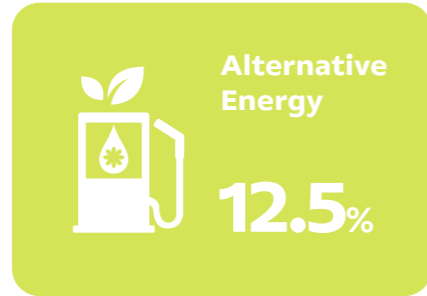


M4 Energy and Climate Change

impact on climate change and the organization's reputation. SCG has established Energy Management policies based on the advantages and disadvantages in terms of natural resources for each country in which we have invested. Production efficiency improvements, increases of alternative energy usage, exploration and research for new alternative energy sources along with environment-friendly products and services development are all management approaches that SCG uses for reduction of energy usage and greenhouse gas emissions.

In addition, SCG established a committee to be directly responsible for and to monitor energy-related issues as well as greenhouse gas matters. The committee is comprised of executive management and experts from all SCG business units. The main responsibilities of the committee are establishing policies, strategies and targets as well as monitoring operations to ensure the accomplishment of the objectives. The committee also needs to ensure the benefits of stakeholders and monitor external factors that might affect SCG's operations.



Since SCG operation significantly relies on energy, It is a big challenge for SCG to manage our energy usage and operate our business while minimizing impacts on the environment, particularly climate change.

SCG has prepared several preventive actions to mitigate both tangible risks like energy costs and business interruption cost and intangible risks, such as the

“Energy management is a tool to mitigate risks while create business opportunities. Enhancing the efficiency of energy consumption takes top priority. Simultaneously, we have to search for new alternative energy sources that are environmentally friendly. SCG uses an energy portfolio management to use various types of energy properly, which creates a competitive advantage from having appropriate energy costs, increase energy security as well as flexibility amidst higher demand from business expansion. Effective energy management will also be an important tool to decrease greenhouse gas emissions.”



Somchai Wangwattanapanich | Chairman SCG Energy Committee

Stakeholder Engagement



Highlight Performances in 2014

Creating Energy Security

- Signing long-term fuel purchasing agreements in ASEAN countries where SCG has invested
- Exploration and search for new fuel resources

Enhancing the Efficiency of Energy Consumption

In 2014, SCG made a total of 3.4 Billion baht in investments to increase the efficiency of energy consumption, and was able to reduce energy expenses by 560 Million Baht per Year.

- Installation of the pre-grinding system for the cement mill of the Siam Cement (Kaeng Khoi) Co., Ltd. This system reduces the electricity consumption of the cement mill by 13 Gigawatts-hours per Year, which is equivalent to a reduction in greenhouse gas emissions of 6,500 Ton per Year.

- Efficiency enhancement of boiler (PB18) at the Siam Kraft Industry Co., Ltd. This results in a decrease of more than 50,000 tons in coal usage per year, which is equivalent to a reduction in greenhouse gas emissions of 120,000 Tons per Year.

- Energy conservation in office buildings. In 2014, SCG was certified for having high energy efficient building to save more than 32% of energy consumption. SCG 100th Year Building was awarded with Platinum certification for the Leadership in Energy and Environmental Design (LEED), which is the highest certification from the U.S. Green Building Council (USGBC).

Increasing the Proportion of Alternative Energy Usage and Changing Energy Types

In 2014, SCG made investments to increase proportion of alternative energy to 12.5%, accounting to 21 Petajoules per Year, which is equivalent to a reduction in greenhouse gas emissions of 1.6 Million Ton per Year.

- Modification of cement kiln and Chloride Bypass System in order to use various types of the alternative fuels produced from industrial and municipal wastes without impacting the

environment. The cement plants were able to switch to using alternative fuel by 900,000 Gigajoule which is equivalent to a reduction in greenhouse gas emissions of 75,000 Tons per Year.

- Adopting gasification technology into the building material factory to increase utilization of biomass fuel and alternative fuel for steam generation.

Launching Greenhouse Gas Reduction Products and Services

- Propylene products reduce greenhouse gas emissions from the production processes by at least 100 Kilogram per Ton of propylene.

- Low density polyethylene plastics with recycled waste heat could reduce steam energy consumption by at least 50%.

- 'Hybrid Cement, Tra Chang' is a new cement type of Portland Composite Cement where the formula has been developed and improved with preserving the environment in mind. It can reduce energy in the combustion process, use less natural resources, and reduce greenhouse gas emissions by at least 70 Kilogram per Ton of cement.

- The emisspro®, high emissivity coating technology for furnaces in petrochemical plants and ceramic tile factories to increase the efficiency of heat transfer by re-radiation process, this technology reduces the consumption of natural gas by 2-6 %, which is equivalent to 100,000 tons of greenhouse gas emissions per year.

Employees and Contractors' Capacity Building

- SCG Energy Awards is a contest that supports energy conservation and the reduction of greenhouse gas emissions. Its purpose is to encourage awareness and provide knowledge for associates to continue gaining knowledge as SCG grows.

- SCG Energy Forum offers opportunities to exchange ideas and knowledge within the organization to improve energy conservation practices.

- Encouraging energy conservation in the office building.

Energy and Climate Change Strategy

Creating energy security
To secure energy supply with appropriate cost

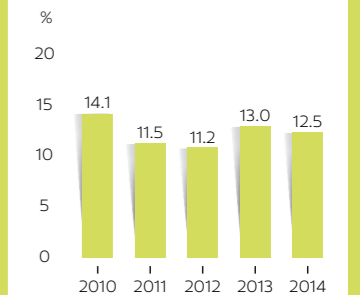
Enhancing efficiency of energy consumption
Must-have for energy conservation and GHG emissions reduction

Increasing usage of less greenhouse gas-energy
To develop innovations and technology to enhance capability of using alternative fuels and reduce production cost

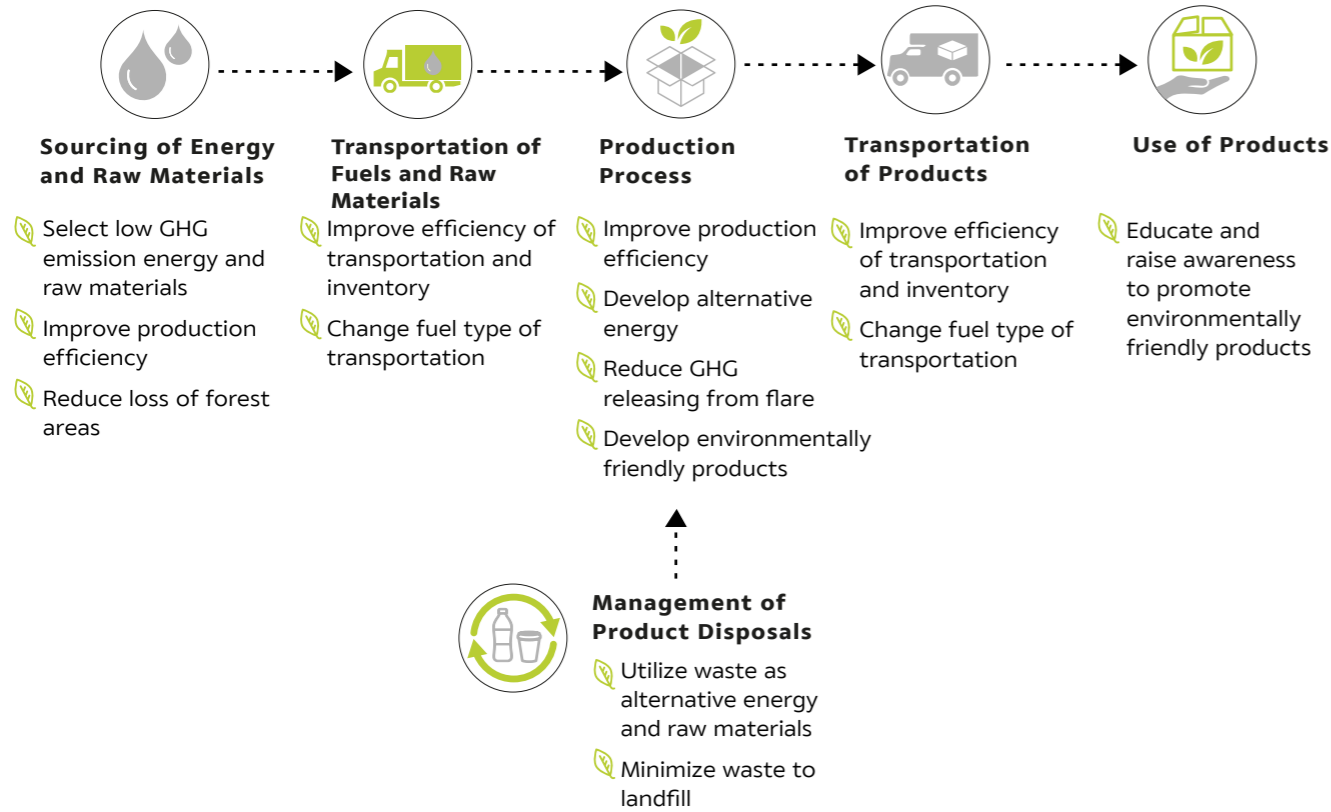
Developing greenhouse gas reduction products and services
Customer engagement through HVA and SCG eco value products and services

Employees and contractors' capacity building
To raise awareness and level up capacity to serve business expansion.

Proportion of Alternative Energy



Energy Conservation and Greenhouse Gas (GHG) Reduction throughout Value Chain



SCG is the first organization in Thailand to disclose energy consumption and greenhouse gas emissions performance data for both Scope 1 and 2 annually. The company 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.

SCG aims to reduce energy and greenhouse gas emissions throughout the value chain. **Starting from sourcing for energy and raw material resources**, the processes use less energy and release less greenhouse gases. Energy and raw material resources must be environmentally-friendly. For example, a mining system in a semi-open cut method, and quarry rehabilitation according to WBCSD-CSI guidelines and the creation of sustainable forests which has increased forest areas by more than

25,000 Rais. **In the fuels and raw materials transportation processes**, SCG developed an integrated logistics system by using a multimodal system to achieve a more efficient transportation. The backhaul system helps in reducing the number of empty trips, whereas the global positioning system reduces the distance and number of transportation trips. All of these procedures can help to reduce the greenhouse gas emissions by at least 13,000 Ton per Year. **In the production processes**, SCG implemented state-of-the-art technology to increase production efficiency, reduce energy consumption, increase the use of alternative fuels releasing less greenhouse gases, and reduce greenhouse gas releasing from combustion of hydrocarbon vent gas during shutdown and startup process by recycle hydrocarbon gas into the process, which reduced greenhouse gas emission by 3,800 Ton per Year. **In the end-product transportation processes**, SCG can respond

Increase cohesive and adhesive, increase smooth of surface, promote compressive strength, reduce porous

Reduce CO₂ emission

Environmentally friendly

Reduce energy consumption in combustion process

By more than 1.4 million tons of 'Hybrid Cement, Tra Chang' sold in 2014, 100,000 tons of carbon dioxide were reduced.

to customers' needs along with providing environmental friendliness with the same quality as used in transporting fuels and raw materials for the production processes. **In the process of product usage**, SCG encourages and educates the end users to obtain knowledge on environmental friendliness. In turn, this provides benefits for consumers by reducing energy consumption, decreasing expenses while contributing to climate change issues for society as a whole. **In the disposal material management processes**, SCG manages to recycle disposal materials in the production processes, such as using paper produced from recycled materials. SCG also minimizes waste to landfill by recycling waste into process as alternative energy and raw materials. This can reduce greenhouse gas emissions, especially methane, which is the gas that has 25 times global warming potential of carbon dioxide.

Expansion of Energy Management and Climate Change Knowledge outside of the Organization

SCG realizes that sustainable development is beneficial for society as a whole. For this reason, SCG in conjunction with other organizations from both the public and private sectors commits to expand the benefits to others for success on industrial and national levels. Furthermore, SCG introduces this collaborative model to the ASEAN.

- Industry groups in the same area
SCG initiates a pilot program for collaboration with other industries located in the same area to exchange knowledge and share ideas of their energy

conservation and greenhouse gas reduction practices. Some of the examples include the Community Partnership Association in Map Ta Phut, Rayong; Cement Partnership Initiative in the Saraburi Province; and Community Partnership Project in Nakhonlounng District, Phra Nakhon Si Ayuthaya.

- Suppliers
Suppliers are stakeholders to whom SCG realizes their importance and aims to share our expertise to provide the knowledge required to achieve higher standards in production processes, energy management, and pollution control as well as greenhouse gas reduction.

- Customers
Since most of SCG's customers are business to business (B2B) customers, SCG introduces several tools, such as Quality Function Deployment (QFD), Conjoint Analysis, Failure Mode and Effect Analysis (FMEA) to search in-depth for our customers' requirements. As the result, energy consumption and greenhouse gas emissions can be reduced when the customers use SCG's products in further production processes.

- Communities
SCG is proud to create advantages for the public, especially for the communities that are still in need of a better standard of living. SCG keeps seeking of opportunities and responding to communities' needs. The examples of these projects include using communities' waste (RDF) as a source of fuel for the kilns in the cement factory and small hydro-power generation in the Conserving Water for Tomorrow project.

“The leadership will only be meaningful when it can provide knowledge to help others. We are proud to be one of a few organizations that other organizations can trust. They can see our capacity, especially in ‘SCG People’. We are one of the wheels that drive the action on energy and climate change issues at national and global levels

Somchai Wangwattanapanich | Chairman
SCG Energy Committee

“Reduction of greenhouse gas emission is an important issue which everyone must be ready to respond and involve. It is right for SCG to make investment on greenhouse gas reduction today since all costs including environmental cost will increase in the future. SCG volunteers to become a piloting corporate for TGO projects such as CDM, carbon footprint for organization and product, showing its status of being the leading corporate which is ready to work in collaboration with TGO and other organizations to drive Thailand toward the target of greenhouse gas reduction.



Prasertsuk Charmormmarn
Executive Director
Thailand Greenhouse Gas Management Organization
(Public Organization)