M10

Sustainable Resource Management

Recycled Waste

94%

“For the utmost utilization of resources, SCG emphasizes that wastes should be well managed at its sources and reused/recycled as much as possible. Apart from the investment on efficiency improvement, it is required the cooperation from both internal and external relevant parties in order to innovate to add value to the wastes in terms of cost reduction and environmentally friendly aspects as well as to share know-how to our stakeholders.”

Suttipong Poomsrisa-ard

Chairman
Waste Management Committee

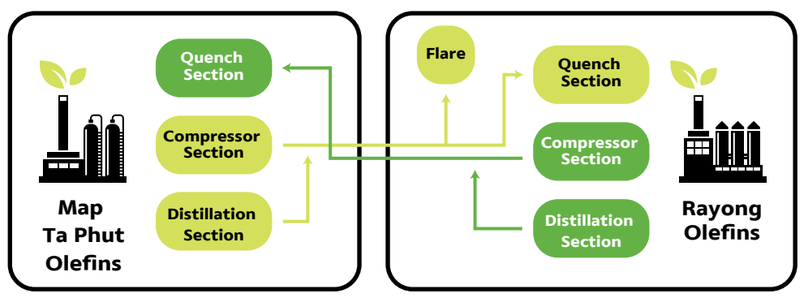
At present, SCG continuous to expand it’s investment in domestic and in ASEAN to respond to increasing customers’ needs. This expansion creates a trend that more natural resources are used as raw materials. Due to increasing of raw material scarcity and their price fluctuations, a shortage of raw materials may occur if there is no effective management plan. This will cause an impact on production and service costs or even business interruption. Furthermore, if the expansion results in additional waste, it will result in higher costs of waste management. Simultaneously, if there is no appropriate waste management, the environment and society will be affected in various ways.

SCG strives to drive sustainable business growth by managing natural resource management services to ensure that all natural resources will be utilized to their maximum capacity and waste will also be minimized to the minimum. In order to achieve this, SCG follows the 3R principles (reduce, reuse/recycle and replenish) as below.

1. Increasing production efficiency to maximize the potential of raw materials,
2. Using alternative raw materials and renewable raw materials,
3. Managing waste by reusing or recycling to create its maximum value,
4. Encouraging customers to consume environmentally-friendly products and services.

Increasing Production Efficiency to Maximize the Potential of Raw Materials

The Olefin plants of SCG Chemicals have launched a hydrocarbon exchange project by installing a system to take hydrocarbon waste back from burning away at flares during suspending or starting operations, passing through its production process (Flare Gas Recovery) as an alternative fuel. This approach is able to reduce hydrocarbon waste by 450 tons each cycle, which is equivalent to a reduction of carbondioxide emissions of 2,800 tons each cycle.



Using Alternative Raw Materials and Renewable Raw Materials

Due to the increasing in sand prices, some areas encounter a severe sand shortage. This shortage results in higher expenses for both purchasing and transportation sand from other areas. Corporate technology development-materials in conjunction with the Raw Material function, The Concrete Products and Aggregate Co., Ltd. (CPAC) carried out a research study to use limestone dust, a by-product from the stone production industry instead of natural sand. This approach could reduce the amount of natural sand used in ready-mixed concrete production processes at CPAC by approximately 50% to 70%.

The innovation of Bio-PET is another good alternative for the environment. It changes an admixture for Polyethylene Terephthalate (PET) production to the use of renewable materials from agricultural wastes, such as molasses, rice straws and bagasse. These alternative agricultural materials replace between 5% and 30% of the petroleum-based raw materials. The products made from the alternative agricultural materials attain the same property as those of normal PET in terms of being lightweight, strong, versatile and safe for consumers.

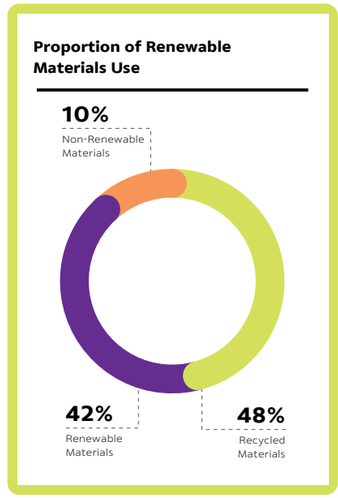
In order to support the sustainable usage of the renewable raw materials, SCG places importance on the wellbeing of farmers by creating stable incomes for them. SCG Paper initiated a cultivation support project with the slogan of ‘low investment, easy grow and selling all year round’ in order to encourage the growing of eucalyptus plantation. In addition to developing more than 10 new varieties of eucalyptus to be suitable to each location, the plant also produces higher yield, and requires no pesticide (pest-free). The farmers can grow eucalyptus along the edge of their rice fields or canal-sides. The plants themselves can be used in the production of paper, wooden pallets, and construction materials as well as other lumber products. In this way, the farmers can create higher incomes, offer alternative resources and protect the national forest areas.

Managing Waste by Reusing or Recycling to Create its Maximum Value

SCG’s waste management becomes another important index that reflects the effectiveness of the environment-related performance of SCG. Waste management helps reduce risks from incorrectly managed waste, which can have impacts on the environment, stakeholders and affect the image of SCG in the long term.

In order to create a effective management plan, SCG appointed a Waste Management Committee to operate and manage industrial waste. The committee is composed of representatives from all business units of SCG along with researchers, who are responsible for establishing goals as well as supporting and encouraging waste management operations. The committee will ensure the efficient management of wastes within SCG, and provide value-added benefits by research and development both internally as well as externally of SCG.

The SCG Waste Management Committee holds a workshop to train and provide knowledge for employees in waste management procedures annually. The workshop also provides opportunities for companies to collaborate in exchanging information, reviewing goals and establishing policies about waste management for SCG.



Learning Centers, Organic Waste Management by Earthworms

Given the target of avoiding landfill or achieving Zero Waste to Landfill, in 2013 SCG was able to accomplish its goals for non-hazardous wastes. In 2014, the company again reached its target for hazardous wastes by using the findings from research to develop techniques for reusing/recycling wastes within SCG. The examples of the techniques include:

Insulation Waste Management Project: This project is characterized by the procedure which uses extremely high temperatures in cement production to disintegrate and neutralize the deteriorated insulators. After the process, the insulators will become the initial raw materials, such as SiO_2, Al_2O_3, CaO and MgO that can be used in cement production. As the ultimate result, SCG was able to reach its target of Zero Waste to Landfill and also add value to the industrial wastes.

In addition to reusing the waste to achieve the highest benefits, SCG conducted research that created further development. The research resulted in the creation of programs of waste exchange among companies in order to maximize their value, including:

Innovation from the collaboration between SCG Chemicals and SCG Paper that facilitated the transfer of untreated wastewater in order to extract mixed salt. This mixed salt can replace up to 4 tons of sodium sulfate salt in SCG Paper during the paper bleaching process. By means of this alternative salt, the company could also utilize the salt to effectively digest wood pieces in the Kraft pulp production.

Learning Centers, Organic Waste Management by Earthworms: The establishment of the learning center at RIL Industrial Estate, Rayong Province by SCG Chemicals plays a major role in the research and study of earthworm farming in order to use dung for fertilizer. All surrounding communities can apply this knowledge for their own benefit and create additional income for their families. SCG provides full support in terms of knowledge as well as providing consulting teams to assist communities in this matter. This is an innovation that can help in terms of taking care of the environment, adding value to the waste, and creating additional income for the communities.

In 2014, SCG achieved the use of recycled materials by 94% with no hazardous waste sent to landfill. Due to lime mud increased from expanding the production and an efficiency problem of lime kilns occurred in paper business, approximately 4.6% of the non-hazardous wastes were still sent to landfill. With commitment to our goals, SCG has invested to increase capacity to turn lime mud into reusable materials along with researching and developing for further utilization.

Encouraging Customers to Consume Environmentally friendly Products and Services

SCG encourages our customers and other stakeholders to realize the importance of the environment. The Company recognizes that a healthy environment can improve people's quality of life and increase the Company's competitive advantages. For this reason, SCG has been encouraging this approach through developing environmentally-friendly products and services. The 'SCG eco value' is used as a measurement standard to certify that products and services are produced by means of environmentally-friendly processes (Eco Process), or are environmentally-friendly products (Eco Use). These environmentally-friendly products and services are of better property than other products, no matter whether in terms of design, production, packaging, transportation or performance. Examples of such products include:

COTTO Floor Tiles: Eco Touch and Eco Rockrete contain tile particles that are waste from other production process, which blend up to 60% of the total raw materials.

Landscape Decoration Paving Blocks: Cool Plus contains light weight concrete block particles with Cool Plus technology that are waste from construction, which blend up to 10% of the total raw materials.

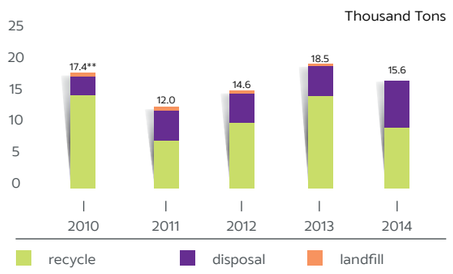
"At the Product and Technology Development Center, SCG Paper, we have researched and developed on the environmental management including water, air and process wastes. The 3R principle facilitates our utilization of resources and contributes production efficiency, for example, the use of chemical substance at least amount for environmentally friendly purpose, the reuse of sludge, lime mud and dreg for the production of organic fertilizer, the modification of lime mud to be used as additives in production of paper in cement and building materials industries, and the reuse of wastewater from pulp processing. All of these are examples of technology implementations for sustainable environmental management and treatment."

Dr. Pongsuda Pongtanya

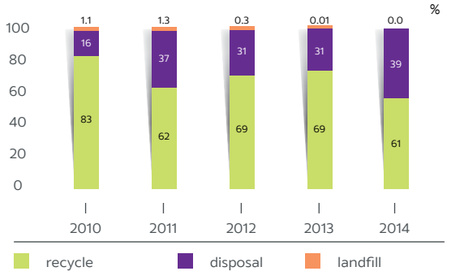
Director
Product and Technology Development Center, SCG Paper

Hazardous Waste

Manageable Amount*



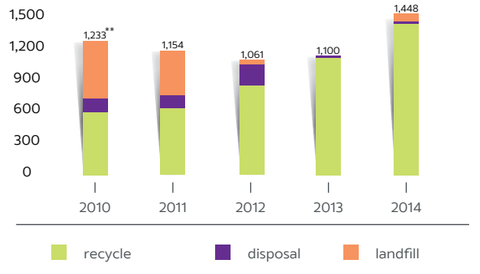
Proportion of Management



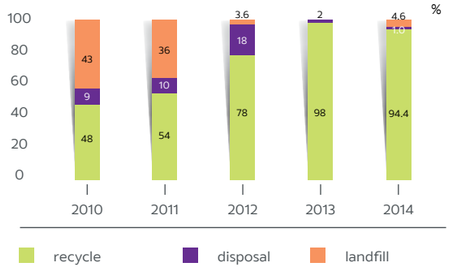
*Waste in the storage waiting for waste management is excluded. ** SCG Paper has revised data form "as dry basis" to "as received basis" since 2010

Non-Hazardous Waste

Manageable Amount*



Proportion of Management



*Waste in the storage waiting for waste management is excluded. ** SCG Paper has revised data form "as dry basis" to "as received basis" since 2010