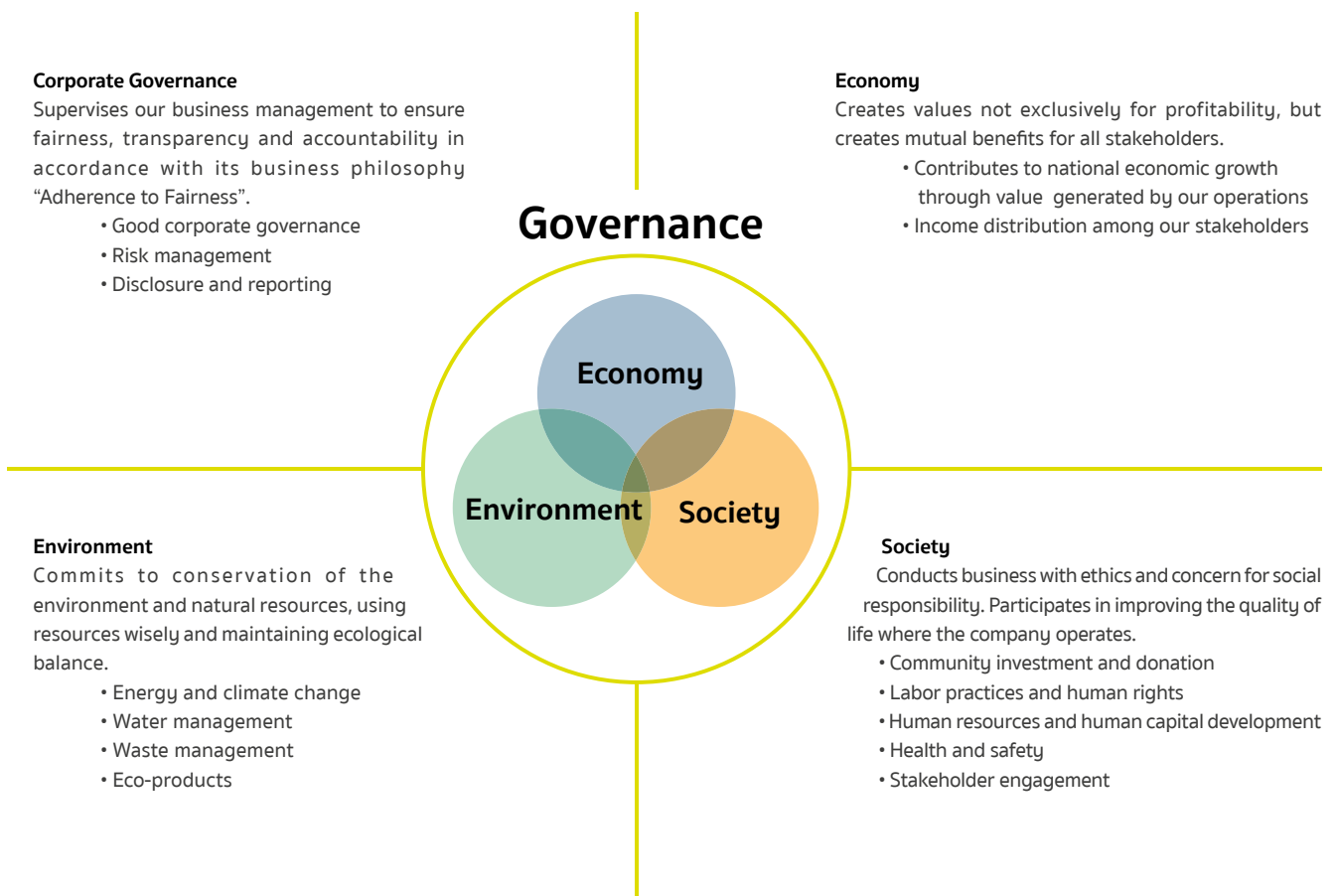


Sustainable Business Strategy

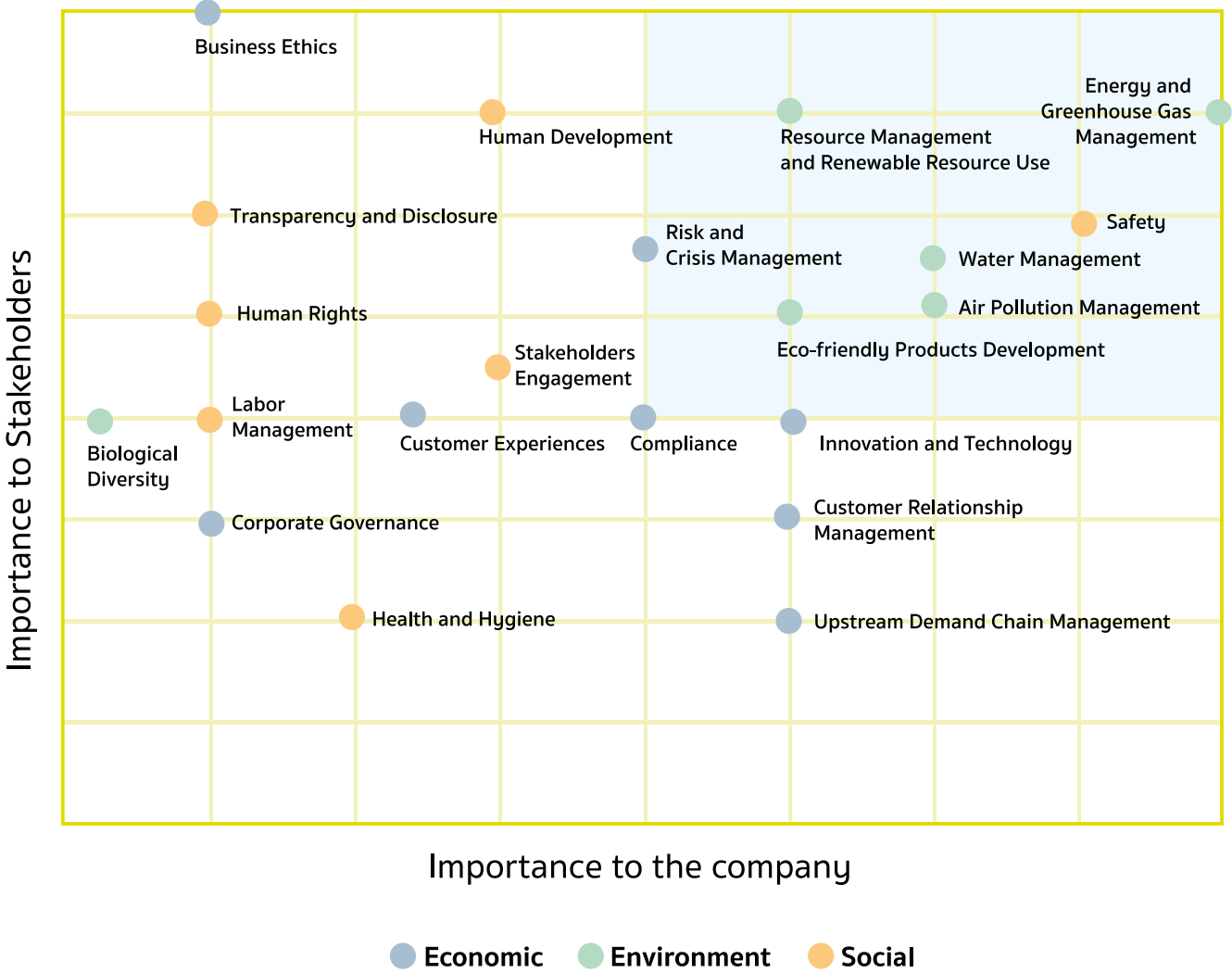
The company has continuously been committed to creating value to society through conducting an entire eco-friendly business. The company is willing to share knowledge, experiences and accomplishments through the engagement of every party, including relevant businesses throughout upstream and downstream, business organizations, and other institutions such as social institution and community so as to drive society towards sustainable development.

The company adopts international guidelines which cover economic, social, and environmental aspects under the principle of good corporate governance in order to conduct business with ethics while adhere to responsibilities the company bears to all stakeholders for the sustainability in mutual benefits of every party.



Sustainable Development Issues

SCG Ceramics has gathered and assessed sustainable development issues through the analysis of sustainability issues appertaining to the value chain of SCG Ceramics, comparing issues that a peer group prioritize, that internal and external stakeholders give special importance to, and that international organizations deem significant in the context of sustainability and changing global trends. Additionally, the company’s strategies together with risk factors at present and in the future that might affect or benefit the company’s business opportunities are taken into account of evaluating the importance of sustainable development issues.



Sustainable development issues

Materiality	Description	Topic in This Report
Energy and Greenhouse Gas Management	Greenhouse gas management throughout value chain to reduce carbon footprint, as well as a management of risks and opportunities for business transactions due to climate change	Energy and Climate Change
Safety	Endorsements of safety policies, standards, and projects whose operational process involves safety management to prevent and mitigate loss	Health and Safety
Environmentally Friendly Products Development	Development of products, services, business models, and manufacturing process, whether old or newly developed, by considering the whole value chain in order to response to the changing trend that customers give more value to eco-friendly products	Eco-friendly Products Approval
Water Management	Integrated risk management concerning water including physical, environmental, social perception risk as well as risk from a change in laws, rules, and regulations	Water Management
Air Pollution	A management of risk due to air pollution, as well as air quality control and measurement	Air Pollution
Resources Management and Renewable Resources Use	A management of risk from the use of resources and renewable resources Use	Materials and Industrial Waste Management

Sustainability Performance

Energy and Climate Change

Climate change is the focus of attention worldwide as evidenced in the agreement of every sector in tackling rising average global temperature. Thailand has also ratified the agreement with mutual goal of keeping the rise in average global temperature under 2 degree Celsius. Hence, climate change becomes the issue that stakeholders such as trade partners, customers, independent organizations, and government officials prioritize. Moreover, energy plays a crucial role in all phases of the manufacturing process of ceramics industry. Correspondingly, The company has given priority to energy management and set up the guidelines for energy management and greenhouse gas administration as followings:

1. Reduce the impacts from fossil fuel use
2. Enhance the efficiency of energy use
3. Increase the capability of renewable energy use
4. Cultivate a sense of environment conservation in employees

The Improvement of Energy and Greenhouse Gas Management

1. Increase the capacity of renewables use by installing 4.7 MW rooftop solar power panels, approximately comparable to the reduction of GHG emission of 3,747 tons carbon dioxide equivalents (CO₂e) per year.



PV Solar Rooftop,
1.8 MW capacity,
at Nong Khae Industrial
Estate.



PV Solar Rooftop,
0.9 MW capacity,
at Nong Khae Plant No. 1



PV Solar Rooftop,
2.0 MW capacity,
at Hin Gong Plant.

2. Enhance the effectiveness of energy use by waste heat recovery, transferring waste heat at a chimney stack, which would be rejected into air, through Air To Air Heat Exchanger process in order to use clean air for drying tiles at a ceramics dryer. This helps save heat energy from natural gas usage by 5,560 million BTU per year and reduce carbon dioxide emission by 329 tons carbon dioxide equivalents (CO₂e) per year.



Waste Heat Recovery from Kiln's Chimney (Air to Air Heat Exchanger)

3. Enhance the effectiveness of electricity use by changing to energy-saving lightbulbs, LED Tube and High Bay, 13,900 lightbulbs in total. This can save 1,330 MW-Hour per year, equivalent to the reduction of GHG emission by 773 tons carbon dioxide equivalents (CO₂e) per year.

For the 2018 operating result

overall energy consumption in the manufacturing process is 4.33 petajoules or 5.60 gigajoules per tons of product when compared to the effectiveness of energy use. Of overall energy consumption, fossil fuels accounts for 96.8 % while alternative energy such as biomass and solar power accounts for 3.2 %.

The company has established a database containing the amounts of greenhouse gas from the company's activities. The amounts of greenhouse gas in this report addresses only ceramics business. The followings are activities relevant to the emission of greenhouse gas:

Direct GHG Emissions from the Operations, Activities, and Machines of the Company (GHG Emissions Scope 1)

- Using natural gas in manufacturing process
- Using diesel fuel in transportation by truck within factories
- Using diesel generator in emergency power system of the company
- Using LPG in transportation
- Using materials with carbonate as constituent
- Using benzene fuel in transportation
- Using SF6 and HFCs

Indirect GHG Emissions from Purchasing Electricity for Activities of the Company (GHG Emissions Scope 2)

- Using electricity from outside sources

Overall greenhouse gas emission is 0.28 million tons carbon dioxide equivalents (CO₂e). When compared to production effectiveness, direct GHG emission from operations is 234 kilograms carbon dioxide equivalents (CO₂e) per ton of products while indirect GHG emission from purchasing electricity for the company's operations is 126 kilograms carbon dioxide equivalents (CO₂e) per ton of products.

Health and Safety

Safety is extremely important for working; thus, The company is concerned and really wants employees and every relevant entities to be safe and free from any injury and illness from works by controlling risks in workplace through the implementation of SCG Safety Framework. The company aims that each department has a safety management and continuing safety development system that could be used in Safety Performance Assessment Program (SPAP). The company has carried out SCG Safety Framework systematically as well as assessed safety performance as followings:

SCG Safety Framework



Administration and Management

All directors must be a leader and responsible for risk management (Visible Safety Leadership) by being a role model about safety so that employees and business partners realize that directors care and fully acknowledge the importance of their safety. Additionally, directors shall follow up on the result of leadership evaluation in order to continue improving.

Safety observation by directors is an observation of employees and business partners' works so as to examine if the works comply to safety regulations or safe work method. If staff are able to work safely, directors shall compliment in order to raise morale among staff. If risks are identified, directors shall halt the work and provide understanding for staff so that they change to safe work method.

Operation and Techniques

The company has long been committed to reducing risks and operational controls by reviewing and assessing risks in working that are likely to bring about loss of life and severe injury. Moreover, the company has improved operational and monitoring system in order to ensure regular practices such as:

- Implement Life Saving Rules which consist of 10 obligatory rules of safety. The rules are considered to be mutual agreement which belonged to the employment contract between the company and the contractors. Any parties neglecting the Life Saving Rules, will be subjected to severe punishment as specified in the contracts.

10 Life Saving Rules

 <p>Use fall protection equipment when working at height</p>	 <p>No alcohol or drugs prior to or while working or driving</p>
 <p>Cut off electricity/energy sources & use lockout/tagout system</p>	 <p>Wear your seat belt</p>
 <p>Obtain authorization before overriding or disabling safety equipment</p>	 <p>Wear safety helmet while riding a motorcycle</p>
 <p>Obtain authorization before entering a confined space</p>	 <p>Do not use mobile phone while driving without hands-free device</p>
 <p>Work with a valid work permit when required</p>	 <p>No truck parking on roadside</p>

10 Life Saving Rules written on staff badges



- As for matters concerning assignments on a place 1.8 meter above ground, the Community of Practice have been established to perform tasks in accordance with 6 processes of Work at Heights Management System: risk indication and evaluation to look for preventive measures, selection of employee specialized in the job, explanation of regulations and safe working methods, instruction and physical examination, and supervision and inspection over the safety during the processes of works by developing equipment and devices that ensure safety and convenience throughout the operation.



using a drones to observe works on the roofs to reduce the hazards of taskmasters and Watch Man.

- The standardization is made, along with the installation of machines which was carried out according to the Foolproof Machine System, the Safety Sensor or Safety Interlock Switch System used to prevent any accidents caused by mistakes of employees who operates the machine. Moreover, the company also promote and encourage the practice of educating employees in operating a machine and stopping a machine before a modification.

- The equipment/electric devices must go through the process of standardization and constant maintenance by expert technicians. A certificate for an inspection of equipment and electric devices must also be issued before the usage. This certificate covers both employees' and contractors' equipment and devices, so as to prevent any accidents that may occur due to malfunction of equipment and electric devices.

- Our company ensures high safety in the operation of Forklift, by assigning our staffs to take courses and register as Forklift operators with certifications. The company also collaborates with contractors to design the safety standards of Forklift, such as operator identification Interlock System, speed limit, the installation of Blue Spot to use as a warning sign when the operator are backing up the forklift.

Culture and Safety Behaviors

The company emphasizes the interaction between employees and contractors through various projects and activities. This is an important guideline for the promotion of learning, mutual understanding and cooperation in order to decrease occupational mistakes and accidents by means of continuous interactive activities, as followings:

Behavior- Based Safety, BBS	Job Safety Analysis, JSA	Kiken Yoshi Training, KYT
To cultivate safe working behavior, which leads to safety culture	To analyze potential danger and prepare preventive measures	To analyze and search for potential danger, and remind each other of it before the operation
Safety Communication	Safety Check	5s Activities
To communicate and build up awareness of safety, inside and outside of works	Security check by safety officer supervisors and the committee of safety to look for and lessen dangerous working situation	To take care of working space, making it neat and tidy, and strengthen working discipline and safety

For the data on safety performance in 2018, no fatal accident occurred to both employees and contractors. Nevertheless, there was an accident that cause one of the contractor’s employee to be hospitalized for a time. The Lost Time Incident Frequency Rate was 0.017 person/ 200,000 hours of work. However, our company is still committed to improve our safety management and promise to bring the accident rate down to zero.

The Approval of Eco Products

Due to the rapid change of the world, consumption rate of natural resources inevitably ascends. As one of the consumer of natural resources, the company continuously persists in improving products and corporate social responsibility. Our products must comply with every relevant standards, for instance, Thai Industrial Standard of Ceramic Tiles, TIS 2508-2555, ISO13006, CE marking, ECO Labeling, and LEED Certified Products for Commercial Green Buildings in order to guarantee that consumers are provided with products conforming to significant regulations in every batch of production.

In 2018, sales volume of eco products under the brand COTTO, CAMPANA and SOSUCO amounted to 35% of total sales.

Here are lists of our Eco products that had been approved:

1. SCG Eco Value Label

Since 2009, SCG Ceramics' products had been certified as eco-friendly products and services through Self-declared Environmental Claims under SCG eco value label. The criteria for assessment was set in accordance with ISO 14021: Environmental Labels and Declarations Self-Declared Environmental Claims, together with consideration of matters regarding stakeholders' demand and Life Cycle Assessment. Finally, quantitative data of our products and services, approved by SCG eco label, was verified by SCG Technical Team to establish credibility and assurance in consumers.



2. Carbon Label/Climate Change Label



Carbon Reduction Label



Carbon Footprint Reduction Label



Carbon Footprint Label

Having realized the situation of global climate change, which is now of concern to every individual, the company is striving to improve the processes of manufacture, especially those relating water conservation by optimizing the use of energy efficiently. When delving into the company's products, the company had already succeeded in promoting products under the brand COTTO, CAMPANA and SOSUCO to receive a certification of Carbon Label/Climate Change Label from Greenhouse Gas Management Organization (Public Organization) and Thailand Environment Institute, which measure greenhouse gas emissions of the products throughout their life cycle, starting from raw material acquisition, transportation, manufacture, use to disposal.



3. EU Flower Label

Above all, the company is also determined to develop eco-friendly products. By comparing our products' performance with other international standards, it is certainly that COTTO's Glazed porcelain tiles are efficient enough to receive EU Flower Certification from EU Ecolabel, an organization that certifies eco-friendly products within EU.

Water Management

Water resources are vital for life to exist, both in performing agricultural and industrial activities. However, due to climate change, the water amount in natural resources are fluctuating wildly, negatively affecting rainfall and runoff. Our company, being fully aware of the necessity of water management, considered water management as a business risk. As for the water amount, the company will establish a team to carry out Risk Management and Business Continuity Management, so as to make up plan in response to potential drought or inundation.

On the subject of water quality management, the company already set up a resources management team to be in charge of clean water production and wastewater treatment. The company also instructed every department to focus on the efficacy of resources usage on the basis of 3Rs guidelines. Here are the management strategies:

1. Reduce risk regarding water issues
2. Reduce water usage by optimizing production process and products
3. Recycle treated wastewater
4. Enhance competency of staffs in charge of water management

Regarding the performance of water management in 2018, the external water footprint was 1.35 million cubic-meter, consisting of surface water, water supply and groundwater, which amounted to 73%, 23% and 4% respectively. For production effectiveness, 1.75 cubic-meter of water was required per ton of product.

Pollution Emission

As for ceramic industries, principal pollutants are dust dispersed during the process of clay powder production, material storage, transportation, and the process of firing clay tiles which emits large amount of nitrogen oxide (NOx) and sulphur oxide (SOx). The company's management guideline is to focus on the prevention and reduction of pollutants from their sources as well as adopt a proper policy to cope with different operating areas. Besides, the company will measure air pollution from factory's chimneys to curb the emission of pollutants, impeding them from affecting nearby communities and environment. After that, the collected dusts will be put into new production process to reduce resources consumption. In addition, the company will stay alert in gauging the pollution level to make sure that air quality is maintained at moderate level.

Sources Prevention	Protective Maintenance	Quality Measurement
Dusts <ul style="list-style-type: none"> • Installation of Bag Filter on Material Shipping Point • Installation of Wet Scrubber in the Process of Clay Powder Production • Search and Elimination of Source of Contaminate 	<ul style="list-style-type: none"> • Machinery Protective Maintenance Plan 	<ul style="list-style-type: none"> • Measurement of Pollution from Chimney according to the Law
NOx and SOx <ul style="list-style-type: none"> • Use of Low-sulphur Fuel • Control of Kiln's Excess Air Condition 	<ul style="list-style-type: none"> • Machinery Protective Maintenance Plan 	<ul style="list-style-type: none"> • Measurement of Pollution from Chimney according to the Law

Regarding the performance of emission in 2018, the amount of nitrogen oxide and sulphur oxide emission didn't exceed the limit as specified in the law. For production effectiveness, the amount of dusts, NOx and SOx emitted were 82, 25 and 108 gram per ton of product respectively.

Material and Industrial Waste Management

Soil and mineral resources which are suitable materials for the making of ceramic products are finite resources, and might be exhausted in the future. Being well aware of the necessity of efficient resources consumption, our company issued SCG 3Rs Principle and has now provided effective management throughout the value chain, by researching and applying the concept of Circular Economy-circulation of resources within the value chain to minimize the consumption of new resources and utilize them to their fullest potential-to business operation, maximizing the use of resources, reducing the waste waiting for disposal, and developing production process to recycle and increase its value continuously. The Strategies for Material and Industrial Waste Management are:

1. Reduce waste from the origin.
2. Research and develop innovation to recycle material and waste, as well as increase waste's value.
3. Reduce ineffective waste incineration.

Regarding waste management within the factory, sludge left from the process of wastewater management, clay powder and rejects are used as materials in the next production to reduce the consumption of natural resources. Ceramic shards from other companies are also acquired to be used as materials in the process. The proportion of Alternative Raw Material used amounts to 10% of Virgin Raw Material. However, the production process also contributes to 5.8 kilogram of untreated waste per ton of product, 82% of which is leftover ash from the combustion of biomass energy.

