



Energy and Climate Change

Energy and Climate Change Risks

SCG involves with industry that consumes energy. Global economic fluctuation has direct impact to raw material prices for energy production whilst climate change risks cause a wide-range of impacts including natural disasters, extreme weather, super typhoon, and severe flooding causing damage to life and business operation.

For the energy aspect, SCG has prepared long-term measures to reduce risk, defined targets to increase renewable fuel consumption, explored new fuel sources, implemented financial measures through long-term purchase

agreements and hedging as well as performed management and improvement of manufacturing process to be ready for business competition. These energy reduction programs also directly and indirectly help reduce emission of greenhouse gases to the atmosphere.

For the climate change aspect, SCG has prepared measures both to avoid emission of greenhouse gases, and prepare for natural disaster to organizational level in which business cannot be operated normally and at individual level in which assistance to victims and alleviation of affliction spreading to society and external organizations.

SCG Strategies

SCG has reduced probability and severity of energy risks by implementation of management strategies such as energy source management to ensure sufficiency for manufacturing and energy source diversification e.g. purchase coal from the Philippines besides Indonesia and explore coal sources in Myanmar. Moreover, SCG increased utilization of other alternative energy for example processing agricultural waste to substitute coal or supplying to gasification process to substitute natural gas. These reduced greenhouse gas emissions and smog from open burning waste.

Machine improvement using new technologies helped improve energy efficiency, lower energy demand as well as reduce burden on energy sourcing.

A campaign of energy conservation awareness was conducted via competition functions and Show & Share activities resulting in expanding energy conservation concepts throughout units, factories and offices effectively.

Greenhouse Gas Emissions Inventory and Reporting

SCG is the first Thai company giving priority to disclosure of energy and greenhouse gas emissions data to the public on an annual basis since 2004 with adherence to the sustainability reporting guidelines of World Business Council for Sustainable Development and ISO 14064-1.

Defining Performance Indicators

Every SCG business unit has defined energy consumption per production unit as one of the key performance indicators in order to demonstrate efficiency and directly reflect energy cost of each manufacturing process. At cement plants, the proportion of renewable energy consumption is another indicator that is regularly reviewed and monitored by management teams.

SCG has defined performance indicators on greenhouse gas emissions for monitoring and reporting as well as defining target on reducing greenhouse gas emissions per ton of product by at least 10 percent by 2020 from the base year of 2007 which is the year that SCG completed verification of greenhouse gases emission inventory at all businesses units.

Establishment of Monitoring Committee

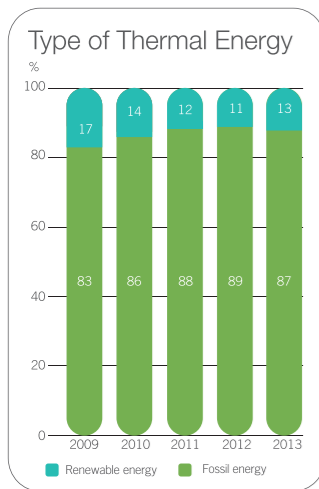
SCG has set up the Energy Committee comprising representatives from management of all business units and energy department in order for solid management, forming direct accountable committee and creating program continuity. This committee tracks all energy programs to ensure consistence with sustainable energy management policy and guidelines, enhance energy conservation, appropriate use renewable energy, and minimize environmental impact. Moreover, the committee communicates, campaigns and builds energy conservation awareness with employees as well as promotes an image of the organization using energy responsibly. It also closely tracks the programs on energy efficiency improvement. For example, management of coal sourcing resulting in over 10 percent decrease of coal purchasing cost over the previous year.

Moreover, SCG has set up the Climate Change Committee responsible for defining climate change impacts and SCG's greenhouse gas emissions. The committee closely monitors climate change trends by cooperating with Thailand Greenhouse Gas Management Organization (Public Organization) and supports carbon credits to compensate activities arranged by different organizations for international forums such as the 31st National Seminar of the Chamber of Commerce at Trang Province.



“SCG manages energy sources and controls greenhouse gas emissions to reduce risks of energy shortage and energy cost, demonstrate social responsibility, and create opportunities to innovate products and services that respond to customer’s needs. SCG has set the target on reduction of greenhouse gas emissions throughout manufacturing by at least 10 percent within 2020 from the base year 2007 by using technology to improve machine efficiency, using renewable energy as well as providing green products and services as options for customers.”

Pinyo Harnseelawat
Chairman
Climate Change Committee



Performance

SCG has continuously committed to energy reduction through efficiency improvement by replacing new technology machineries and implementing Total Quality Management (TQM) and Total Productive Maintenance (TPM) in order to serve rapid manufacturing expansion. These resulted in 2 percent reduction of electricity consumption due to cooperation from employees and contractors in the electricity consumption reduction campaign driven by the increase of electricity price. The company could save electricity cost whilst the total electricity consumption was increased for 1 percent.

Rises in the price of natural gas which is the main fuel source in the ceramic industry is another factor that caused ceramic floor and wall tiles and ceramic sanitary ware factories to adjust their manufacturing processes to reduce the energy usage.

However, the use of renewable energy could not yet achieved the goal due to economic reason – industries still used high proportion of coal because the coal price had become much cheaper so that alternative fuels did not yield attractive return as before.

Efficiency Enhancement and Reduction of Greenhouse Gas Scope 1

- Use of the ceramic coating substance (Emisspro™) in furnaces at olefins and vinyl chloride monomer manufacturing factories contributed to the reduction of natural gas consumption by 2-6 percent, or 36,500 tons per year, which was equivalent to the reduction of greenhouse gas emission of 100,000 tons per year.

- Efficiency enhancement by installing highly efficient burners which lowers natural gas usage at Thai Ceramic Co., Ltd; recovery of waste heat from furnaces and used in dryer at the Siam Ceramic Group Industries Co., Ltd and Thai Ceramic Roof Tiles Co., Ltd; and the use of a ceramic coating substance to reduce heat loss from furnaces at the Siam Ceramic Group Industry Co., Ltd. These contributed to reduction of natural gas consumption, saving energy for over 87,000 gigajoules per year and lowering greenhouse gas emissions for 5,000 tons per year.

- Use of community waste as alternative fuel at our cement plants under Refuse Derived Fuel (RDF) Project. During the past year, the use of community waste has increased to 14,000 tons per year and greenhouse gas emissions were reduced by 12,600 tons per year.

- Installation of a High Pressure Casting Machine which enabled sanitary ware moldings to proceed without molds at Siam Sanitary Ware Co., Ltd contributed to the reduction of energy consumption in molds production by 8,900 gigajoules per year, lowering greenhouse gas emissions for 500 tons per year and reducing wastes from expired molds for 1,300 tons per year.

- Installation of an Absorption Heat Pump to recover waste heat in the water from the cooling tower in order to warm the water in boiler, which could reduce energy consumption as well as work load at the cooling tower. This contributed to the reduction of coal usage by

Any houses...can be cool

Tra Chang's House Cooling System Innovation is product group with the SCG eco value label which certifies its efficiency on saving electricity cost from air-conditioner and environmental-friendliness.

1. Cool Roof & Ceiling System prevents heat by heat reflective roof tiles, low thermal conductivity materials, air circulation system in the roof, heat reflective sheet and soffits enabling heat dissipation.

2. Cool Wall System is light weight wall system fixed with steel framing and insulation in between, which can be used for either interior or exterior.

3. Interior Heat Preventive System reduces the heat in the attic by lathing design preventing heat but not blocking air flow, and special paving blocks that absorb and retain water inside and release cool air that lowers temperature around the house.



512 tons per year and greenhouse gas emission of 2,800 tons per year.

- Use of biogas from up-flow anaerobic sludge blanket wastewater treatment system to generate power at Vina Kraft Paper Co., Ltd that can produce biogas of up to 8,500 cubic meters per day, substituting for coal usage of 2,750 tons per year, resulting in greenhouse gas emissions reduced over 7,500 tons per year.

Improvement of Manufacturing Process and Reduction of Greenhouse Gas Scope 2

- Use of excess heat at pre-heater tower and clinker cooler in clinker manufacturing process, where the heat is as high as 350-400°C, to produce steam that drives a steam turbine to generate electricity back to the manufacturing process. This could replace the purchased electricity of 100 megawatts and lower greenhouse gas emissions over 327,000 tons per year.

- Installation of a pre-grinding system for cement mill of The Siam Cement (Kaeng Khoi) Co., Ltd resulted in lower usage of electricity at cement mill by 13 gigawatt-hours per year and reduction of greenhouse gas emissions for over 6,500 tons per year.

- Replacement of raw mill with vertical mill at The Siam Cement (Ta Luang) Co., Ltd contributed to electricity consumption reduction over 10 gigawatt-hours per year and reduction of greenhouse gas emissions for over 5,000 tons per year.

Business Partners' Enhancement and Reduction of Greenhouse Gas Scope 3

- Promote energy saving and reduce greenhouse gas emissions from products and services through research and development that fulfills customers' need under SCG eco value label, such as, Home Cooling Innovation and CeraFino Solar Tile that generate electricity from solar energy, in order that customers be aware of and protect environment while saving money from energy costs.

- Adoption of a multimodal system for integrated logistics management which can reduce deadhead and enhance travel flow by C-Move system with Global Positioning System which identifies routes, manages transportation plan, reduces distance and number of trips. Moreover, drivers were educated on economical and safe driving techniques to enhance service quality aiming for professionalism. This has reduced greenhouse gas emissions from normal logistic process by at least 13,000 tons per year.

Carbon Credit

Although currently ASEAN countries where SCG conducts operations are not yet controlled by Kyoto Protocol for reducing greenhouse gas emissions, and the outcome of the previous Climate Change Conference could not yet conclude clear guidelines of practices, SCG still continues to define strategies and projects to reduce greenhouse gas emissions in every country where SCG operates.

In 2013, SCG continued its attempt to apply for carbon credit certification – Certified Emission Reductions 11,084 tons of CO₂ equivalent and Voluntary Emission Reductions 419,655 tons of CO₂ equivalent.



SCG can reduce greenhouse gas emission throughout life cycle of the products by collaborating with Thailand Greenhouse Gas Management Organisation (Public Organisation) and National Metal and Materials Technology Center in carrying out a study on the quantity of greenhouse gas emission throughout products' life cycle. SCG is the first company in Thailand which studies on greenhouse gas emission from cement products and has certified by Carbon Footprint Label.