Environmental Stewardship

Biodiversity and Ecosystems

The conservation of biodiversity and ecosystems is a key sustainability goal for SCGP, emphasizing the achievement of "Net Positive Impact" (NPI), "No Net Loss" (NNL), and "No Gross Deforestation" across all company operations in alignment with the Sustainable Development Goals. In its commitment to the Nature Positive approach, SCGP aims to halt and reverse biodiversity loss by 2030 using a 2020 baseline, with a goal of full recovery by 2050. To facilitate effective implementation, SCGP aligns its efforts with the guidelines established by the Taskforce on Nature-related Financial Disclosures (TNFD). Its parent company, SCG, is registered as an Early Adopter of TNFD. Consequently, SCGP will include nature-related financial disclosures as part of its corporate reporting for the financial year 2024 alongside SCG. Furthermore, SCGP is dedicated to the continuous conservation of forests and biodiversity through sustainable forest management, adhering to the **Forest Stewardship Council™ (FSC™) standards.** The company also focuses on forest carbon sinks according to Thailand's greenhouse gas emission reduction standards, all in pursuit of a "Nature Positive" impact.

Targets	Performance in 2024
Biodiversity and Ecosystems	
• Biodiversity conservation certified by FSC™ standards, at least 10% of certified area	**10.6%** (**5,351** rai)
• No Gross Deforestation	**No Gross Deforestation**
Air Quality Management	
• Reduce dust emissions intensity (per ton of production) by 10% by 2030, compared with the base year of 2020	**16.7%**
• No official odor complaint	**4** cases
Water Management	
• Reduce water withdrawal by 35% by 2025, compared with Business As Usual (BAU) at the base year of 2014	**27.3%**
• Reduce water withdrawal intensity (per ton of production) by 10% by 2030, compared with the base year of 2022	**3.12%**

Strategies

- Implementing sustainable biodiversity management practices by utilizing international metrics and positioning SCGP as a model for biodiversity conservation with initiatives that can be expanded to additional areas.
- Engaging communities and stakeholders to enhance their understanding of biodiversity conservation and the participatory utilization of community forests based on community forest principles.

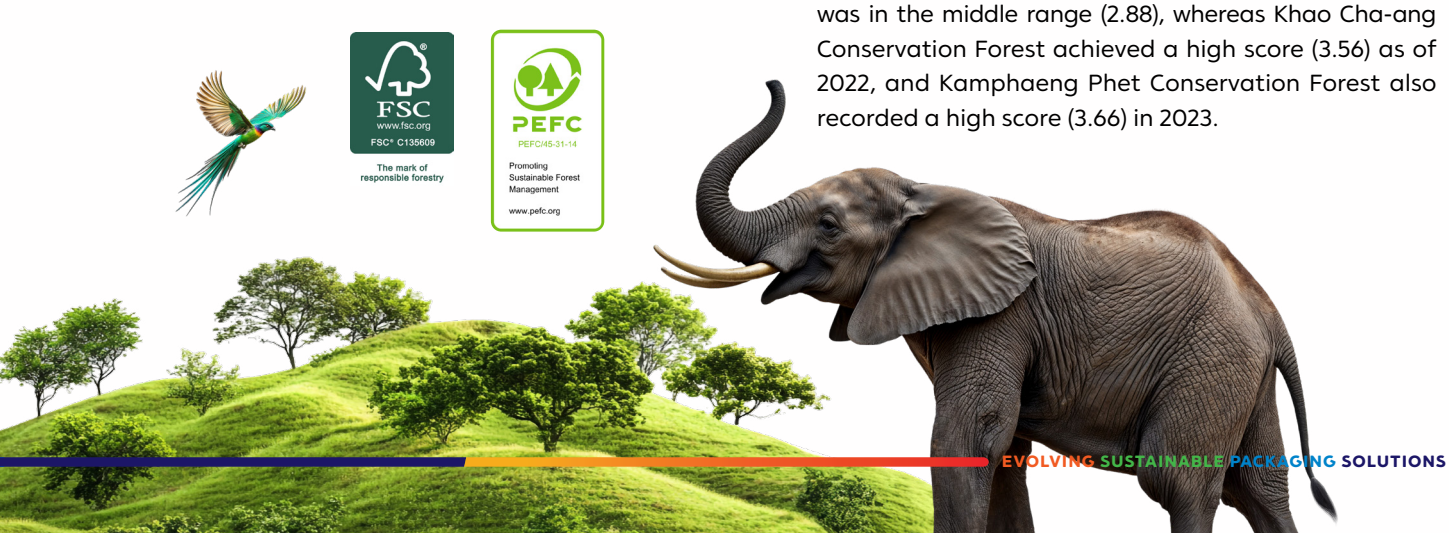
Management Practices

- **FSC™ Management Committee:** Establishing policies, objectives, and targets for sustainable forest management, in alignment with FSC™ standards.
- **Generation of Net Positive Impact (NPI):** Aiming to create positive impacts on biodiversity in every operational stage using a Nature Positive with the goal of halting nature loss and rehabilitating rehabilitating its the environment by 2030, using 2020 as the base year, and achieving full recovery in 2050.
- **Nature Positive Committee:** Supporting the Nature Positive target by forming the Nature Positive Committee in 2024 and assigning it to collaborate with the ESG Committee.
- **Collaborative Ecosystem Conservation:** Encouraging participation of communities and organizations in ecological conservation.
- **Forest Expansion for Carbon Sinks:** Expanding forest areas in accordance with Thailand Voluntary Emission Reduction (T-VER) standards to enhance biodiversity and increase carbon sinks.

- No Gross Deforestation was achieved in line with the SCGP's goal, thereby enhancing biodiversity and expanding conservation areas and carbon sinks to support greenhouse gas emission reduction targets.
- In 2024, a total of 50,399 rai of land under SCGP's management received certification based on FSC™ standards. Out of this total, 31,807 rai consisted of SCGP's economic forests, while 18,592 rai belonged to SCGP's farmer members. These efforts support SCGP's commitment to "Net Positive Impact" and "No Gross Deforestation,"
- In 2024 SCGP allocated 10.6% of its FSC™-certified land, totaling 5,351 rai, for biodiversity conservation areas. Of these conservation areas, 3,257 rai are owned by SCGP, while 2,094 rai are managed by farmer members.
- SCGP successfully obtained FSC™ certification for an additional 11,372 rai of its economic forests in 2024 compared to previous year.
- SCGP sourced pulp and wood from responsible suppliers who are 100% certified under FSC™-CW/COC, and FSC-C133879.
- All wood harvested from SCGP's economic forest is 100% certified according to the FSC™-FM/COC and FSC-C012207 standards.
- SCGP's operation received 100% certification under FSC™-FM (SLIMF), FSC-C105470.
- In 2024, SCGP sourced a total of 2.50 million tons of wood in an environmentally responsible manner ensuring that its operations had no adverse impact on biodiversity-rich areas or ecologically significant systems at both the national and global levels.
- SCGP collaborates with experts and local communities to continuously survey and research biodiversity and ecosystem conservation. SCGP has employed the CERT+ geological-information program and Satellite x AI technology to assess carbon capture, calculate the volume of carbon absorbed by trees, and monitor forest conditions for effective output management. These practices have been certified by the Thailand Greenhouse Gas Management Organization (Public Organization) - TGO, which contributes to the development of sustainable standards and initiatives.
- SCGP utilized an E-plantation system for data collection in economic forest management. This system helps to assesses risks, calculates costs, and monitors economic forests development. E-plantation provides SCGP with access to historical data, allowing for effective analysis of forest management.
- SCGP has successfully developed "new hybrid eucalyptus varieties for sustainability" through a controlled pollination program that combines pollens from different eucalyptus species with advanced biomolecular techniques for precise DNA-level selection. To ensure the genetic stability tissue cultures specific growth formulas were employed each variety with identity of the plants confirmed via DNA analysis. These new hybrid eucalyptus varieties are fast-growing and exhibit resistance to both drought and pests. Moreover, the new hybrid eucalyptus varieties developed by SCGP provide a 40% higher yield compared to the original strains. This achievement earned SCGP the Best Innovative Company Awards at the SET Awards 2024, advancing sustainable value throughout the value chain.
- Fest by SCGP has joined the Program for the Endorsement of Forest Certification (PEFC) to promote sustainable forest management. In Thailand, this initiative is supported by the certifying Thailand Forest Certification Council (TFCC), which operates under the Institute of Agro-Based Industries (IAI) within the Federation of Thai Industries (FTI). Both TFCC and IAI are recognized as National Governing Bodies (NGB) by PEFC International based on internationally recognized sustainable forest standards, similar to FSC™.

Biodiversity Surveys in Biodiversity Conservation Areas

SCGP conducted biodiversity surveys to assess plant and wildlife species in one community forest and two conserved forests. The sites survey included the Baan Huay Saphan Samakkee Community Forest and Khao Cha-ang Conservation Forest in Kanchanaburi, as well as the Kamphaeng Phet Conservation Forest in Kamphaeng Phet. The surveys employed the Shannon-Wiener Index to estimate flora and fauna diversity. Findings indicate that in 2021, Baan Huay Saphan Samakkee Community Forest was in the middle range (2.88), whereas Khao Cha-ang Conservation Forest achieved a high score (3.56) as of 2022, and Kamphaeng Phet Conservation Forest also recorded a high score (3.66) in 2023.



Research Collaborations for Biodiversity Conservation

SCGP collaborated with various partners and organizations in support of biodiversity:

- **FSC™ - Forest Stewardship Council™:** The council conducts examinations and evaluations of target operations and outcomes to assess compliance with FSC™ standards. It also works with local communities to monitor operations and identifying measures to mitigate operational risks, with the aims of maintaining FSC™-FM certifications for SCGP's economic forests.
- **Forestry Research Center of Kasetsart University's Faculty of Forestry:** This research center carries out surveys and long-term research on biodiversity, ecosystem, and biodiversity management.
- **Thai Forest Ecological Research Network of Kasetsart University's Faculty of Forestry:** This research network monitors and reports findings from studies on long-term forest conservation, biodiversity, and ecosystem conservation, while also providing expert advice.
- **Forest Resource Management Office of the Royal Forest Department:** This bureau undertakes activities aimed at conserving natural resources in target areas.

Air Quality Management

SCGP is committing to reducing air pollutants and odors at their sources through effective management of production processes, ensuring the protection of employee health, surrounding communities, and the environment. The management strategy incorporates advanced technologies to ensure compliance with both national and international regulatory standards. SCGP is dedicated to providing communities with good air quality and an enhanced quality of life.

Strategies

- Establishing air pollution emission targets aligned with global standards for comparable industries while ensuring compliance with legal requirements.
- Utilizing state-of-the-art technologies to optimize air pollutant and odor management, which includes initiatives to regulate emissions, control pollutants at their sources, and consistently monitor air quality.
- Engaging communities and stakeholders regularly discusses and initiatives related to air pollution management.

Management Practices

SCGP implemented various technologies and measures to minimize air pollutant emissions from its manufacturing processes, including:

- **Air Treatment Technology:** Employing effective air pollutant control technologies such as filtration systems, biochemical treatment processes, and measurements that comply with specified standards.
- **Monitoring and Control:** Continuously monitoring air quality within factories and surrounding areas using machine learning technology capable of measure particulate matter (PM) and other health-impacting pollutants that impact health.
- **Development and Training:** Educating employees on pollution control and the effective of use new technologies to ensure they work with safety and environmental responsibility.

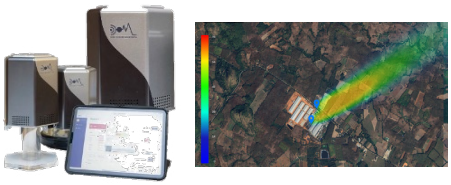
Odor Control

SCGP places significant importance on odor control, as odors from manufacturing operations may impact communities and the health of those exposed. To effectively control odors, SCGP implements the following measures:

- **Odor Control Technology:** Utilizing a modern wet scrubber system to effectively eliminate unpleasant odors from the production process.
- **Odor Detection and Assessment:** Regularly analyzing and monitoring odor levels within factories and surrounding areas to ensure compliance with legal limits of emitted odors.
- **Production Process Improvement:** Improving manufacturing efficiency to reduce direct emissions of odors and air pollutants.

Expansion of the Detect Odor & Monitoring (DOM) System

- SCGP has developed an AI-powered Detect Odor & Monitoring (DOM) system, a comprehensive technology designed to measure and track odors with high precision. This innovation earned the 2020 Innovation Award in the Product and Service Design category and has been continuously refined through machine learning. For of its excellence, the DOM system earned SCGP the SET Awards 2023 in the Business Excellence category for Best Innovative Company. Furthermore, as of 2024, SCGP has successfully implemented DOM technology across 28 facilities in Thailand and 4 facilities in Vietnam.



Detect Odor & Monitoring (DOM) system – a comprehensive odor detection and monitoring technology.

- SCGP has consistently improved its AI models to enhance the DOM system's efficiency and accuracy in odor identification, targeting a 90% accuracy rate.
- SCGP has collaborated with various industries including Thailand's rubber industry and Vietnam's petrochemical industry in expanding DOM to more than 40 customers outside SCG Group.
- In 2024 the DOM system received certification based on European Union's CE Marking standards for safety and health.
- SCGP plans to enhance its odor control initiatives by leveraging data from the DOM system for community odor management. This collaboration aims to reduce odors at their sources and conduct various odor surveys to improve AI-driven cooperation for greater efficiency. Additionally, it seeks to minimize the use of chemicals in odor control, thereby promoting a more sustainable approach.
- The DOM system is capable of identifying odors by type and displaying real-time data, including intensity, via dashboards to facilitate efficient response to odor related issues. The DOM settings can be configured to align with the odors typically associated with each factory type, making it adaptable for various types of industrial plants. As a result, SCGP's implementation of the DOM system within to the industrial sector benefits beneficial both operators and surrounding community.

Measures to Reduce the Impact of PM2.5 Dust Particles

- **Within Factories**
  Enhance air pollution control efficiency by inspecting and upgrading machinery such as Dust Collectors and Electrostatic Precipitators (ESP), to improve air emission quality. Increase the frequency of air emission monitoring and implement dust reduction measures across the value chain. Ensure transparency by publicly disclosing air quality monitoring results. Additionally, monitor transportation trucks to ensure they are properly sealed and clean prior to leaving the factory.
- **Community Collaboration**
  Support the collection and distribution of sugarcane leaves from farmers for use as biomass fuel, thereby reducing open-air burning. Promote the reuse of agricultural waste to create value-added materials in production.
- **Employee and Partner Health Monitoring**
  Monitor air quality in workplace environments to assess risks and implement protective measures for employees and business partners. Encourage the use of personal protective equipment (PPE) and provide health check-ups in high-risk areas. Foster a culture of workplace safety and well-being to mitigate PM2.5 exposure.

Compliance with Laws and Standards

SCGP is committed to adhering to national and international standards, regarding air and odor pollution.

- **Compliance with Thai laws:** Thailand's environmental laws govern air and odor pollution control, imposing restrictions on the release of air pollutants, including dust, SOx, and NOx, as well as odors resulting from manufacturing operations
- **Compliance with International Standards:** SCGP maintain air quality in accordance with international standards, such as ISO 14001 which pertains to environmental management systems.

Audit and Reporting

SCGP conducts regular audits and reports on air and odor pollution to ensure compliance with environmental standards. The processes include:

- **Internal Audit:** The Odor Pollution Management Committee at SCGP is responsible for ensuring compliance with relevant laws and standards.
- **Reporting to Stakeholders:** Results from air and odor pollution monitoring are transparently reported to stakeholders, including customers, local communities and relevant authorities.
- **Legally-Required Reporting:** Compliance with air and odor pollution-related laws is communicated to the appropriate authorities.

Community Engagement

SCGP recognizes the importance of collaborating with neighboring communities in the prevention or reduction of air and odor pollution by:

- Meetings with Communities: Organizing activities to engage with communities by sharing information about the company's air pollutants and odors, while actively listen to the opinions and concerns of the communities.
- Collaborative Projects: Supporting community involvement in environmental initiatives aimed at reducing air and odor pollution, such as plantation for better air quality.
- Emergency Response Plan (ERP): If an incident that may exacerbate air and odor pollution occurs, SCGP will take actions based on its emergency response plan which has already been prepared to handle the situation and minimize impacts on communities.

Water Management

Water is essential to SCGP's business operations. Given the risks posed by droughts and floods to its manufacturing processes, SCGP has implemented an integrated water management system. This system includes monitoring water conditions in collaboration with external agencies, and utilizing technology to assess water-related risks. It adhere to the 3Rs principles (Reduce, Reuse, Recycle) and incorporate ecological rehabilitation efforts for water sources.

SCGP is committed to achieving comprehensive and sustainable water management, to reduce environmental impacts and support ecosystems and local communities, the company employed efficient strategies and technologies to manage water resources effectively.

Strategies

- Integrate water management practices to mitigate water-related risks.
- Optimize water usage efficiency in production processes and products.
- Treat effluent to meet quality standards, investigate incidents, identify causes, and minimize water discharge.
- Recycle treated wastewater to conserve valuable water resources.
- Restore and support water ecosystems, while promoting sustainable water use in agricultural communities.
- Develop employee expertise in water management to enhance integration and efficiency.

Management Practices

- **Water-Usage Reduction based on 3Rs (Reduce, Reuse, Recycle):** SCGP applies the 3Rs to its water management approach by focusing on reducing water within consumption, reusing and recycling water in its manufacturing processes. This strategy helps decrease dependence on external water sources and improve overall water efficiency.
- **Integrated Water Management:** SCGP has established a Water Management Committee tasked with developing and implementing strategies for water risk management to enhance water efficiency in production processes and products.
- **Oversight and Monitoring:** SCGP closely monitors its water efficiency through key performance indicators (KPIs), with senior executives actively overseeing and participating in the process. This ensures establishment of appropriate water usage targets and effective governance of water consumption each year.
- **Wastewater Treatment and Recycling:** SCGP adheres to stringent wastewater treatment standards, employing advanced technology to ensure that the quality of treated wastewater meets prescribes criteria and is suitable for reuse in production processes. This, approach helps reduce reliance on external water sources.
- **Water Risks:** SCGP utilized advanced tools such as WRI AQUEDUCT, satellite images and Early Warning System (EWS) to assess water-related risks including such as water shortages, floods, and droughts.
- **Community Engagement:** SCGP is dedicated to rehabilitating the ecosystems of water sources and providing water supplies for local communities and agricultural needs.

Water Usage Reduction

SCGP invests in new technologies to minimize water consumption and enhance water efficiency based on the principles of the 3Rs (Reduce, Reuse, Recycle).

- SCGP has designed and installed a heat exchanger system to recycle wastewater from pulp-making machines. The system utilize excess heat from the production process to increase the temperature of the wastewater, allowing the treated water take reused as hot water in the pulp washing process. This initiative reduces water consumption in the pulp production process by 0.22 million cubic meters per year.
- SCGP has implemented pumps to direct excess water from the pulp transportation process via pipelines to the paper production plant for reuse, successfully reducing its water consumption by 0.55 million cubic meters annually.
- To facilitate water recycling, SCGP employs SaveAll and PETAX filtration system for water used in production processes.

Technology to reduce water consumption and enhance efficiency based on the 3R principles.

Returning Water to Nature

- SCGP treats wastewater in accordance with applicable standards to ensure water discharged from its facilities returns to nature without harming water sources.
- In 2024, SCGP sponsored the construction of 1,263 check dams, bringing the total number of check dams built with its support to 4,662. Phoenix Pulp & Paper Public Company Limited contributed to this initiative by supporting the construction of over 100 check dams, which includes backing the "Soil Cement Trench Weirs" project, in Khon Kaen. This initiative involved creating small semi-permanent weirs in the Nam Phong and Ubol Ratana districts of Khon Kaen to facilitate water retention for agricultural use. In 2024, the project successfully constructed four weirs.

SCGP supports the construction of a cement check-dam in Khon Kaen Province, 2024.

Water Risk Reduction

- SCGP employs an Early Warning System (EWS) to enhance its water risk management efforts. By integrating satellites imagery and data from WRI Aqueduct, the Geo-Informatics and Space Technology Development Agency (GISTDA), the Royal Irrigation Department, the Meteorological Department and the Pollution Control Department through Power BI, the system provides a dashboard for real-time monitoring of water conditions. It can analyze rainfall, temperature, and water quality, while also issue early warnings for flood or drought. Beyond supporting SCGP's water risk management, this system also plays a crucial role in fostering collaborations with communities and government agencies for efficient preparedness regarding water risks, promoting sustainable use of water resources usage, and mitigation on risks faced by both businesses and communities in accordance with the United Nations Office for Disaster Risk Reduction (UNDRR) and SENDAI Framework.

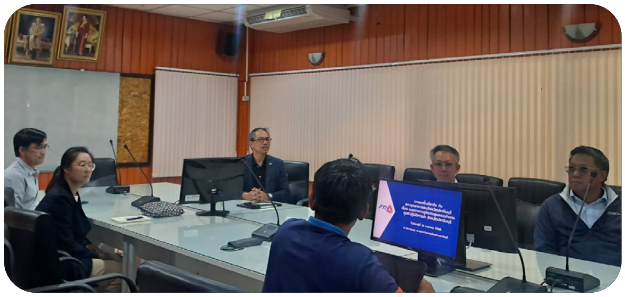
Building Collaborations on Water Management

SCGP prioritizes collaborations with both public and private sectors to develop of water management plans and assess water risks that may impact its manufacturing operations. In 2024, the company participated in the following projects:

- **Industrial-Sector Water Management Efficiency Enhancement for Mae Klong River Basin Project**
  - Thai Cane Paper Public Company Limited (Kanchanaburi) has participated in the Industrial-Sector Water Management Efficiency Enhancement for Mae Klong River Basin Project, initiated by the Federation of Thai Industries' Water and Environment Institute for Sustainability. The plant aims to serve as a model factory, in striving for the common objective of reducing the industrial sector and increasing its water efficiency by 15%. The first phase of the project run from May to December 2024. SCGP has contributed its knowledge in 3R-based water management, exchanging them with work panels and other participating industrial operators.

Thai Cane Paper Public Company Limited (Kanchanaburi) joined the Industrial-Sector Water Management Efficiency Enhancement for Mae Klong River Basin Project, 2024.

  - SCGP is an active member of water user organizations in river basins where its business operations are located, supporting efforts in water management, as well as the maintenance, rehabilitation, and sustainable conservation of water resources. SCGP's membership activities include participation in the Tha Chin River Basin through four companies, the Mae Klong River Basin through six companies, the Bang Pakong River Basin through two companies, the Eastern Seaboard River Basin through two companies, and the Chi River Basin through four companies. Additionally, SCGP is representative on the Mae Klong River Basin Committee and the Bang Pakong River Basin Committee foster drive integrated, efficient, and sustainable water management.

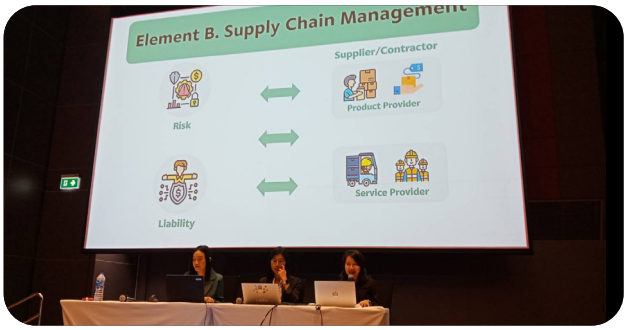


SCGP participates in water management initiatives within the Tha Chin, Mae Klong, and Bang Pakong River Basins, 2024.

International Standard Certification and Environmental Performance Assessment

SCGP is dedicated to complying with both national and international regulations, laws, and standards to effectively manage environmental conservation issues, including the mitigation of impacts from greenhouse gases, waste, water pollution, air pollution, and odors. With this commitment, SCGP promotes water, energy, and resource efficiency, as well as biodiversity. To ensure robust environmental quality and safety management and guidelines are well in place, SCGP has obtained certifications for its factories under international standards such as the Environmental Management System (ISO 14001).

Additionally, SCGP has implemented the Environmental Performance Assessment Program (EPAP), which features an internal assessment component. This assessment framework was developed in collaboration with ERM Thailand, a reputable international environmental sustainability consulting firm. The framework covers five main components: governance, supply chain management, operation, product & service and stakeholder management & communication. In 2024, SCGP conducted EPAP self-declaration assessments for 32 of its companies in Thailand, representing 100% of its Thailand-based companies required to report on environmental management. SCGP also plans to extend the assessment to cover its overseas subsidiaries.



SCGP has implemented the Environmental Performance Assessment Program (EPAP), 2024.