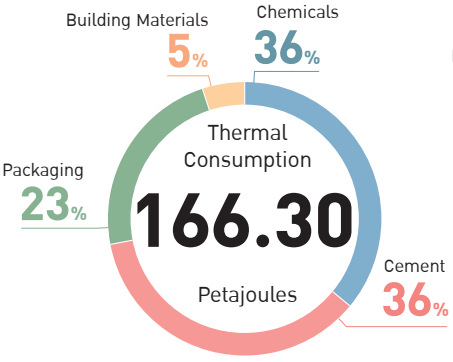


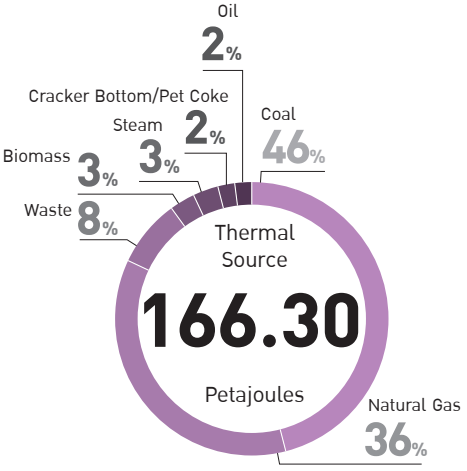


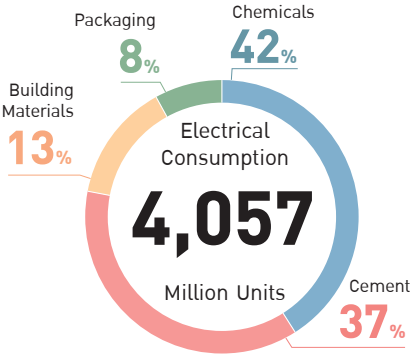
Performance Data	2012	2013	2014	2015	2016	G4
Total Energy Consumption (Petajoules)	174.58	175.93	182.27	186.48	180.90	*EN3
Thermal Consumption (Petajoules)	159.70	161.50	167.22	171.07	166.30	EN3
Alternative Energy (Petajoules)						*EN3
• Biomass	9.86	10.26	9.50	6.65	5.50	
• Industrial Waste	8.35	10.70	11.44	11.99	12.37	
Electrical Consumption (Million kilowatt hours)	4,133	4,008	4,180	4,281	4,057	*EN3

* Within KPMG's limited assurance scope (page 121)

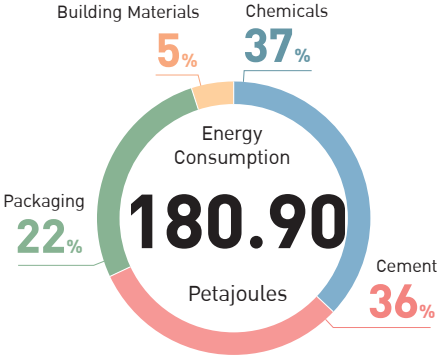
Energy Consumption





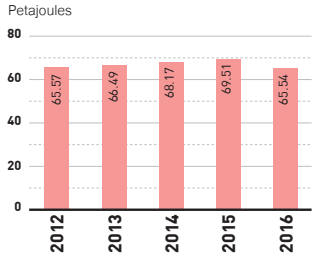


Total Energy Consumption

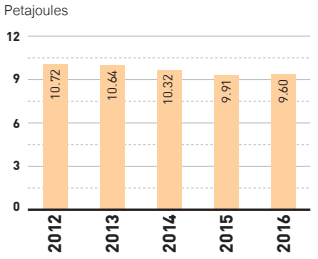


Amount ----- %

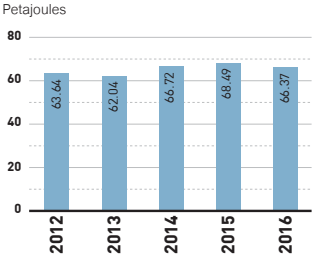
Cement



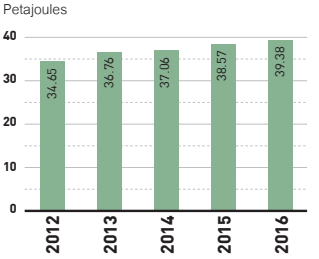
Building Materials



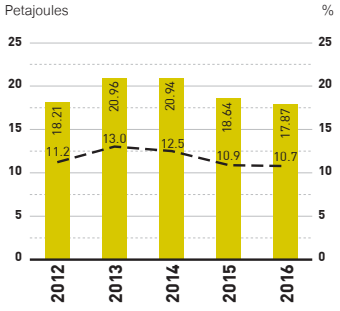
Chemicals



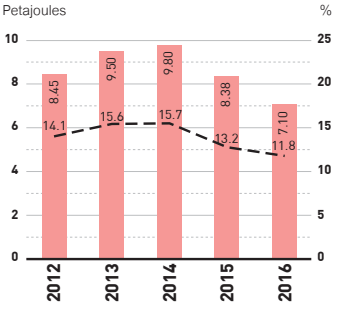
Packaging



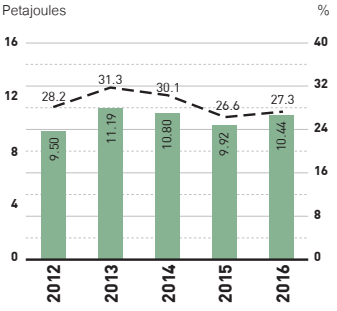
SCG Alternative Energy**



Cement



Packaging

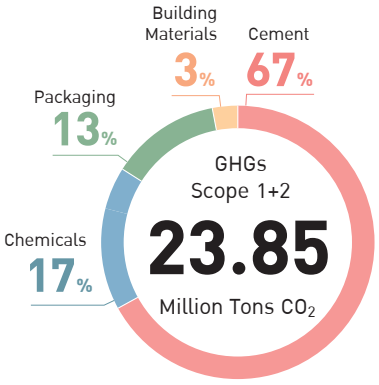


** Cement and Packaging are main utilizers of alternative energy

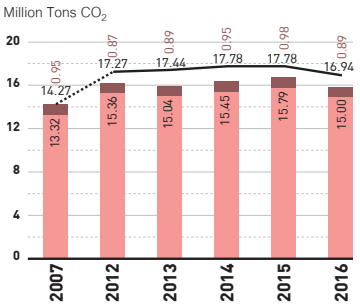
Performance Data	2012	2013	2014	2015	2016	G4
GHG Scope 1 (Million Tons CO_2)	21.69	21.34	22.12	22.51	21.51	*EN15
GHG Scope 2 (Million Tons CO_2)	2.46	2.47	2.62	2.47	2.34	*EN16

* Within KPMG's limited assurance scope (page 122)

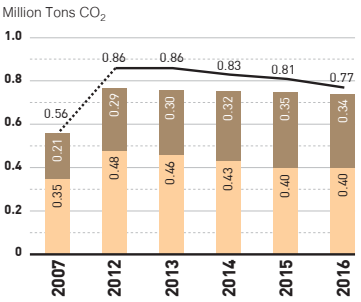
GHGs Scope 1+2



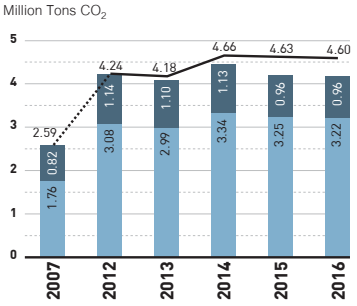
Cement



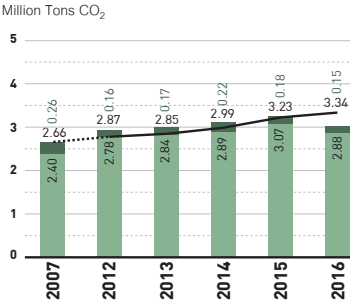
Building Materials



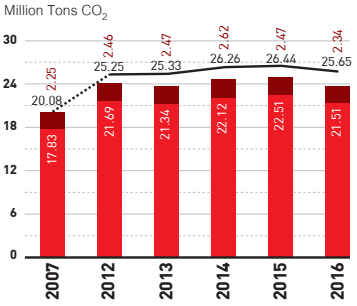
Chemicals



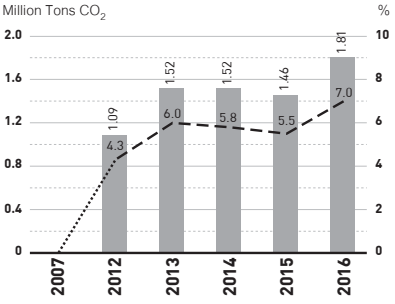
Packaging



SCG



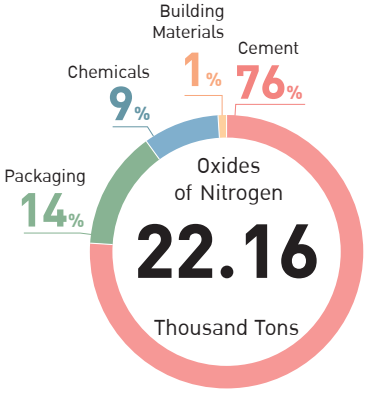
SCG Greenhouse Gas Reduction

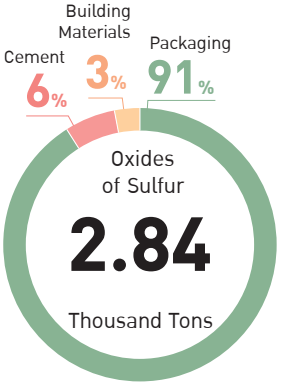


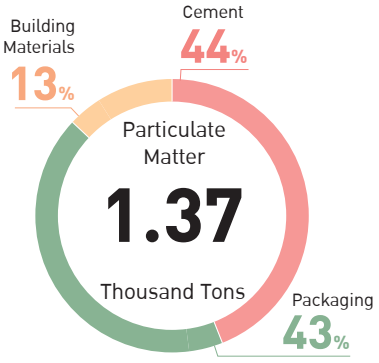
Amount Scope 2 — BAU
Amount Scope 1 ---- %

Performance Data	2012	2013	2014	2015	2016	G4
Oxides of Nitrogen (Thousand Tons)	19.45	23.95	23.94	25.45	22.16	EN15
Oxides of Sulfur (Thousand Tons)	7.68	5.26	3.25	3.34	2.84	EN16
Particulate Matter (Thousand Tons)	2.13	2.03	1.84	1.91	1.37	EN21

Emissions



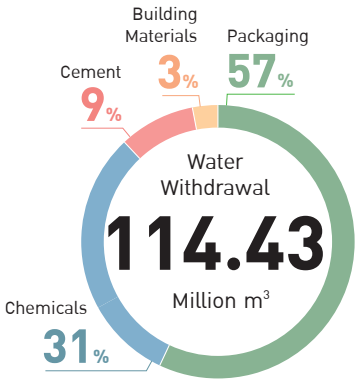




Performance Data	2012	2013	2014	2015	2016	G4
Water Withdrawal (Million Cubic Meters)	110.80	104.52	111.71	117.70	114.43	*EN8
Proportion of Recycled Water (%)	9.52	6.98	7.20	7.93	5.40	*EN10
BOD (Thousand Tons)	0.59	0.49	0.49	0.42	0.46	EN22
COD (Thousand Tons)	8.20	6.75	6.73	6.53	6.75	EN22
TSS (Thousand Tons)	1.35	0.96	1.02	0.90	0.92	EN22

* Within KPMG's limited assurance scope (page 123)

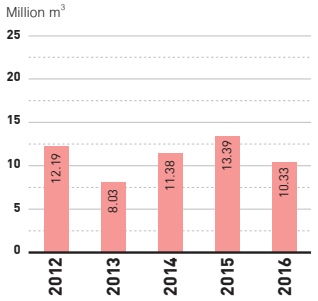
Water Withdrawal



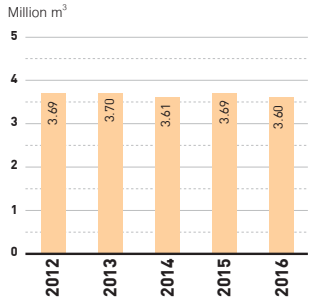
Amount ---- %

** Chemicals and Packaging are main contributors of recycled water

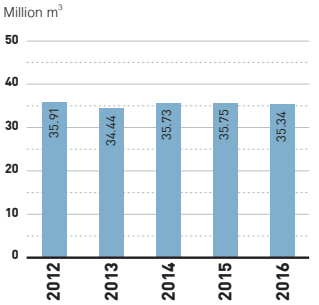
Cement



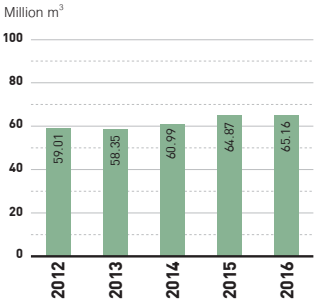
Building Materials



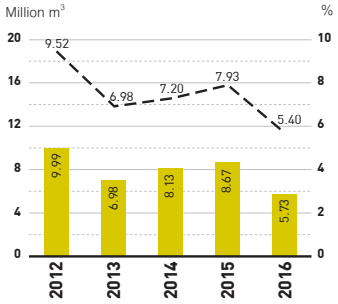
Chemicals



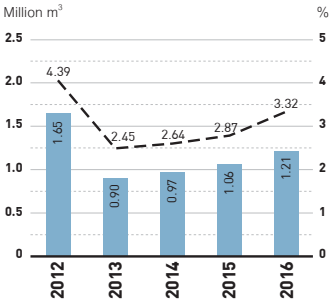
Packaging



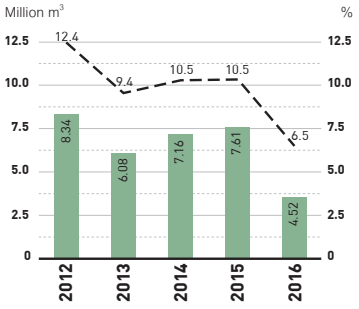
SCG Recycled Water**



Chemicals



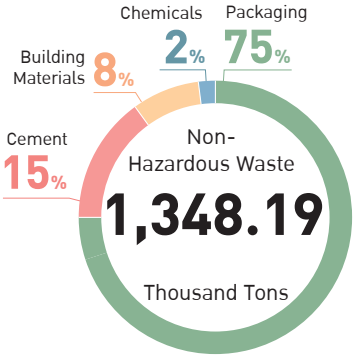
Packaging



Performance Data	2012	2013	2014	2015	2016	G4
Hazardous Waste (Thousand Tons)	14.65	19.60	15.29	15.66	21.26	*EN23
Non-Hazardous Waste (Thousand Tons)	1,215.07	1,130.67	1,209.46	1,373.36	1,348.19	*EN23

* Within KPMG's limited assurance scope (page 123)

Hazardous Waste and Non-Hazardous Waste***



***Amount and proportion of waste mangement are shown on pages 76-77.

World Business Council for Sustainable Development, Cement Sustainability Initiative (WBCSD CSI)

1. Climate Protection

SCG commits to reduce CO_2 at least 10% of the CO_2 emission by 2020 from 2007, to reduce greenhouse gas which impact to global warming. In the past, SCG Cement-Building Materials has attempted to improve and to invent new production process technology to reduce CO_2. For example, installing waste heat generation (WHG) to convert waste heat from clinker process to electricity, using alternative energy sources comprising of refuses derived fuel (RDF), biomass and industrial waste, as well as low greenhouse gas products and services.

In 2016, we had continually developed energy efficiency by installing projects such as new main burner and hot air recirculation from cooling stack at The Siam Cement (Ta Luang) Co., Ltd. (Khoa Wong Plant), reducing cyclone pressure loss and installing floating solar cell at The Siam Cement (Kaeng Khoi) Co.,Ltd.,

2. Emission Reduction

Cement business has concerned on pollution control comprising of dust, oxide of nitrogen and sulfur dioxide. In 2016, SCG Cement-Building Materials studied to reduce pollution with efficient technology. We converted electrostatic precipitator to high performance bag filter at The Siam Cement (Ta Luang) Co., Ltd. (Khoa Wong Plant). Moreover, The Siam White Cement Co., Ltd. installed low NOx burner to increase burning efficiency, which decreasing oxide of nitrogen gas and installed the calciner system to reduce sulfur dioxide from kiln stack.

From our past environmental activities, we achieved the committed target following WBCSD CSI, dust emission less than 150 g/ton clinker, oxides of nitrogen (NOx) less than 1,700 g/ton clinker, and sulfur dioxide (SO_2) less than 120 g/ton clinker.

3. Local Impacts

SCG Cement-Building Materials has assessed and evaluated for environmental impacts which may occur. We announced the environmental friendly mining policy, rehabilitating in non-active mining areas and conserving its biodiversities. We defined Key Performance Indicator (KPI) on rehabilitation activities together with sustainable biological resources management. We collaborated with stakeholders, especially local communities and experts from academies to conserve and set best practice standards for biological management of all 4 limestone quarries.

In 2016, we have started implementing Business & Biodiversity Check project in collaboration with Biodiversity-Based Economy Development Office Public Organization (BEDO) and Global Nature Fund (GNF). This is the first project of cement industry in Thailand which is promoted the development of biodiversity resources management throughout the supply chain.

Regarding to taking care of nearby communities, we have proceeded through the One Cell One Project (OCOP) which participated by our employees. These projects will enhance good relationship and community trust. We have launched OCOP and expanded to all cement plants since 2007 and achieved over 1,800 projects. The Siam Cement (Kaeng Khoi) Co., Ltd. has incremented to Our Village project (OV) which employees from each department will responsible for at least one village. Moreover, Cement Partnership project has been created to emphasize on green production process, corperate social responsibility (CSR) and communication to concerned stakeholders. The successful outcome of all projects had been reflected by highly 92% of third party's community satisfaction survey.

4. Health and Safety

In 2016, Cement Business had 5 fatality cases of accident from transportation, 3 of which were from cement truck parking on road shoulder, causing unawared third party drivers to run into the parking trucks. From the major cause of accident, preventive actions were set as follows;

- Set "No parking zone" along the road shoulder of the highway, all the 19,634 km. If the GPS detects any truck parking in "No parking zone", Logistics Command Center will alert the driver to move vehicle out of that area.
- No parking on road shoulder is one of Cement business's Life Saving Rules, if violated, contractors will be fined. From this rule, companies can reduce not only the number of cars parked on prohibiting area but also accidentscases.
- Contractors must move breakdown truck from the street or road shoulder within three hours. If not, SCG will have authorized to move the vehicle immediately.
- Change taillights and emergency lights of all trucks from incandescent to LED, results in a brighter and clearer vision for both commuters and pedestrians.
- Survey for additional truck parking areas for safer resting areas of truck drivers.

In terms of safety actions in cement plants, we aim to enhance the safety management of SCG in its both domestic and regional factories. The key activities focus on management team to be a role model to support and perform the safety observation.

5. Reporting and Communications

SCG Cement-Building Materials has communicated and reported our performances to stakeholders via various channels such as printed media, annual report, sustainability report and website. For stakeholders nearby our plants will get information through many activities; public consultation, open house activities, our village activities, broadcasting programs.

Our performances have been verified and assured the reliability of data alignment with WBCSD CSI guidelines by an independent third party, namely KPMG.

WBCSD CSI Operating Results of Cement Business

Performance Data	number	2012	2013	2014	2015	2016
Climate Protection[1, 3, 6]						
Number of facilities adopting WBCSD CO_2 Protocol	number of facility	6	6	6	6	6
	%	100	100	100	100	100
Absolute Gross CO_2	million tons of CO_2	15.46	15.21	15.62	16.04	15.24
Absolute Net CO_2	million tons of CO_2	15.36	15.08	15.45	15.79	15.00
Specific Gross CO_2	kg CO_2 /ton cementitious	648	630	636	653	651
Specific Net CO_2	kg CO_2 /ton cementitious	644	625	629	643	641
Use of Fuels and Raw Materials[3, 6]						
Heat consumption	MJ/ton clinker	3,219	3,326	3,292	3,317	3.319
Alternative fossil fuel	% by heat	2.3	2.8	3.6	5.0	5.0
Biomass	% by heat	11.8	12.8	12.2	8.3	6.9
Alternative raw materials	% by weight	0.70	1.09	2.78	2.79	2.83
Clinker/Cementitious Ratio	%	75.2	74.4	75.5	76.7	76.0
Emission reduction[2, 3, 7]						
% of clinker produced by kilns covered by a monitoring system (dust, NO_x, SO_2, heavy metal) (KPI 1)	%	-	-	99.23	99.23	99.17
Dust emissions (KPI 3)	tons	947	982	971	925	603
Dust emissions rate (KPI 3)	g/ton clinker	51	54	52	49	34
NO_x (KPI 3)	tons	15,274	18,845	18,872	20,222	16,919
NO_x emissions rate (KPI 3)	g/ton clinker	820	1,033	1,005	1,064	941
SO_2 (KPI 3)	tons	1,122	534	355	239	158
SO_2 emissions rate (KPI 3)	g/ton clinker	60	29	19	13	9
% of clinker produced by kilns covered by a monitoring system (dust, NO_x, SO_2) (KPI 4)	%	100	100	100	100	100
Local Impacts[3]						
Quarries with rehabilitation plans in place	number of site	4	4	4	4	4
	%	100	100	100	100	100
Quarries with community engagement plans in place	%	100	100	100	100	100
Quarries with high value (according to KPI 1) where biodiversity management plans are actively implemented	number of site	4	4	4	4	4
	%	100	100	100	100	100
Water[3]						
Total water withdrawal	million cubic meter	-	-	-	13	10
Health and Safety[4]						
No. of fatalities - Directly employed	case	0	0	0	0	0
- Indirectly employed	case	0	2	1[5]	6[5]	1[5]
- Third party	case	0	0	4[5]	2[5]	4[5]
Fatality rate (Directly employed)	case per 10,000 directly employed	0	0	0	0	0
No. of lost time injuries - Directly employed	case	0	2	1	0	1[3]
- Indirectly employed	case	5	4	2	5[3]	2[3]
Lost time injuries frequency rate (Directly employed)	case per million man-hour	0	0.38	0.18	0	0.19

Remarks

[1] The collection and reporting of GHGs data is accordance with WBCSD,The Cement CO_2 Protocol based on company's own control.

[2] The collection and reporting of each emission data (KPI 1, KPI 3 or KPI 4) is in accordance with WBCSD,The Guidelines for Emissions Monitoring and Reporting in the Cement Industry version 2.0

[3] Only domestic cement plants.

[4] Both domestic and overseas cement plants.

[5] Included accident data from cement transportation.

[6] Adjust scope of cementitious report

[7] Within KPMG's limited assurance scope (page 125)

About this report

SCG has published the sustainability report every year since 2001 by presenting the performance in 3 core business units namely, SCG Cement-Building Materials, SCG Chemicals and SCG Packaging. For economic and human resources data, the reporting scope cover the performance of subsidiaries, joint ventures, associates and other companies in line with the SCG Annual Report 2016. For environmental and safety data, only operating sites in Thailand were included using the combined criteria of equity share of 50% and over and controlled associates. Data from associates and joint ventures will be included on a voluntary basis (please see page 129-132 for the list of companies). Exception is for safety data of cement business, overseas cement plants were included according to WBCSD-CSI requirement.

This year we have improved the presentation of Greenhouse Gas Emissions (GHGs) data from SCG business activities on page 122 for greater clarity to inform stakeholders of GHG reduction compare with SCG target. We have retrospectively presented 5-year data compared with 2007 which is the Business as Usual (BAU) base year.

Reporting Scope

The reporting period for the information in this report is from 1 January 2016 to 31 December 2016. This 2016 sustainability report and its data were prepared in accordance with GRI-G4: Comprehensive reporting guideline. The information in this report disclosed a Communication on Progress (CoP) for the Advanced Level of United Nations Global Compact (UNCG) as shown on page 139-141 and operating results of cement business according to WBCSD-CSI as shown on page 124-125.

Reporting Assurance

Financial data was derived from financial management system similar to those presented in SCG Annual Report 2016 and is verified by certified accounting firm. To assure the integrity and the transparency of environmental and safety data in this report, SCG has requested an external party to verify and assess the selected data against GRI-G4 criteria (see details on page 142-143).

Reporting Principles on Environmental and Safety Data

Environmental and safety data from all business units were included in the report except for overseas operations, newly acquired companies (less than 3 years for new establishment and less than 4 years for M&A) and companies outside of SCG management control. Exclusivity of the data is noted in "Subsidiaries included in this report" on page 129-132.

The selection of information included in this report is based on what is determined by SCG's management to be responsible, relevant and of value for its stakeholders when measuring sustainability performance.

Environment

The environmental data cover those activities that, based on an overall environmental assessment and determined by SCG management, could have a significant impact on the environment. Sites with production process are included while sites with activities considered not to have a significant impact are not included, for examples; sales offices, R&D laboratories, services and holding companies.

The environmental data is based on data sources from accounting evidence, meter reading, data from production system and estimation with ground rules.

Energy

Total energy consumption includes thermal energy and electricity used in the companies/plants areas.

Alternative energy is a part of thermal energy and defined as biomass, industrial or rejected wastes, e.g. used tyres, used oil, RDF and black liquor.

Calculation method of energy consumption is based on:
fuel weight or steam volume* x heating value of each fuel type**
* estimated from volume purchased or stockpile
** provided by laboratory test or suppliers

Greenhouse Gas Emissions (GHGs)

GHGs data in this report represent an account of SCG's GHG emissions from the operation of based on WRI/WBCSD GHG Emissions Protocol. When choosing the inventory boundary, we considered a number of factors as followings;

1. Operational boundary

1.1 Direct GHG emissions (Scope 1): GHG emissions occur from sources owned by SCG, for example emissions from combustion of coal or natural gas in incinerators, boilers, furnaces, vehicles, etc. In addition, we include GHG emissions occur from chemical production process such as calcinations in cement plant and lime kilns. On the other hand, emissions from the combustion of biomass, alternative fuels, water treatment process and landfill are excluded.

1.2 Indirect GHG emissions (Scope 2): GHG emissions occur from the generation of energy purchased by SCG, such as electricity, steam and hot air.

2. Inventory:

2.1 Direct GHG emission calculation (Scope1)

- From combustion

> It will be calculated based on quantities of fuel consumption (weight or volume) such as fuel oil and natural gas x emission factors which was referred to Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) emission factors. If there is no Thai emission factor, Intergovernmental Panel on Climate Change 2006 (IPCC) emission factors will be used.

> It will be calculated based on fuel consumption (based on heating factor) such as coal x heating value x emission factor which was referred to TGO. If there is no Thai emission factor, Intergovernmental Panel on Climate Change 2006 (IPCC) emission factors will be used.

> It will be calculated from carbon mass balance from fuel consumption.

- From raw materials reaction in stoichiometry e.g. limestone and lime mud is estimated and calculated using mass balance.
- For cement business, refer to WBCSD-CSI.

2.2 Scope 2 Indirect GHG emissions will be calculated from purchased electricity, steam or hot air consumption using emission factors from supplier.

3. Reporting on GHG emissions: The type of GHG emissions to be reported includes CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 converted to the universal unit of measurement by Global Warming Potential (GWP) as CO_2 equivalent. Referred GWP factors are defined by IPCC. For NF_3, it will be reported in the future.

Air Emission

Air emissions are the quantity of air pollution (for example, NO_x, SO_2, Particulate Matter) deriving from combustions and other components during the production process. This depends on the production process of each operation in which chemical substance is produced. It is based on a result and measurement as stipulated by laws. The measurement of air emissions is at the stacks during the operation, according to US EPA Method or equivalent standard.

Reporting of air emission will be calculated based on concentration and hot gas ratio from spot check, multiplied by working hours. Spot check is made by laboratories which is certified and registered to the Department of Industrial Works. For cement business, refers to WBCSD-CSI (see details on page 125).

Water

Water management (water withdrawal, water discharge, water treatment and water recycling) is considered in order to assess efficiency and any risks that may have when SCG withdraws water from nature.

Water withdrawal is the quantity of fresh water taken from external sources for use in any activities of SCG. The quantity of water includes water used in production process, offices, maintenance and utilities and is obtained from accounting evidences or meter reading. Sources of water are divided into surface water, ground water and tap water.

Recycled water is the quantity of treated water returned to the process but excludes non-treated reused water such as cooling water.

Effluent Water Quality is the quality of water discharged to external sources such as BOC, COD and TSS. The quality of water will be tested using standardized measurement.

Industrial Waste

Waste Management is considered in order to assess the efficiency of production process, improvement of product quality and a decrease of production cost. SCG has established 'SCG Waste Reporting Guideline' in March 2010 by SCG Waste Management Committee.

The quantity of waste from production process is reported and any waste which can be recycled in the production process (Work in process, WIP) is excluded.

Type of industrial wastes is classified by the Notification of Ministry of Industry on Industrial Waste Disposal 2005. It can be divided into 2 categories, Hazardous Waste and Non-Hazardous Waste. Each category of waste is treated as recycle, disposal or landfill.

All waste data is measured as generated and managed volumes, by reading weighting scale. Estimation according to academic measurement is also used if weighting scale is not available.

Efficiency Indices/Specific Data

Efficiency indexes or specific data is calculated from environmental data divided by unit of production.

Tons production data used in the efficiency indices is measured based on data from production system. Estimation will be used if it is applicable.

For cement business, tons production of clinker will be used for air emission and heat consumption (referring to WBCSD CSI) efficiency indexes. Regarding Energy Efficiency

Index, GHG Emissions and Water withdrawal indices, we apply cementitious tons of production to calculate. For 2016 Sustainability Report, we adjusted cementitious tons data retroactively to incorporate other raw materials used in the cementitious production, including Pulverized Fuel Ash, limestone used in cement production and limestone that is used in mortar mix.

Safety

Data on number of employees and contractors

Safety data includes information from three work streams: SCG employees, contracted employees and contractors with the following definitions;

1. Employee - a full time worker according to SCG lifetime employment contract.

Employees are categorized into 3 levels: operational, supervisor, and management.

• Operational level is a front line worker who spends most of their time operating machines using their technical skills.

• Supervisor level is a front line manager who is responsible for daily management or having a control over subordinates.

• Management level is a top manager who responsible for addressing business strategies or policies. They delegate and control supervisor level employees who implement policy and daily jobs.

2. Contracted employee - a full time worker employs on a yearly contracted basis.

All employees and contracted employees are covered in this report

3. Contractor is an individual who gets consent from SCG to perform any job on SCG behalf but not an SCG's employee. Contractor is divided into 3 groups as follows:-

• Routine contractor is a contractor who performs an assigned job regularly or on a day-to-day basis under SCG's working procedures.

• Non-routine contractor is a contractor who performs any specific job using their own working procedures.

• Transport Contractor is a contractor engaged in transportation of raw materials or products under SCG's management (both with and without SCG Brand Logo) and those without SCG's management but having SCG Brand logo on their transportation vehicles.

All contractors are included in the data except for non-routine contractor where cases will be recorded but man-hours are excluded. Transport contactors under SCG Logistics Management Co., Ltd., the record unit is kilometer.

Third party who does not fit any description above is not covered in this report.

Calculation of Working Hour

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

2. In case the companies/plants do not have a clock-in system or HR database, the below formula shall be employed to estimate the average man-hours.

Number of man hours (man - hours)
= Number of Employees/Contractors x Number of working days x Number of normal working hours (per day) + Number of Over Time (only operational employees and contractors)

Recording of Safety Data

SCG records data on safety at work, divided into 3 categories

1. Number of fatality; death resulting from work-related accident where the victim is passed away suddenly or thereafter due to such accident.

2. Total incident rate; number of cases per 200,000 man-hours.

3. Incident rate (lost time cases); number of cases per 200,000 man-hours.

Lost Time Injury (LTI) is a work-related injury causing the absence of one or more working days (or shifts). This includes any work-related injury or illness which prevents that person from doing any work the day after the accident.

The electronic file of this report and the previous can be downloaded from SCG website
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Subsidiaries Included in Sustainability Report 2016*

	Business/Company	Production	Environment												Safety
			Energy		Air				Water					waste	
			Thermal	Electricity	Dust	SO_x	NO_x	GHG	Water Withdrawal	Recycled Water	BOD	COD	TSS		
SCG															
1	The Siam Cement Public Company Limited														
SCG Cement-Building Materials															
Subsidiaries															
1	SCG Cement-Building Materials Co., Ltd.														✓
2	SCG Cement Co., Ltd.														✓
3	The Concrete Products and Aggregate Co., Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	✓	✓
4	The Siam Cement (Kaeng Khoi) Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
5	The Siam Cement (Ta Luang) Co., Ltd. (Ta Luang/Khao Wong)	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
6	The Siam Cement (Thung Song) Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
7	The Siam Cement (Lampang) Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
8	Siam Mortar Co., Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	✓	✓
9	The Siam White Cement Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
10	The Siam Refractory Industry Co., Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	✓	✓
11	Cementhai Energy Conservation Co., Ltd.	Data included in The Siam Cement (Ta Luang) Co., Ltd., The Siam Cement (Kaeng Khoi) Co., Ltd., The Siam Cement (Thung Song) Co., Ltd. and The Siam Cement (Lampang) Co., Ltd.													✓
12	ECO Plant Services Co., Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	✓
13	Siam Research and Innovation Co., Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	✓
14	SCI Eco Services Co., Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	✓	✓
15	Q Mix Supply Co., Ltd.														
16	Silathai Sanguan (2540) Co., Ltd.														
17	Green Conservation Solution Co., Ltd.														
18	Silasanon Co.,Ltd														
19	SCG Building Materials Co., Ltd.														✓
20	The Siam Fibre-Cement Co., Ltd. (Saraburi/Ta Luang/Thung Song/Nongkae)	✓	✓	✓	✓	NR	✓	✓	✓	NR	NR	NR	NR	✓	✓
21	The Fibre-Cement Products (Lampang) Co., Ltd.	✓	✓	✓	✓	NR	✓	✓	✓	NR	NR	NR	NR	✓	✓
22	Tip Fibre-Cement Co., Ltd.														
23	SCG Landscape Co., Ltd. (Khonkaen/Thung Song/Ladkrabang/Lamphun/Sriracha/Nongkae)	✓	✓	✓	NR	NR	NR	✓	✓	NR	NR	NR	NR	✓	✓
24	Siam Fiberglass Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
25	Cementhai Gypsum Co., Ltd.														
26	Cementhai Ceramics Co., Ltd.														
27	Thai Ceramic Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
28	Gemago Co., Ltd.														
29	SCG Distribution Co., Ltd.														

	Business/Company	Production	Environment												Safety
			Energy		Air				Water					waste	
			Thermal	Electricity	Dust	SO_x	NO_x	GHG	Water Withdrawal	Recycled Water	BOD	COD	TSS		
30	The Siam Ceramic Group Industries Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
31	Cementhai Home Services Co., Ltd.														✓
32	SCG Trading Co., Ltd.														✓
33	SCG Logistics Management Co., Ltd.														✓
34	SCG Trading Services Co., Ltd.														
35	SCG Sourcing Co., Ltd.														
36	SCG Experience Co., Ltd.														✓
37	SCG Skills Development Co., Ltd.														
38	The CPAC Roof Tile Co., Ltd. (Saraburi 1/Saraburi 2/ Nakorn Prathom/Chonburi/Nakorn Rajchasrima/ Lamphun/Khonkaen/Nakorn Sri Thammaraj)	✓	✓	✓	NR	NR	NR	✓	✓	NR	NR	NR	NR	✓	✓
39	Thai Ceramic Roof Tile Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
40	MRC Roofing Co., Ltd.														
41	The Siam Sanitary Fittings Co., Ltd. (Pathumthani/Nakorn Rajchasrima)	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
42	Sosuco and Group (2008) Co., Ltd.														
43	Saraburirat Co., Ltd.	✓	✓	✓	NR	NR	NR	✓	✓	NR	NR	NR	NR	✓	✓
44	Thai-German Ceramic Industry Public Company Limited	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
45	Siam Sanitary Ware Co., Ltd.														✓
46	Siam Sanitary Ware Industry Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
47	Siam Sanitary Ware Industry (Nongkae) Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
48	Quality Construction Products Public Company Limited	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
49	Q-Con Eastern Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
50	SCGT Automobile Co., Ltd.														
51	Panel World Co., Ltd.														
52	Sosuco Ceramic Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
53	SCG-Sekisui Sales Co., Ltd.														✓
54	SCG Yamato Express Co,. Ltd.														
55	Jumbo Barges and Tugs Co., Ltd.														
	Joint Ventures, Associates and Other Companies														
1	Sekisui-SCG Industry Co., Ltd.	✓	✓	✓	NR	NR	NR	✓	✓	NR	NR	NR	NR	✓	✓
2	Noritake SCG Plaster Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	NR	NR	NR	✓	✓
3	SCG Nichirei Logistics Co., Ltd.														
	SCG Chemicals														
	Subsidiaries														
1	SCG Chemicals Co., Ltd.														✓
2	Thai Polyethylene Co., Ltd.	✓	✓	✓	NR	NR	NR	✓	✓	✓	✓	✓	NR	✓	✓
3	SCG Plastics Co., Ltd.														✓
4	SCG Performance Chemicals Co., Ltd.														✓
5	Rayong Engineering & Plant Service Co., Ltd.														✓

	Business/Company	Production	Environment												Safety
			Energy		Air				Water					waste	
			Thermal	Electricity	Dust	SO_X	NO_X	GHG	Water Withdrawal	Recycled Water	BOD	COD	TSS		
6	Protech Outsourcing Co., Ltd.														✓
7	RIL 1996 Co., Ltd.	NR	NR	✓	NR	NR	NR	✓	NR	NR	NR	NR	NR	✓	✓
8	Texplore Co., Ltd.														
9	Vina SCG Chemicals Co., Ltd.														
10	Rayong Pipeline Co., Ltd.														✓
11	Thai Plastic and Chemicals Public Company Limited	✓	✓	✓	NR	NR	✓	✓	✓	✓	✓	✓	NR	✓	✓
12	TPC Paste Resin Co., Ltd.	✓	✓	✓	NR	NR	✓	✓	✓	NR	✓	✓	NR	✓	✓
13	The Nawaplastic Industries (Saraburi) Co., Ltd.	✓	✓	✓	NR	NR	NR	✓	✓	NR	✓	✓	NR	✓	✓
14	Nawa Plastic Industries Co., Ltd.	✓	✓	✓	NR	NR	NR	✓	✓	NR	✓	✓	NR	✓	✓
15	Nawa Intertech Co., Ltd.	NR	NR	✓	NR	NR	NR	✓	NR	NR	NR	NR	NR	✓	✓
16	Total Plant Service Co., Ltd.														
17	SCG ICO Polymers Co., Ltd.														✓
18	Map Ta Phut Tank Terminal Co., Ltd.	NR	✓	✓	NR	NR	NR	✓	✓	NR	NR	NR	NR	✓	✓
19	Map Ta Phut Olefins Co., Ltd.	✓	✓	✓	NR	NR	✓	✓	✓	✓	✓	✓	NR	✓	✓
20	Rayong Olefins Co., Ltd.	✓	✓	✓	NR	NR	✓	✓	✓	✓	✓	✓	NR	✓	✓
21	Siam Stabilizers and Chemicals Co., Ltd.	✓	✓	✓	NR	NR	✓	✓	✓	NR	✓	✓	NR	✓	✓
22	Flowlab & Service Co., Ltd.														
23	SMH Co., Ltd.														
	Joint Ventures, Associates and Other Companies														
1	Siam Mitsui PTA Co., Ltd.	✓	✓	✓	NR	NR	✓	✓	✓	✓	✓	✓	NR	✓	✓
2	Rayong Terminal Co., Ltd.	NR	✓	✓	NR	NR	NR	✓	✓	NR	NR	NR	NR	✓	✓
3	Thai MMA Co., Ltd.	✓	✓	✓	NR	NR	✓	✓	✓	NR	✓	✓	NR	✓	✓
4	Grand Siam Composites Co., Ltd.	✓	✓	✓	NR	NR	NR	✓	✓	NR	✓	✓	NR	✓	✓
5	Thai MFC Co., Ltd.	✓	✓	✓	NR	NR	✓	✓	✓	✓	✓	✓	NR	✓	✓
6	Thai PET Resin Co., Ltd.	✓	✓	✓	NR	NR	✓	✓	✓	NR	✓	✓	NR	✓	✓
7	Siam Tohcello Co., Ltd.														
8	Bangkok Synthetics Co., Ltd.														
	SCG Packaging														
	Subsidiaries														
1	SCG Packaging Public Company Limited														✓
2	Thai Paper Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	✓	✓	✓	✓	✓
3	Thai Union Paper Public Company Limited	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4	Siam Kraft Industry Co., Ltd. (Kanjanaburi/Ratchaburi)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5	Siam Cellulose Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6	The Siam Forestry Co., Ltd.	✓	NR	NR	NR	NR	NR	✓	NR	NR	NR	NR	NR	NR	✓
7	Panas Nimit Co., Ltd.														NR
8	Thai Panason Co., Ltd.														NR
9	Thai Panadorn Co., Ltd.														NR
10	Thai Panaram Co., Ltd.														NR
11	Suanpa Rungsaris Co., Ltd.														NR
12	Siam Panawes Co., Ltd.														NR

Business/Company		Production	Environment												Safety
			Energy		Air				Water					waste	
			Thermal	Electricity	Dust	SO_x	NO_x	GHG	Water Withdrawal	Recycled Water	BOD	COD	TSS		
13	Thai Panaboon Co., Ltd.	✓	NR	NR	NR	NR	NR	✓	NR	NR	NR	NR	NR	NR	NR
14	Thai Wanabhum Co., Ltd.														
15	Phoenix Pulp & Paper Public Company Limited	✓	✓	✓	✓	✓	✓	✓	✓	NR	✓	✓	✓	✓	✓
16	Phoenix Utilities Co., Ltd.														
17	SCGP Excellence Traning Center Co., Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
18	SCG Paper Energy Co., Ltd.														
19	Thai Cane Paper Public Company Limited (Kanjanaburi/Prachinburi)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20	Thai Containers Group Co., Ltd. (Navanakorn/Pathumthani/Samutprakarn/ Ratchaburi/Songkhla/Chonburi/Prachinburi/ Saraburi/Kamphaeng Phet)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
21	Thai Containers Khonkaen Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	✓	✓	✓	✓	✓
22	Thai Containers Rayong Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	✓	✓	✓	✓	✓
23	Invenique Co., Ltd.														
24	TC Flexible Packaging Co., Ltd.														
25	Dyna Packs Co., Ltd.														✓
26	Orient Containers Co., Ltd.														✓
27	Tawana Container Co., Ltd.	✓	✓	✓	✓	✓	✓	✓	✓	NR	✓	✓	✓	✓	✓
28	D-In-Pack Co., Ltd.														
29	Prepack Thailand Co., Ltd.														
Associates															
1	Siam Nippon Industry Paper Co., Ltd.	✓	NR	✓	NR	NR	NR	✓	✓	NR	NR	NR	NR	✓	✓
Other															
Subsidiaries															
1	Cementhai Holding Co., Ltd.														
2	Cementhai Property (2001) Public Company Limited														
3	Property Value Plus Co., Ltd.														
4	SCG Accounting Services Co., Ltd.														
5	SCG Legal Counsel Limited														
6	CTO Management Co., Ltd.														
7	Siam Innovation Product and Solution Co., Ltd.														
8	SCG Learning Excellence Co., Ltd.														
9	Siam GNE Solar Energy Co., Ltd.														

* Economic performance covers all significant subsidiaries, joint ventures, associates and other companies according to Annual Report 2016

NR = Non Relavance

Office/Investment/Sales/Service where the collection of environmental and safety 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

GRI Content Index

G4 Indicator	Description	Page AR	Page SR	Omission/ Note	External Assurance
GENERAL STANDARD DISCLOSURES					
STRATEGY AND ANALYSIS					
G4-1	Statement from the most senior decision-maker of the organization	2-3	4-5		
G4-2	Description of key impacts, risks, and opportunities	124-129	26-29		
ORGANIZATIONAL PROFILE					
G4-3	Name of the organization	285	17		
G4-4	Primary brands, products, and services	14-25	10-13		
G4-5	Location of the organization's headquarter	285	128		
G4-6	Number of countries where the organization operates, and names of countries where either the organization has significant operations or that are specifically relevant to the sustainability topics covered in the report	13			
G4-7	Nature of ownership and legal form	285	-		
G4-8	Markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries)	12-25	10-13		
G4-9	Scale of the organization	10, 28-45	129-132		
G4-10	Total number of employees by type	77	118-119		
G4-11	Percentage of total employees covered by collective bargaining agreements		-		
G4-12	Describe the organization's supply chain		19		
G4-13	Significant changes during the reporting period regarding the organization's size, structure, ownership, or its supply chain	12-13	126-128		
G4-14	Explanation of whether and how the precautionary approach or principle is addressed by the organization	124-129	26-29		
G4-15	List externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or which it endorses	33, 124-125, 141-143			
G4-16	Membership in associations	10-13, 33, 124-125, 141-143			
IDENTIFIED MATERIAL ASPECTS AND BOUNDARIES					
G4-17	List all entities included in the organization's consolidated financial statements or equivalent documents	28-45	129-132		
G4-18	Process for defining report boundaries and content	28-45	126-128		
G4-19	Material aspects included in the report		24-25		
G4-20	Descriptions of material aspect boundaries within the organization		24-25		
G4-21	Descriptions of material aspect boundaries outside the organization		24-25		
G4-22	Explanation of the effect of any restatements		24-25	note: no restatement in 2016.	
G4-23	Significant changes from previous reporting periods in the Scope and Aspect Boundaries		24-25	note: no significant changes from previous report.	
STAKEHOLDER ENGAGEMENT					
G4-24	List of stakeholder groups engaged by the organization	83-89	30-35		
G4-25	Basis for identification and selection of stakeholders with whom to engage	83-89	30-35		
G4-26	Approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group	83-89	30-35		
G4-27	Key stakeholder topics and concerns and organization response	83-89	30-35		

AR = Annual Report
SR = Sustainability Report

G4 Indicator	Description	Page AR	Page SR	Omission/ Note	External Assurance
REPORT PROFILE					
G4-28	Reporting period for information provided	285	126-128		✓
G4-29	Date of most recent report		126-128		✓
G4-30	Reporting cycle	285	126-128		✓
G4-31	Contact point for questions regarding the report or its contents	285	128		
G4-32	"In accordance" option, GRI Index and report assurance		126-128, 144-147		✓ *
G4-33	Policy regarding report assurance	136-139	126-128		
GOVERNANCE					
G4-34	Governance structure of the organization	49	18-19		
G4-35	Process for delegating authority for sustainability topics from the board to senior executives and other employees	50-51	18-21		
G4-36	High-level accountability for sustainability topics	50-51, 91-105	18-21		
G4-37	Processes for consultation between stakeholders and the board on sustainability topics	89-91	31-32		
G4-38	Composition of the board and its committees	49-52, 101-105	16-19		
G4-39	Indicate if Chair of highest governance body is also an executive officer				
G4-40	Nomination and selection processes for the board and its committees	100-101	-		
G4-41	Processes for the highest governance body to ensure conflicts of interest are avoided and managed	82-83	-		
G4-42	Board and executives' roles in the organization's mission statements, strategies, policies, and goals related to sustainability impacts	91-94	-		
G4-43	Board knowledge of sustainability topics	96-97	-		
G4-44	Board performance with respect to governance of sustainability topics	94-95	-		
G4-45	Board role in the identification and management of sustainability impacts, risks, and opportunities	124-129	16-17		
G4-46	Board role in reviewing risk management processes for sustainability topics	124-129	16-17		
G4-47	Frequency of the board's review of sustainability impacts, risks, and opportunities	125	26-27		
G4-48	Highest committee or position that formally reviews and approves the organization's sustainability report	124-129	18-19		
G4-49	Process for communicating critical concerns to the board	124-129	16-17, 26-27		
G4-50	Nature and total number of critical concerns that were communicated to the board	124-129	26-29		
G4-51	Remuneration policies for the board and senior executives	73-75	-		
G4-52	Process for determining remuneration	101	-		
G4-53	Stakeholders' views on remuneration	73-75	-		
G4-54	Ratio of the annual total compensation for the organization's highest-paid individual to the median annual total compensation for all employees	73-75	-		
G4-55	Ratio of percentage increase in annual total compensation for the organization's highest-paid individual to the median percentage increase in annual total compensation for all employees	73-75	-		
ETHICS AND INTEGRITY					
G4-56	Code of conduct	78-79, 87, 107-110	16-17, 38-41, 92-93		
G4-57	Helplines or advice lines for employees	107-108	24-25, 38-41, 92-95		
G4-58	Mechanisms for reporting concerns about unethical or unlawful behavior	107-108	38-41		

AR = Annual Report
SR = Sustainability Report
* Only Selected Subject Matter : Report Assurance

G4 Indicator	Description	Page AR	Page SR	Omission/ Note	External Assurance
SPECIFIC STANDARD DISCLOSURES					
CATEGORY: ECONOMIC					
ASPECT: ECONOMIC PERFORMANCE					
G4-DMA	Generic Disclosures on Management Approach	90-95	-		
G4-EC1	Direct economic value generated and distributed	10-13	118		
G4-EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	129	29, 58-63		
G4-EC3	Coverage of the organization's defined benefit plan obligations	48, 75	-		
G4-EC4	Financial assistance received from government	219	118		
ASPECT: MARKET PRESENCE					
G4-DMA	Generic Disclosures on Management Approach	90-95	-		
G4-EC5	Ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation	128	119		
G4-EC6	Proportion of senior management hired from the local community at significant locations of operation	128	119		
ASPECT: INDIRECT ECONOMIC IMPACTS					
G4-DMA	Generic Disclosures on Management Approach	90-95	52-57		
G4-EC7	Development and impact of infrastructure investments and services supported	76-77	82-87		
G4-EC8	Significant indirect economic impacts, including the extent of impacts		104-115		
ASPECT: PROCUREMENT PRACTICES					
G4-DMA	Generic Disclosures on Management Approach	78-79	24-25, 92-93		
G4-EC9	Proportion of spending on local suppliers at significant locations of operation		94-97		
CATEGORY: ENVIRONMENTAL					
ASPECT: MATERIALS					
G4-DMA	Generic Disclosures on Management Approach		24-25, 70-71		
G4-EN1	Materials used by weight or volume		11-13, 120		
G4-EN2	Percentage of materials used that are recycled input materials		70-73, 120		
ASPECT: ENERGY					
G4-DMA	Generic Disclosures on Management Approach		24-25, 58-59, 126		
G4-EN3	Energy consumption within the organization		60-61, 121, 124-125		✓
G4-EN4	Energy consumption outside of the organization		-	Data are collected for logistics but they are not publicly reported.	
G4-EN5	Energy intensity		121, 125		
G4-EN6	Reduction of energy consumption		60-61		
G4-EN7	Reductions in energy requirements of products and services		86-87		
ASPECT: WATER					
G4-DMA	Generic Disclosures on Management Approach		24-25, 64-65, 127		
G4-EN8	Total water withdrawal by source		66, 123	Note: Rainwater is counted as part of surface water	✓
G4-EN9	Water sources significantly affected by withdrawal of water		64-66	Note: no water sources significantly affected by withdrawal of water.	
G4-EN10	Percentage and total volume of water recycled and reused		67, 123		✓
ASPECT: BIODIVERSITY					
G4-DMA	Generic Disclosures on Management Approach		24-25, 98-99, 124		

AR = Annual Report
SR = Sustainability Report

G4 Indicator	Description	Page AR	Page SR	Omission/ Note	External Assurance
G4-EN11	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas		98-103, 124-125		
G4-EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas		98-103		
G4-EN13	Habitats protected or restored		98-103, 124-125		
G4-EN14	Total number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk		-	Note: no IUCN Red List species and national conservation list species with habitats in areas affected by operations.	
ASPECT: EMISSIONS					
G4-DMA	Generic Disclosures on Management Approach		24-25, 58-59, 124, 127		
G4-EN15	Direct greenhouse gas (GHG) emissions (Scope 1)		60-61, 122, 125		✓
G4-EN16	Energy indirect greenhouse gas (GHG) emissions (Scope 2)		60-61, 122		✓
G4-EN17	Other indirect greenhouse gas (GHG) emissions (Scope 3)		-		
G4-EN18	Greenhouse gas (GHG) emissions intensity		122, 125		
G4-EN19	Reduction of greenhouse gas (GHG) emissions		60-61, 122		
G4-EN20	Emissions of ozone-depleting substances (ODS)		-	non-materiality	
G4-EN21	NO_X, SO_X, and other significant air emissions		122, 125	assurance for cement business	✓
ASPECT: EFFLUENTS AND WASTE					
G4-DMA	Generic Disclosures on Management Approach		24-25, 74-75, 127		
G4-EN22	Total water discharge by quality and destination		76-77, 123		
G4-EN23	Total weight of waste by type and disposal method		76, 77, 123	note: Non-process waste is not in cluded in calculotior of total hazardous and non-hazardous waste.	✓
G4-EN24	Total number and volume of significant spills		119		
G4-EN25	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally		-	note: no waste under the terms of the Basel Convention Annex I, II, III, and VIII.	
G4-EN26	Identity, size, protected status, and biodiversity value of water bodies and related habitats signifcantly affected by the organization's discharges of water and runoff		-	note: no plant located near by identity, size, protected status, and biodiversity value of water bodies.	
ASPECT: PRODUCTS AND SERVICES					
G4-DMA	Generic Disclosures on Management Approach		24-25, 80-81		
G4-EN27	Extent of impact mitigation of environmental impacts of products and services		82-87		
G4-EN28	Percentage of products sold and their packaging materials that are reclaimed by category		82-87		
ASPECT: COMPLIANCE					
G4-DMA	Generic Disclosures on Management Approach		24-25, 38-39		
G4-EN29	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations		-	note: no fines for non-compliance with environmental laws and regulations in 2016.	
ASPECT: TRANSPORT					
G4-DMA	Generic Disclosures on Management Approach		24-25, 42-43, 46, 92-93		
G4-EN30	Significant environmental impacts of transporting products and other goods and materials for the organization's operations, and transporting members of the workforce		46		
ASPECT: OVERALL					
G4-DMA	Generic Disclosures on Management Approach		24-25		
G4-EN31	Total environmental protection expenditures and investments by type		118		

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G4 Indicator	Description	Page AR	Page SR	Omission/ Note	External Assurance
ASPECT: SUPPLIER ENVIRONMENTAL ASSESSMENT					
G4-DMA	Generic Disclosures on Management Approach		24-25, 92-93		
G4-EN32	Percentage of new suppliers that were screened using environmental criteria		94-95		
G4-EN33	Significant actual and potential negative environmental impacts in the supply chain and actions taken		-	note: no significant environmental impacts in the supply chain in 2016.	
ASPECT: ENVIRONMENTAL GRIEVANCE MECHANISMS					
G4-DMA	Generic Disclosures on Management Approach		24-25, 30-31, 104-105		
G4-EN34	Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms		-	note: no grievances about environmental impacts filed or addressed.	
CATEGORY: SOCIAL					
SUB-CATEGORY: LABOR PRACTICES AND DECENT WORK					
ASPECT: EMPLOYMENT					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49, 52-53		
G4-LA1	Total number and rates of new employee hires and employee turnover by age group, gender and region	77	118-119		
G4-LA2	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation	84-86	54-57		
G4-LA3	Return to work and retention rates after parental leave, by gender		119		
ASPECT: LABOR/MANAGEMENT RELATIONS					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49, 52-53		
G4-LA4	Minimum notice periods regarding operational changes, including whether these are specified in collective agreements		50-51		
ASPECT: OCCUPATIONAL HEALTH AND SAFETY					
G4-DMA	Generic Disclosures on Management Approach	84-87	24-25, 42-43, 92-93, 124		
G4-LA5	Percentage of total workforce represented informal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs		42-43		
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender		44-45, 119, 125		✓
G4-LA7	Workers with high incidence or high risk of diseases related to their occupation	84-85	44-47		
G4-LA8	Health and safety topics covered in formal agreements with trade unions	84-86	42-43		
ASPECT: TRAINING AND EDUCATION					
G4-DMA	Generic Disclosures on Management Approach	86-87	24-25, 52-55		
G4-LA9	Average hours of training per year per employee by gender, and by employee category		56		
G4-LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	86-87	54-55		
G4-LA11	Percentage of employees receiving regular performance and career development reviews, by gender and by employee category		56		
ASPECT: DIVERSITY AND EQUAL OPPORTUNITY					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49		
G4-LA12	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity		119		

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G4 Indicator	Description	Page AR	Page SR	Omission/ Note	External Assurance
ASPECT: EQUAL REMUNERATION FOR WOMEN AND MEN					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49		
G4-LA13	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation		119		
ASPECT: SUPPLIER ASSESSMENT FOR LABOR PRACTICES					
G4-DMA	Generic Disclosures on Management Approach	87	24-25, 92-93		
G4-LA14	Percentage of new suppliers that were screened using labor practices criteria		94-95		
G4-LA15	Significant actual and potential negative impacts for labor practices in the supply chain and actions taken		-	note: no significant actual and potential impacts on labor practices in the supply chain.	
ASPECT: LABOR PRACTICES GRIEVANCE MECHANISMS					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 38-39		
G4-LA16	Number of grievances about labor practices filed, addressed, and resolved through formal grievance mechanisms		-	note: no grievances about labor practices filed or addressed in 2016.	
SUB-CATEGORY: HUMAN RIGHTS					
ASPECT: INVESTMENT					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49		
G4-HR1	Total number and percentage of significant investment agreements and contracts that include human rights clauses or that underwent human rights screening		-	note: all agreements are in compliance with SCG Code of Conduct.	
G4-HR2	Total hours of employee training on human rights policies or procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained		54-57		
ASPECT: NON-DISCRIMINATION					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49		
G4-HR3	Total number of incidents of discrimination and corrective actions taken		-	note: no incidents of discrimination in 2016.	
ASPECT: FREEDOM OF ASSOCIATION AND COLLECTIVE BARGAINING					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49		
G4-HR4	Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights		54-57		
ASPECT: CHILD LABOR					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49		
G4-HR5	Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor		95		
ASPECT: FORCED OR COMPULSORY LABOR					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49		
G4-HR6	Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor		95	note: no operations and suppliers identified as having significant risk for incidents of forced or compulsory labor according to SCG Code of Conduct.	
ASPECT: SECURITY PRACTICES					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49		
G4-HR7	Percentage of security personnel trained in the organization's human rights policies or procedures that are relevant to operations		-	note: 100% were trained according to contract agreement.	
ASPECT: INDIGENOUS RIGHTS					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49		

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G4 Indicator	Description	Page AR	Page SR	Omission/ Note	External Assurance
G4-HR8	Total number of incidents of violations involving rights of indigenous peoples and actions taken		-	note: no violation involving rights of indigenous peoples in 2016.	
ASPECT: ASSESSMENT					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 48-49		
G4-HR9	Total number and percentage of operations that have been subject to human rights reviews or impact assessments		-	note: 100% reviewed by Code of Conduct.	
ASPECT: SUPPLIER HUMAN RIGHTS ASSESSMENT					
G4-DMA	Generic Disclosures on Management Approach	87	24-25, 92-93		
G4-HR10	Percentage of new suppliers that were screened using human rights criteria		94-95		
G4-HR11	Significant actual and potential negative human rights impacts in the supply chain and actions taken		-	note: there was no negative human rights impacts in supply chain.	
ASPECT: HUMAN RIGHTS GRIEVANCE MECHANISMS					
G4-DMA	Generic Disclosures on Management Approach	84-86	24-25, 92-93		
G4-HR12	Number of grievances about human rights impacts filed, addressed, and resolved through formal grievance mechanisms		40		
SUB-CATEGORY: SOCIETY					
ASPECT: LOCAL COMMUNITIES					
G4-DMA	Generic Disclosures on Management Approach	88	24-25, 104-105		
G4-SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs		106-115		
G4-SO2	Operations with significant actual and potential negative impacts on local communities		106-115	note: no operations with significant actual or potential negative impacts on local communities in 2016.	
ASPECT: ANTI-CORRUPTION					
G4-DMA	Generic Disclosures on Management Approach	108-110	16-17, 40		
G4-SO3	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	137-139	40		
G4-SO4	Communication and training on anti-corruption policies and procedures	137-139	40-41		
G4-SO5	Confirmed incidents of corruption and actions taken		-	note: no incidents of corruption in 2016.	
ASPECT: PUBLIC POLICY					
G4-DMA	Generic Disclosures on Management Approach		-	Non Relevance	
G4-SO6	Total value of political contributions by country and recipient/beneficiary		-	Non Relevance	
ASPECT: ANTI-COMPETITIVE BEHAVIOR					
G4-DMA	Generic Disclosures on Management Approach		-	Non Relevance	
G4-SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes		-	Non Relevance	
ASPECT: COMPLIANCE					
G4-DMA	Generic Disclosures on Management Approach	79-123	24-25, 38-39		
G4-SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations		-	note: no significant fines in 2016.	
ASPECT: SUPPLIER ASSESSMENT FOR IMPACTS ON SOCIETY					
G4-DMA	Generic Disclosures on Management Approach	87	24-25, 42-43, 92-93		
G4-SO9	Percentage of new suppliers that were screened using criteria for impacts on society		46, 94-95		
G4-SO10	Significant actual and potential negative impacts on society in the supply chain and actions taken		-	note: no significant negative impacts on society in the supply chain found in 2016.	

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G4 Indicator	Description	Page AR	Page SR	Omission/ Note	External Assurance
ASPECT: GRIEVANCE MECHANISMS FOR IMPACTS ON SOCIETY					
G4-DMA	Generic Disclosures on Management Approach	88-89	24-25, 104-105		
G4-SO11	Number of grievances about impacts on society filed, addressed, and resolved through formal grievance mechanisms		106-115		
SUB-CATEGORY: PRODUCT RESPONSIBILITY					
ASPECT: CUSTOMER HEALTH AND SAFETY					
G4-DMA	Generic Disclosures on Management Approach	87	24-25, 80-81		
G4-PR1	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement		-	note: 100% of significant products.	
G4-PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services during their life cycle, by type of outcomes		-	note: incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products in 2016.	
ASPECT: PRODUCT AND SERVICE LABELING					
G4-DMA	Generic Disclosures on Management Approach	87	24-25, 80-81		
G4-PR3	Type of product and service information required by the organization's procedures for product and service information and labeling, and percentage of significant product and service categories subject to such information requirements		-	note: all significant product and service categories are assessed regarding health and safety impact.	
G4-PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes		-	note: no incidents of non-compliance in 2016.	
G4-PR5	Results of surveys measuring customer satisfaction		90-91		
ASPECT: MARKETING COMMUNICATIONS					
G4-DMA	Generic Disclosures on Management Approach		24-25, 88-89		
G4-PR6	Sale of banned or disputed products		-	note: no banned or disputed products in SCG in 2016.	
G4-PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship, by type of outcomes		81	note: no incidents of non-compliance in 2016.	
ASPECT: CUSTOMER PRIVACY					
G4-DMA	Generic Disclosures on Management Approach		24-25, 88-89		
G4-PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data		90-91		
ASPECT: COMPLIANCE					
G4-DMA	Generic Disclosures on Management Approach		24-25, 80-81, 88-89		
G4-PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services			note: no significant fines for non-compliance concerning the provision and use of products and services in 2016.	

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United Nation Global Compact (UNGC)
Communication on Progress for the Advanced Level

Criteria for the GC Advanced Level	Action	Page
Strategy, Governance, and Engagement		
1. High-level sustainability in line with UNGC	• Message from President & CEO	4
	• Message from Chairman,SCG Sustainable Development Committee	5
	• Sufficiency Economy	7
	• Business Philosophy and Vision	14-15
	• Management approach to sustainability	20-21
2. Effective decision-making processes and systems of governance for corporate sustainability	• Corporate Governance	16-17
	• Sustainable Development Structure	18-19
	• Management approach to sustainability	20-21
	• Corporate Governance Compliance	38-41
3. Engagement with all key stakeholders	• Defined stakeholder engagement policy, strategy and practices	30-35
UN Goals and Issues		
4. Actions taken in support of broader UN goals and issues	• About SCG	10
	• Sustainable Management Approach	20-21
	• Materiality issue	24-25
	• Corporate Governance Compliance	40-43
Human Rights Implementation		
5. Robust commitments, strategies or policies in the area of human rights	• Defined Human Right policy, strategy and practices	48-51
	• Respect to Diversity; No discrimination against gender, age or physical condition; Employee Treatment with Equality and Fairness	48-51
	• Employee caring and development	52-57
	• Whistleblower system	40
6. Effective management systems to integrate the human rights principles	• Health and Safety for Employee and Contractor	42-47
	• The Human Rights Due Diligence Processes	48-49
	• Identification of Human Rights Risks	50-51
	• Employee caring and development	52-57
	• Supplier Selection and Assessment	94
7. Monitoring and evaluation mechanisms of human rights performance	• Employee opinion survey and engagement	31
	• Safety Performance Assessment Program (SPAP)	42-43
	• Human Rights	48-51
	• SCG Contractor Safety Certification System (SCS)	94
8. Outcomes of human rights principles integration	• Number of Suppliers signed to comply with the SCG Supplier Code of Conduct	94
	• Number of contractors certified for SCS	94
	• Social Performance	118-119

Criteria for the GC Advanced Level	Action	Page
Labour Principles Implementation		
9. Appropriate commitments, strategies or policies in the area of labor	• Risk assessment, guidance and compliance system (labor and safety) and Managing Emerging Risks from labour shortage and rising wages	26,29
	• Defined Health & Safety policy, target and strategy like targeted to be an organization with an Injury and Illness–free Operation	42-47
	• Defined Employee Caring and Development policy, target and strategy and targeted to be a model organization in caring for employees, and as a role model with innovations in human resources development that can attract talented people	52-57
10. Effective management systems to integrate the labor principles	• Conducted a comprehensive labor risk assessment and managed follow relevant regulation	50-51
	• The SCG Safety Framework provides the fundamental guideline for healty and safety practices.	42-47
	• Improve contractor safety standard by auditing against SCG Contractor Safety Certification System	94
	• Defined Employee caring and development strategy and practices like the Individual Developmefnt Plan under the Learning Management System (LMS).	52-57
11. Monitoring and evaluation mechanisms of labor performance	• Material sustainability issues managmentment	24-25
	• Stakeholder engagement by opinion survey and intercourse	30-32
	• Safety Performance Assessment Program (SPAP)	42-47
	• Defined Employee caring and development policy, target, strategy and practices	
	• SCG Contractor Safety Certification System (SCS)	52-57
12. Outcomes of labor principles integration	• Health and Safety Performance	94
	• Employee Caring and Development Performance	
	• Number of Supplier committed to SCG Supplier Code of Conduct compliance	44-47 54-57
	• Social Performance	94
	• Summarised accident statistics and social indicators (community satisfaction) and WBCSD-CSI indicators	118-119 124-125
Environmental Implementation		
13. Appropriate Commitments, strategies or policies in the area of environmental responsibility	• Assessed and defined practces for environment (safety and health) risks as well as managed emerging risks	26-29
	• Defined Energy and Climate Change policy, target and strategy like targeted to reduce greenhouse gas emission for at least 10 percent by 2020 from base year (2007)	58-63
	• Defined Water Management policy, target and strategy like targeted to reduce water usage 20 percent per ton of production by 2020 from base year (2014)	64-69
	• Defined Material Use and Recycling policy, target and strategy like targeted to increase the share of renewable materials and recycled materials	70-73
	• Defined Waste Mangement policy, target and strategy like targeted to reduce disposal waste to be less than 2 kilogram per ton of production	74-79
	• Defined Biodiversity and Ecosystem policy, target and strategy like targeted to rehabilitate biodiversity to its best at all SCG limestone quarry sites	98-103
14. Effective management systems to integrate the environmental principles	• Defined Sustainable development structure and approach	18-21
	• Improved production process to be environmentally friendly with international standard by environmental practices like Energy and Climate Change, Water Management and Waste Managment	58-79, 98-103
	• Create sustainable value from sustainable and environmentally friendly products and services (SCG Green Building Solution, SCG eco value Label, Carbon Reduction Label, Carbon Footprint Label)	80-81, 85-87
	• Projects to level-up Environmental Management for contractors and environmentally friendly procurement	92-97

Criteria for the GC Advanced Level	Action	Page
15. Monitoring and evaluation mechanisms of environmental performance	• Regulated practices and performance followed environment policy and strategy by committee • Progress of environment development plan like like Energy and Climate Change, Water Management and Waste Managment • Create sustainable value to suppliers and Supplier Assessment • Environmental Performance Assessment Program (EPAP)	18-19 58-79, 98-103 92-97 144-145
16. Outcomes of environmental principles integration	• Environmental performance • WBCSD-CSI indicators	120-123 124-125
Anti-Corruption Implementation		
17. Appropriate commitments, strategies or policies in the area of anti-corruption	• SCG business philosophy and vision • Announced anti-corruption policy and guidelines through SCG Corporate Governance Handbook • Targeted to be a role model for good corporate governance practice • Enhanced company cultures on business transparency to employees • SCG Supplier Code of Conduct	14-15 16-17 38 38-41 92-95
18. Effective management systems to integrate the anti-corruption principle	• Clearly defined authority of each levels of executives and corporate governance structure • Strict internal audit system and communicated opinions or complaints via Whistleblower system	16-17 38-41
19. Monitoring and evaluation mechanisms anti-corruption performance	• Audit reporting system to Board of Directors via audit committee • Applied the "Preventive Pack Three" a preventive system to employees for risk management, internal control and knowledge	16-17 39
20. Outcomes of anti-corruption principle integration	• No complaint against anti-corruption policy found, with few non-significant cases of misconducted on code of conduct	40
Value Chain Implementation		
21. Implementation of the UNGC principles in the value chain	• Sustainable management approach and SCG sustainable supply chain • Identified Value Chain Management approach on SCG Supplier Code of Conduct, Green Procurement, SCG Safety Contractor Certification System, sustainable products and services as well as customer relationship management	20-21 80-97
Transparency and Certification		
22. Information on the company's profile and business context and	• About SCG	10-13
23. Highest standards of transparency and disclosure	• Excellence: Sustainability Report Award of 2016 • Sustainability Performance Data • WBCSD-CSI indicators • GRI Content Index	146 118-123 124-125 133-140
24. Independently certified by a credible third-party	• Environmental Performance Assessment Program (EPAP) • Independent assurance statement on Sustainability Report 2016	144-145 146-147

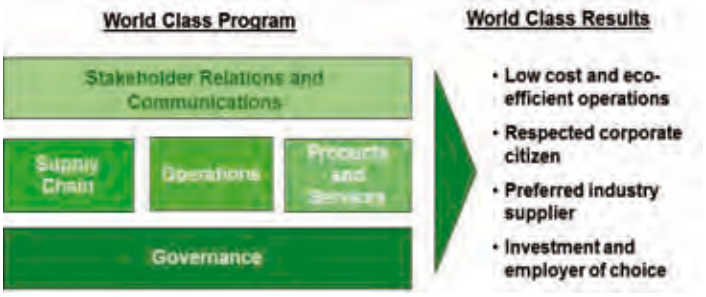
Assurance Statement

Environmental Assurance Statement, 2016

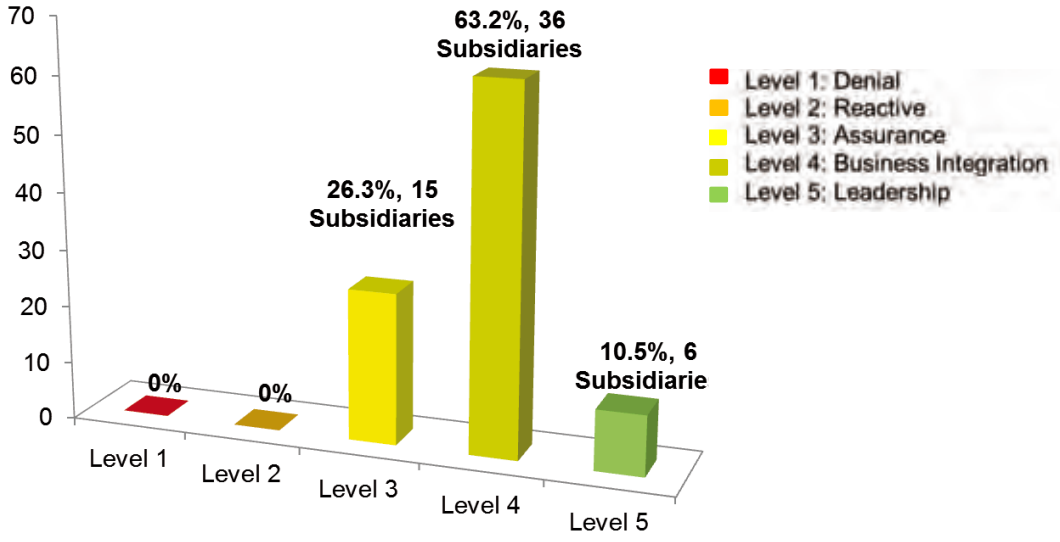
SCG

Environmental Performance Assessment Program

SCG has implemented the Environmental Performance Assessment Program (EPAP) since 2001. Up to 2016, 58 subsidiaries in total have been in the program with 195 assessments conducted. The participating subsidiaries are those required by SCG criteria considering business type and their activities that have potential environmental impacts. Since 2013, the assessment approach and criteria cover all dimensions of sustainable development that are relevant to environmental management. These approach and criteria provide benefits to the subsidiaries by driving environmental performance improvement and ensuring the alignment with sustainable development policy of SCG. Each participating subsidiary is assessed every 3 years with the scope of the assessment comprising 5 main elements i.e. Governance; Supply Chain; Operations; Product and Service; and Stakeholder Relation and Communication.



The maturity for each subsidiary, considering management system, compliance, effectiveness and performance, is demonstrated in 5 Levels, i.e. Level 1: Denial; Level 2: Reactive; Level 3: Assurance; Level 4: Business Integration; and Level 5: Leadership. In general, the results of the assessment indicate a continual improvement in the environmental performance across SCG. The cumulative maturity levels of the total 57 subsidiaries assessed through the EPAP until the end of 2016 show 10.5% in Level 5, 63.2% in Level 4 and 23.6% in Level 3, respectively.



Based on the 10 assessments conducted in 2016, the overview of management of each element and key issues being focused by SCG to achieve the sustainable operation aim are summarized as followings.

Governance

Top management of each subsidiary involved in defining sustainability strategy, targets and action plans for the Business and their own subsidiary as well as designating organization and functions responsible for monitoring and reporting of environmental performance to achieve the defined targets. Risk management process has been implemented at both Business and Subsidiary levels. Risk mitigation measures were defined, implemented and routinely tracked to effectively address key issues. Non-technical risks (i.e. environmental and social) and related regulatory requirements should be fully integrated into the risk assessment process and project modification process of some subsidiaries. Some subsidiaries should enhance their emergency preparedness and response plans for the case of major fire and major oil and chemical spill to cover the procedures dealing with the potentially-affected nearby factories and communities.

Supply Chain

Greening the Supply Chain program has been launched to each Business to manage supply chain risks and increase the partnership opportunity with suppliers and contractors. The implementation progress has varied across business type. Some subsidiaries should continue improving in certain areas, for example, integrating key environmental and social risk mitigation measures specific to activities carried out by suppliers and contractors into the selection and contract management processes. Specific criteria reflecting environmental performance expectation should be defined and employed in evaluation of supplier and contractor performance in order to be further referred to during the selection process as part of the past performance review.

Operations

Most subsidiaries had processes to identify environmental risks and associated management plan with the focus of compliance with regulations as a minimum whilst some subsidiaries further developed programs to escalate the performance to be beyond the regulatory standards. Specific targets and action plans were defined to serve the strategy of each business with regular monitoring and reporting to management toward continuous improvement. In 2016, most subsidiaries had difficulties in achieving the targets especially those key areas related to the business objectives e.g. energy and greenhouse gases emission reduction. Improvements required from the oversea subsidiaries incl zero waste to landfill;

and maximize the rehabilitated areas to demonstrate commitment on returning the non-active area to the nature.

Product and Service

Policy on the development of environmental-friendly products has been defined and implemented across SCG in order to increase number of products certified with SCG eco value, green label, and carbon reduction label criteria. In addition, each Business has conducted Life Cycle Analysis (LCA) to evaluate key impacts arising from its key products and services. In order to leverage, the results from the LCA should be further utilized in reducing impacts through production process improvement and enhancing business opportunities. Also, a product take-back program should be strengthened to return waste from consumers back to the manufacturing process to reduce waste disposal liabilities and overall environmental impacts from SCG.

Stakeholder Relation and Communication

Most subsidiaries conducted stakeholder identification and prioritization including engagement plans development . A survey to evaluate satisfaction is conducted with key stakeholders to obtain opinions for improvement of sustainable development programs. Some subsidiaries should implement a partnership strategy and program with external parties in order to address concerns from stakeholders including nearby communities in the area where SCG operates. Example of external parties includes the companies operating ports servicing to SCG; and the quarry owed by other companies locating in the same area of SCG quarry, etc. Some subsidiaries should incorporate the stakeholder interests into stakeholder identification and prioritization process to ensure the specific and effective engagement program is developed and implemented.

Plerngtape Chamikorn (Partner)

ERM-Siam Co. Ltd., 22 February 2017

ERM is a global provider of environmental, social and corporate responsibility consulting and assurance services. We have worked with over half of the world's 500 largest companies, in addition to numerous governments, international organizations and NGOs.

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Independent limited assurance report

To the Sustainable Development Committee of The Siam Cement Public Company Limited ("SCG")

Our conclusion

Based on the procedures performed, as described below, nothing has come to our attention that would lead us to believe that the selected subject matters ("Subject Matters") identified below and included in the Sustainability Report 2016 (the "Report") for the year ended 31 December 2016, is not, in all material respects, prepared in accordance with the reporting criteria (the "Criteria").

We have been engaged by SCG and are responsible for providing a limited assurance conclusion in respect of the Subject Matters for the year ended 31 December 2016 to be included in the Report as identified below.

Our assurance engagement is conducted in accordance with the International Standard on Assurance Engagements ISAE 3000 *Assurance Engagements other than Audits or Reviews of Historical Financial Information* and ISAE 3410 *Assurance on Greenhouse Gas Statements*. These standards require the assurance team to possess the specific knowledge, skills and professional competencies needed to provide assurance on sustainability information, and that they comply with the requirements of the Code of Ethics for Professional Accountants of the International Federation of Accountants to ensure their independence. The firm applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

We have not been engaged to provide an assurance conclusion on any other information disclosed within the Report.

Subject Matters

Subject Matters comprised of the following data expressed numerically for the year ended 31 December 2016:

a) Environmental dimension performance indicators
   - Total energy consumption (petajoules) on page 121
   - Alternative energy consumption (petajoules) on page 121
   - Greenhouse gas emission (scope 1) (million tons) on page 122
   - Greenhouse gas emission (scope 2) (million tons) on page 122
   - Greenhouse gas emission (scope 1 and scope 2) by core business unit, with comparison against base year 2007 'business as usual' emissions (million tons) on page 122
   - Hazardous waste (thousand tons) and disposal method (%) on page 123
   - Non-hazardous waste (thousand tons) and disposal method (%) on page 123
   - Water withdrawal (million cubic meters) on page 123
   - Proportion of recycled water (%) on page 123

b) Social dimension performance indicators
   - Total Incident Rate (Employees and Contractors) (Case/200,000 Man-Hours) on page 119
   - Incident Rate (Lost Time Case) (Employees and Contractors) (Case/200,000 Man-Hours) on page 119
   - Number of Fatalities (Employees (male : female) and Contractors (male : female)) (Case) on page 119

c) WBCSD-CSI Emissions Monitoring and Reporting key performance indicators
   - % of clinker produced by kilns covered by a monitoring system (dust, Nitrogen Oxide (NO_x), Sulfur Dioxide (SO_2), and heavy metal) (KPI 1) (%) on page 125
   - Dust emissions (KPI 3) (tons) on page 125
   - Dust emissions rate (KPI 3) (g/ton clinker) on page 125

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- NO_x (KPI 3) (tons) on page 125
- NO_x emissions rate (KPI 3) (g/ton clinker) on page 125
- SO_2 (KPI 3) (tons) on page 125
- SO_2 emissions rate (KPI 3) (g/ton clinker) on page 125
- % of clinker produced by kilns covered by a monitoring system (dust, NO_x, SO_2) (KPI 4) (%) on page 125
- where:
  - KPI1: Overall coverage (%)
  - KPI3: Dust, Nitrogen Oxide (NO_x) and Sulfur Dioxide (SO_2) emissions data (tons)
  - KPI4: Dust, Nitrogen Oxide (NO_x) and Sulfur Dioxide (SO_2) coverage rate pollutant (%)

Criteria

The Subject Matters were assessed according to the following criteria, where relevant, as specified by SCG in the section "About this report" on pages 126 to 128 of the Report:

- the Sustainability Reporting Guidelines version 4 – Comprehensive issued by the Global Reporting Initiative ("GRI-G4 Comprehensive");
- the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard issued by the World Business Council for Sustainable Development and World Resources Institute ("WBCSD/WRI-GHG"); and
- the Cement Sustainability Initiative guidelines issued by the World Business Council for Sustainable Development ("WBCSD-CSI"), including WBCSD-CSI Guidelines for Emissions Monitoring and Reporting in the Cement Industry (updated March 2012, version 2.0).

Sustainable Development Committee's responsibilities

The Sustainable Development Committee of SCG is responsible for the preparation and presentation of the Subject Matters, specifically ensuring that in all material respects the Subject Matters are prepared and presented in accordance with the Criteria. This responsibility also includes the internal controls relevant to the preparation of the Report that is free from material misstatement whether due to fraud or error.

Limited assurance over Subject Matters

In forming our limited assurance conclusion over the Subject Matters, our procedures consisted of making enquiries and applying analytical and other evidence gathering procedures including:

- Interviews with senior management and relevant staff at corporate and operating sites;
- Inquiries about the design and implementation of the systems and methods used to collect and process the information reported, including the aggregation of source data into the Subject Matters;
- Visits to 4 sites, selected on the basis of risk analysis including the consideration of both quantitative and qualitative criteria;
- Agreeing the Subject Matters to relevant underlying sources on a sample basis to determine whether all the relevant information has been included in the Subject Matters and prepared in accordance with the Criteria.

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 and 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. Accordingly, we do not express a reasonable assurance opinion.

Restriction of use of our report

Our report should not be regarded as suitable to be used or relied on by any party wishing to acquire rights against us other than SCG, for any purpose or in any other context. Any party other than SCG who obtains access to our report or a copy thereof and chooses to rely on our report (or any part thereof) will do so at its own risk. To the fullest extent permitted by law, we accept or assume no responsibility and deny any liability to any party other than SCG for our work, for this independent limited assurance report, or for the conclusions we have reached.

KPMG Phoomchai Audit Ltd

KPMG Phoomchai Audit Ltd.

Bangkok

23 February 2017

PRIDE OF SCG 2016

SCG

- H.R.H. Princess Maha Chakri Sirindhorn's Trophy for Thailand Corporate Excellence Awards 2016 from Thailand Management Association (TMA) and the Sasin Graduate Institute of Business Administration of Chulalongkorn University
    - Human Resource Management Excellence for the 15th consecutive year
    - Innovation Excellence for the 11th consecutive year
    - Product/Service Excellence for the 7th consecutive year
    - Leadership Excellence for the 4th consecutive year
    - Sustainable Development/Corporate Social Responsibility Excellence
    - Financial Management Excellence
    - Marketing Excellence

- SET Sustainability Awards 2016 for the 2nd consecutive year from the Stock Exchange of Thailand
    - Best Sustainability Awards
    - Thailand Sustainability Investment

- “Excellent” in Corporate Governance Report of Thai Listed Companies 2016 from Thai Institute of Directors

- Sustainability Report Awards 2016 in Excellence for the 4th consecutive year (Award of Sustainable Excellence) from Thai Listed Companies Association (CSR Club), the Securities and Exchange Commission and Thaipat Institute

- Thailand’s Top Corporate Brand Values 2016 for the 5th consecutive year from Real Estate and Construction Group from Chulalongkorn University, SETTRADE.COM Company and Manager Magazine.

- Asia IP Elite 2016 3rd consecutive year for the cooperate with necessary expertise to create, manage commercialize and drive strategic value from intellectual property and outstanding in managing IP for continual success from Intellectual Asset Management (IAM)

- Best corporate governance and Best in sector: Industrials & materials from IR Magazine Awards & Conference-South East Asia 2016

- Rated "Excellent" with 100 points according to the evaluation of the quality of annual general meetings of shareholders (AGM checklist) of listed companies 2016 from the Thai Investors Association

- Ergonomics Best Practice Awards: EBPA 2016, Office Ergonomics Improvement Project from Ergonomics Society of Thailand

H.R.H. Princess Maha Chakri Sirindhorn’s Trophy for Thailand Corporate Excellence Awards 2016

SET Sustainability Awards 2016 2nd consecutive year

Business Units

- ASEAN Energy Awards 2016 in ASEAN Energy Efficiency and Conservation Best Practices Awards for Energy Efficient Buildings for Large Industry Category from ASEAN Center for Energy: ACE
    - Thai Plastic and Chemicals Public Company Limited (Rayong)

- Thailand Energy Awards 2016 from Department of Alternative Energy Development and Efficiency, Ministry of Energy
    - Thai Plastic and Chemicals Public Company Limited (Rayong)

- The first position award for Alternative Energy in the Off-Grid (Thermal) Project category at the Thailand Energy Awards 2016 and ASEAN Energy Award 2016 from the Department of Alternative Energy Development and Efficiency, Ministry of Energy
    - Phoenix Pulp and Paper Public Company Limited

- The Prime Minister's Best Industry Award 2016 from Ministry of Industry
    - Thai Polyethylene Co., Ltd.

- The Prime Minister's Industry Award 2016 for Safety Management from Ministry of Industry
    - Nawaplastic Industries (Saraburi) Co., Ltd.

- The Advanced Special Award for TPM Achievement from Japan Institute of Plant Maintenance (JIPM), Japan
    - Thai Container Groups Co., Ltd., SamutPrakarn plant

- Eco Factory from The Federation of Thai Industries
    - Nawaplastic Industries (Saraburi) Co., Ltd.
    - Siam Stabilizers and Chemicals Co., Ltd

- The Outstanding Workplace Award for Safety, Occupational Health and Environment from Department of Labor Protection and Welfare, Ministry of Labor
    - Thai MMA Co., Ltd. (the 16th consecutive year)
    - Rayong Olefins Co.,Ltd. (the 14th consecutive year)
    - Siam Mitsui PTA Co., Ltd. (the 14th consecutive year)
    - Thai Polyethylene Co., Ltd. (the 12th consecutive year)
    - The Siam Refractory Industry Co., Ltd. (the 12th consecutive year)
    - Thai Containers Group Co., Ltd.; Pathumthani Plant (the 11th consecutive year), Ratchaburi Plant (the 11th consecutive year) , Saraburi Plant (the 8th consecutive year), Navanakorn Plant (the 7th consecutive year), Songkhla Plant (the 7th consecutive year), Samut Prakarn Plant (the 6th consecutive year) , Prachinburi Plant (the 4th consecutive year), Chonburi Plant (the 2nd consecutive year)

Asia IP Elite 2016 3rd consecutive year

The Prime Minister's Best Industry Award 2016

- Siam Kraft Industry Co., Ltd.; Ban Pong Plant (the 11th consecutive year), Wangsala Plant (the 3rd consecutive year)
- Thai Plastic and Chemicals Public Company Limited; Rayong Plant for the 10th consecutive year), Samut Prakan Plant (the 3rd consecutive year)
- The CPAC Roof Tile Co., Ltd. (Khon Kaen Plant for the 6th consecutive year)
- Thai MFC Co., Ltd. (the 6th consecutive year)
- Grand Siam Composites Co., Ltd. (the 5th consecutive year)
- Thai British Security Printing Public Company Limited ; Samut Prakarn Plant (the 5th consecutive year), Bang Poo Plant (the 4th consecutive year)
- Nawaplastic Industries Co., Ltd. (the 4th consecutive year)
- Thai PET Resin Co., Ltd. (the 4th consecutive year)
- Map Ta Phut Olefins Co.,Ltd. (the 4th consecutive year)
- Thai British DPost Co., Ltd. (the 4th consecutive year)
- Nawaplastic Industries (Saraburi) Co., Ltd. (the 4th consecutive year)
- Nawalntertech Co., Ltd. (the 3rd consecutive year)
- Thai Containers Khonkaen Co., Ltd. (the 2nd consecutive year)
- Thai Containers Group Co., Ltd.
- Thai Containers Rayong Co., Ltd. (the 1st year)
- Siam Tohcello Co., Ltd. (the 1st year)
- The Siam Sanitary Fittings Co., Ltd. (the 1st year)
- Tawana Container Co., Ltd. (the 1st year)
- Thai Cane Paper Public Company Limited (Kanchanaburi Plant for the 1st year)
- Thai Cane Paper Public Company Limited (Prachinburi Plant for the 1st year)

- An Outstanding Organization Award - Labor Relations and Welfare in 2016 from Department of Labor Protection and Welfare, Ministry of Labor
  - The Siam Refractory Industry Co.,Ltd.
  - Thai Container Groups, Co., Ltd., Ratchaburi plant, Navanakorn plant

- The CSR-DIW Continuous Awards 2016 from Department of Industrial Works, Ministry of Industry
  - Thai Paper Co., Ltd.
  - Thai Container Groups Co., Ltd., Pathumthani plant
  - The CPAC Roof Tile Co., Ltd., Nakhon Ratchasima Plant
  - Siam Sanitary Ware Industry Co., Ltd.
  - Siam Sanitary Ware Industry (Nongkae) Co., Ltd.
  - The CPAC Roof Tile Co., Ltd. - Saraburi 2 Plant
  - The Concrete Products and Aggregate Co., Ltd.

Best corporate governance and Best in sector: Industrials & materials from IR Magazine Awards & Conference-South East Asia 2016

Eco Factory from The Federation of Thai Industries

- An honorable Fame award of the outstanding Social Development, Ministry of Social Development and Human Securety
    - The Concrete Products and Aggregate Co., Ltd.

- Green Industry Level 4 from Ministry of Industry
    - The CPAC Roof Tile Co., Ltd. - Nakhon Ratchasima Plant
    - Siam Sanitary Ware Industry (Nongkae) Co., Ltd.
    - Siam Mortar Co., Ltd.
    - The Concrete Products and Aggregate Co., Ltd. (Khao Wong)

- Excellence Award of EIA monitoring Award 2016 from Ministry of Natural Resources and Environment
    - The Siam Cement (Ta Luang) Co., Ltd. - limestone and shale mine sector
    - The Siam Cement (Kaeng Khoi) Co.,Ltd. - limestone and shale mine sector
    - The Siam Cement (Kaeng Khoi) Co.,Ltd. - industrial sector
    - The Siam Cement (Thung Song) Co.,Ltd. - limestone quarry sector
    - Thai Polyethylene Co., Ltd.

- Outstanding Award of EIA monitoring Award 2016, from Ministry of Natural Resources and Environment
    - The Siam Cement (Ta Luang) Co., Ltd. - Kiln uprate project
    - The Siam Cement (Thung Song) Co.,Ltd. - cement industrial sector
    - The Siam Cement (Lampang) Co.,Ltd.

- EIT-CSR Awards 2016
    - Siam Sanitary Ware Industry Co., Ltd. Factory

- Thai Labor Standard Certificate TLS 8001-2553 from the Ministry of Labor
    - Thai Container Groups Co., Ltd., Samut Prakarn plant

- The Standard on Prevention and Solution to Drug Problems in an Establishment Certificate from Department of Labor Protection and Welfare,Ministry of Labor
    - Thai Cane Paper Public Company Limited, Prachinburi plant

- The Luxury Packaging category at the WorldStar Awards 2016 From the World Packaging Organization (WPO)
    - Siam Kraft Industry Co., Ltd.

WorldStar Awards 2016 in Luxury category

Carbon Footprint Reduction Certificate from Thailand Greenhouse Gas Management Organization (Public Organization)

- The Asian Packaging Design Awards in the Beverage category for their “LEO Wrap Around / Flexographic” project from the Asian Flexographic Technology Association (AFTA)
    - Thai Container Groups Co., Ltd., Pathumthani plant

- Carbon Footprint Reduction Certificate from Thailand Greenhouse Gas Management Organization (Public Organization)
    - Siam Stabilizers and Chemicals Co., Ltd.
    - Thai Plastic and Chemicals Public Company Limited (Rayong)
    - Nawaplastic Industries (Saraburi) Co., Ltd.
    - Nawaplastic Industries Co., Ltd., Rayong Plant

- Carbon Footprint Product from Thailand Greenhouse Gas Management Organization (Public Organization)
    - Siam Sanitary Ware Industry (Nongkae) Co., Ltd.
    - Siam Mortar Co., Ltd.
    - Grand Siam Composites Co., Ltd.
    - Thai Polyethylene Co., Ltd.
    - Thai Plastic and Chemicals Public Company Limited (Rayong)
    - Thai MFC Co., Ltd.
    - Siam Stabilizers and Chemicals Co., Ltd.

- Carbon Footprint of Organization Certificate from Thailand Greenhouse Gas Management Organization (Public Organization)
    - Thai Plastic and Chemicals Public Company Limited (Rayong)
    - Thai MMA Co., Ltd.
    - Nawaplastic Industries (Saraburi) Co., Ltd.
    - Siam Mitsui PTA Co., Ltd.

- Bronze Award at Thailand Kaizen Awards 2016 from the Technology Promotion Association (Thailand - Japan)
    - Thai Container Groups Co., Ltd., Saraburi plant and Siam Kraft Industry Co., Ltd., Wangsala plant

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