



FROM FOREST TO FUTURE

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VANACHAI GROUP'S ENDURING COMMITMENT TO FOREST CONSERVATION AND ENVIRONMENTAL STEWARDSHIP

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From **FOREST**
to **FUTURE**

FROM FOREST TO FUTURE: A LEGACY ROOTED IN SUSTAINABILITY

Like the growth rings of a tree that record the journey through seasons of challenges and opportunities, the path of Vanachai Group reflects both resilience in adaptation and a deep-rooted commitment to sustainability. Each ring symbolizes transformation, of a tree that grows with firm roots and of an industry intrinsically connected to nature.

For decades, Vanachai has led the way in sustainable wood-based panel solutions, not only by producing wood panels from natural materials but by reshaping the industry through the innovative use of leftover biomass such as branches, firewood, and wood residues to create high-quality panels. This approach adds value to waste, reduces carbon emissions, and generates carbon credits, contributing meaningfully to the fight against climate change which intensifies each year.

Vanachai believes in a future where industry and the environment grow together. With a clear vision, the company is committed to reducing carbon emissions across its entire value chain and advancing the circular economy, with the goal of achieving carbon neutrality by 2050 and net zero greenhouse gas emissions by 2055. Every innovation is designed to support sustainability for both industry and the planet.

Like a tree growing steadily over time, Vanachai remains firmly rooted in its mission to conserve forests, use resources responsibly, and develop solutions that are built to last. The future is not shaped by wood alone but must grow in alignment with sustainability.



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[Table of Contents](#)[Introduction](#)[Forest](#)[Future](#)[Together](#)[Appendix](#)A close-up photograph of a person's hand gently touching a tree trunk covered in vibrant green moss. The background is a soft-focus forest scene.

Committed to Forest Conservation and Environmental Stewardship

Over 80 Years of Vanachai's
Sustainable Legacy

ABOUT THIS REPORT

Report Background

Vanachai Group has prepared this Sustainability Report to disclose its sustainability performance for the year 2024. This marks the second year of reporting, covering the period from January 1 to December 31, 2024. The report reflects the company's commitment to transparency in disclosing key information related to sustainable development. It covers performance in environmental, social, and governance (ESG) aspects, which are integrated with the company's economic performance. Additionally, the report includes information on human rights, recognized as a fundamental foundation for responsible and sustainable business operations.

The report follows the Global Reporting Initiative (GRI) Standards 2021 and integrates the United Nations Sustainable Development Goals (SDGs) into the company's strategy and operations, demonstrating Vanachai's dedication to contributing to sustainable global development. The company also emphasizes stakeholder engagement and responds to the needs and expectations of various stakeholder groups. Furthermore, climate-related disclosures are aligned with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

Report Scope

The scope of this report is defined based on business relevance, data availability, and the significance of impacts on the company's performance. It focuses on the company's core business: the manufacturing of wood-based panels as alternatives to natural wood. The operational data presented in this report includes both the parent company and its subsidiaries, as outlined in the accompanying table. The coverage of this report represents 100% of the consolidated revenue of the company and its subsidiaries. For 2024, the reporting scope has been expanded from the previous year (2023) to ensure full operational coverage.

Scope Table for Sustainability Reporting Based on Material Topics

Company / Subsidiaries	Shareholding Percentage	Revenue Contribution (%)	Environmental Pillar	Social Pillar					Governance Pillar				
				Equity and Inclusion	Occupational Health & Safety	Customer Satisfaction	Employee Development	Community Development	Business Ethics	Innovation	Supply Chain Management	Product & Service Responsibility	Sustainable Value Chain
Vanachai Group Public Company Limited	99.99%	35	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Particle Planner Company Limited	99.99%	2	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Vanachai Panel Industries Company Limited	99.99%	58	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Vanachai Chemical Industries Co., Ltd.	99.99%	-	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Woodtek International Company Limited	99.97%	-	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
PV Wood Company Limited	50.00%	4	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Vanachai Energy Industries Company Limited	99.99%	-	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Vanachai Woodsmith Company Limited	99.99%	1	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Vanachai Logistics Company Limited	99.99%	-	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Vanachai Logistics Enterprise Company Limited	99.52%	-	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Total		100%											

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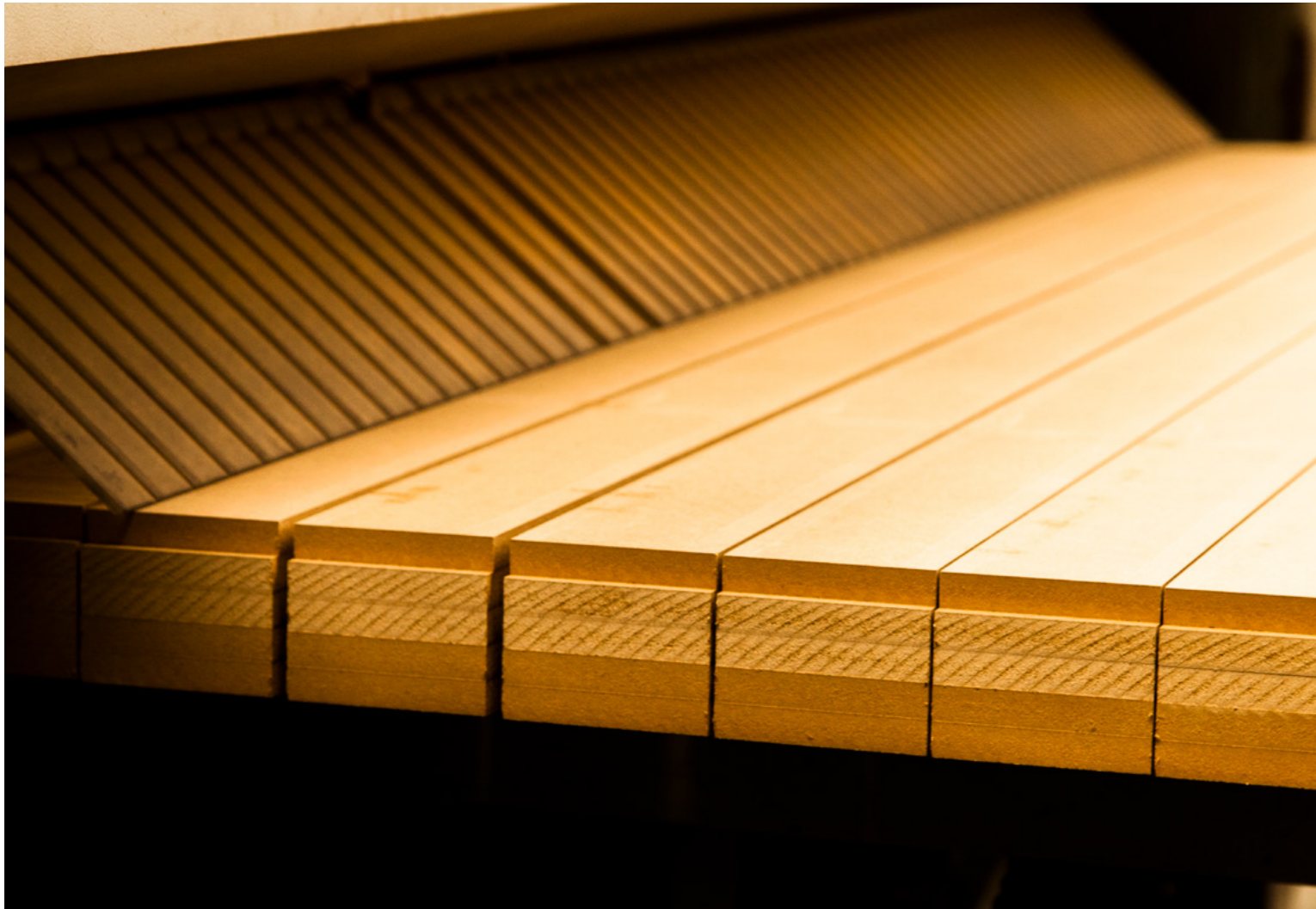
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The scope of this report has been determined based on business relevance, data availability, and the impact on the Company's performance, with a focus on its core business of manufacturing wood-based panels as substitutes for natural wood.



Revisions and Updates from the 2023 Report

In this 2024 report, the Company has revised and updated certain data previously disclosed in the 2023 report. These changes aim to enhance data accuracy and align with Vanachai's continuously evolving sustainability goals. Notably, the Company engaged a certified greenhouse gas consultant to validate both project-level (T-VER) and corporate-level (CFO) GHG emissions. The assessment process follows ISO 14065:2020 and ISO/IEC 17029:2019 standards, and covers both Scope 1 and Scope 2 emissions. This process resulted in adjustments to previously reported figures. These updates are essential to enable the Company to set realistic and effective plans toward achieving Carbon Neutrality by 2050 and Net Zero emissions by 2055.

Furthermore, the Company has adopted the Science Based Targets initiative (SBTi) framework to guide its long-term GHG emissions reduction strategy. This adoption necessitated revisions to its targets to ensure alignment with climate science and global stakeholder expectations. As such, figures reported in 2023 have been updated, and the revised data will serve as the baseline for target setting and performance tracking in subsequent years.

Looking forward, the scope of future reports will continue to be determined by the materiality of business relevance, data readiness, and the operational impact within Vanachai's primary business of producing alternative wood-based panels.

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Report Assurance and Validation

This report follows the GRI Sustainability Reporting Standards 2021, aiming to create value for both internal and external stakeholders. Vanachai emphasizes accurate data collection to identify gaps between operations and stakeholder expectations across the value chain.

Now in its second year, the report undergoes internal review and validation by the Sustainability Committee and senior accounting and finance officers, ensuring data accuracy and reliability before publication. To strengthen credibility and transparency, the Company plans to engage an independent external assurance provider in future reports, focusing on key topics such as GHG emissions and material sustainability issues.

Economic performance data aligns with the audited Annual Report. Risk disclosures follow the COSO Enterprise Risk Management (ERM) framework established by the Committee of Sponsoring Organizations of the Treadway Commission.

Material topics were assessed using the Double Materiality approach, considering both external environmental and social impacts and internal effects on enterprise value. The methodology aligns with GRI 3: Material Topics 2021 and the draft ESRS G1 standards by the EFRAG Sustainability Reporting Board. The 2023 assessment, approved by the Board of Directors, remains the basis for 2024, with no new topics added.

Sustainability Management

Vanachai Group has embedded sustainability into its core business strategy to ensure responsible operations, long-term growth, and balance across economic, environmental, social, and governance aspects.

For over 80 years, the Company has upheld its mission to preserve forests as a foundation for sustainable living. This commitment informs its sustainability strategy, guided by material issues that impact business performance.

Comprehensive risk assessments are conducted across the value chain, with mitigation plans developed to manage ESG-related risks. Sustainability is integrated into business planning and decision-making, fostering a culture of proactive and resilient operations.



CONTACT INFORMATION

For further inquiries or suggestions regarding this report, please contact:

Vanachai Group Public Company Limited
 2/1 Wongsawang Road, Wongsawang Subdistrict
 Bangsue District, Bangkok 10800, Thailand
Tel: +66 2 913 2180-9, +66 2 585 4900-3
Fax: +66 2 587 9556, +66 2 587 0516
Email: vanachai@vanachai.com

MESSAGE FROM THE CHAIRMAN



Throughout its history, Vanachai Group Public Company Limited has remained firmly committed to advancing sustainability, which lies at the heart of every business operation. Guided by the core philosophy that “Vanachai equals victory in forest conservation,” this belief serves as both a guiding principle and a corporate identity. The Company recognizes that amid intensifying global economic, social, environmental, and geopolitical challenges, its responsibilities extend beyond business growth to include the protection of natural resources, especially forests, for the benefit of future generations.

Over the past year, Vanachai made tangible progress in its sustainability agenda. In addition to the existing Risk Management and Corporate Governance Committee and the Nomination and Remuneration Committee, the Company established a dedicated Sustainability Committee to reinforce its governance framework. This enhancement enables agile and strategic decision-making, strengthens the Company’s ability to navigate uncertainties, and supports the pursuit of long-term sustainable growth. Under its action plan initiated in 2023, Vanachai aims to reduce greenhouse gas emissions by more than 27 percent by 2030, achieve carbon neutrality by 2050, and reach net zero emissions by 2055.

To support these ambitions, the Company continues to increase the use of renewable energy sources such as biomass and solar power, optimize material usage, and implement low-carbon innovations across its production processes. These efforts are driven by Vanachai’s enduring pledge to **maximize resource efficiency**, a principle that remains central to its operations. Every fiber of wood, every drop of water, and every unit of energy is utilized with care and intention. This resource-conscious

approach supports both environmental protection and the long-term resilience of the business.

The Company’s commitment to sustainability extends beyond environmental stewardship to include its people. Vanachai prioritizes community well-being, human rights, workplace safety, and employee development. Its business practices are built on integrity, transparency, and adherence to good corporate governance. To reinforce its ethical commitments, Vanachai has joined the Thai Private Sector Collective Action Coalition Against Corruption (CAC).

Although the global economy in 2025 is expected to remain uncertain and challenging, I am confident that through the collaboration of our Board of Directors, management team, and employees, Vanachai will continue to grow with strength, resilience, and innovation. The Company is well-positioned to lead the industry in the development of sustainable, environmentally friendly wood-based panel solutions that deliver meaningful and lasting value to all stakeholders.

On behalf of the Board of Directors, I would like to express my sincere appreciation to all shareholders, customers, partners, and allies for your continued trust and support. Vanachai will continue to move forward with stability, determination, and a deep-rooted commitment to growing alongside the forests we strive to preserve.

Mr. Sompop Sahawat
Chairman

MESSAGE FROM THE MANAGING DIRECTOR

The year 2024 has been another testament to the strength of both the industry and our organization, especially as the global business landscape faces growing challenges. From geopolitical uncertainties and fluctuating input costs to the escalating impacts of climate change, Vanachai Group Public Company Limited continues to deliver strong performance. This resilience is driven by our unwavering commitment, adaptability, and clear strategic vision guided by our core objective: Preserving the future of forests together.

At Vanachai, we believe that sustainability is not merely a goal or obligation. It is the foundation of our corporate strategy and the driving force behind long-term growth. This belief is embedded in every step of our value chain through the strategic framework of FOREST-FUTURE-TOGETHER, which positions environmental, social, and governance principles at the heart of our development model.

Over the past year, the Company launched a capacity expansion plan to increase MDF production by 40 percent by 2026, reinforcing our leadership in the MDF industry. Alongside this, we continued enhancing production and sales operations with intelligent technology to respond efficiently to market demands. These actions are aligned with our ambition to operate with high energy efficiency and minimal environmental impact. We have advanced our use of biomass energy and solar power, with a combined installed capacity of 16.45 megawatts peak. These measures are integral to achieving carbon neutrality by 2050 and our ultimate target of net zero greenhouse gas emissions by 2055.

To improve organizational efficiency, the Company also impleoverseeing and monitoring progress in line with the

Vanachai Sustainable Move framework. This framework outlines seven key principles:

- Conserving natural forests • Advancing renewable energy
- minimizing waste • Driving innovation across business
- Social, and environmental domains • Managing air and water emissions • Contributing to local community development and value creation • Maintaining strong business ethic.

Vanachai is committed to transforming our pledges into real outcomes. We have increased the share of environmentally friendly product sales, promoted the use of wood residues within communities to support sustainable product development, and created stable income opportunities for local farmers. On the risk management front, the Company has deployed currency hedging tools and optimized pricing strategies to maintain profit stability in the face of global market volatility. As we look ahead to 2025, Vanachai is prepared to move forward with prudence and confidence. With the combined efforts of our employees, Board of Directors, and business partners, every investment and action we take will be geared toward delivering maximum benefit for all stakeholders. We remain steadfast in our mission to generate sustainable value for our business, the environment, and the communities surrounding our operations.

I would like to sincerely thank our shareholders, customers, partners, and all stakeholders for your continued trust and support. I reaffirm our commitment to carry forward the Vanachai philosophy, which stands for victory in forest conservation, and to pass on a better, more sustainable world to the next generation.

Mr. Wanthana Jaroennawat
Managing Director

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BUSINESS OVERVIEW OF VANACHAI GROUP PUBLIC COMPANY LIMITED

COMPANY INFORMATION

Company name:	Vanachai Group Public Company Limited
Type of business:	MDF Board, Particleboard, Doorskin, Laminated Board Laminated Flooring, for local and export sales
Company Registration No.:	0107537002621
Head office:	2/1 Wongsawang Road, Bangsue, Bangkok10800
Tel:	02 585 4900-3, 02 913 2180-9
Fax:	02 587 9556, 02 587 0516
Website:	http://www.vanachai.com
Email	vanachai@vanachai.com
Registered capital:	1,735,237,480 Baht
Paid-up capital:	1,735,237,480 Baht
Types and Value of share:	Ordinary shares at a par value of 1.00 baht per share
Factory - Chonburi:	22/1 Banbung - Neimok Road, Banbung, Chonburi
Tel:	+66 38 297322-30
Fax.:	+66 38 297334
Factory - Saraburi:	112 Kangkoi Industrial Estate, Moo 1, Tambon Ban-That, Kangkoi, Saraburi
Tel:	+66 36 245644

VISION AND MISSION



VISION

To be a leader in the alternative wood panel products industry, Recognizing the value of resources and creating sustainable value.



MISSION

- **To strive for global excellence** in producing high-quality products using technology and innovation that precisely meet customer needs with efficiency.
- **The business operates in accordance with ESG principles,** focusing on environmental care, social responsibility.
- **Transparent corporate governance** and enhancing the quality of life for employees to drive the organization toward a sustainable future.

VANACHAI “Victory in Forest Conservation”

Awareness of nature and the environment is vital in modern business. It reflects true commitment to addressing environmental issues. Today, environmental conservation is a global concern, and every sector has a role to play. For Vanachai, this is not new. We have chosen a path that respects nature and society for decades, always looking forward.

Vanachai’s philosophy in wood manufacturing begins with forest preservation. From the start, this principle has shaped our systematic and eco-friendly operations. We are driven by two core goals:

- 1) Providing leadership in the wood substitute board industry
- 2) Providing Leadership in Forest Conservation

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BUSINESS OVERVIEW OF VANACHAI GROUP PUBLIC COMPANY LIMITED

As a leader in Thailand’s wood-based panel industry and a pioneer in forest conservation, Vanachai Group stands as proof that industrial growth can go hand in hand with environmental responsibility.

Our name, Vanachai, meaning “Victory in Forest Conservation,” reflects our business vision and instills pride among shareholders and employees alike. We are committed to operating efficiently, delivering maximum value to customers, and promoting an industry that is environmentally responsible. For Vanachai, good governance is more than compliance, it is a principle we strictly uphold. Choosing Vanachai means choosing both quality and environmental stewardship. We also prioritize our people, continuously supporting skill development and career growth, as they are the heart of our success.

Business Strategy

Vanachai focuses on delivering mid to high-end product quality while adding value to core offerings, such as laminate flooring and surface-finished wood panels. In terms of cost efficiency, the Company aligns production capacity in each line with actual market demand, which is a key strength that allows Vanachai to maintain higher output than its competitors. Cost and raw material management remain central to operations.

The Company maximizes material efficiency by incorporating wood residues and non-usable raw materials into the process, helping reduce production costs. For example, certain waste materials are converted into electricity for internal use. Solar rooftop systems have also been installed to further reduce energy costs. At the same time, machinery upgrades have been carried out to improve productivity and reduce cost per unit.

The Company continuously updates its management systems to enhance work efficiency and employee development. Product innovation and business expansion are driven by ongoing market research, ensuring that initiatives align with economic conditions. Vanachai aims to maintain its leadership in sustainable wood-based panel manufacturing. Marketing efforts are focused on smart distribution across target markets, seeking new opportunities while managing customer portfolios in line with production capacity. Every product sold not only meets customer expectations but also contributes to preserving the natural environment.

Organizational Culture

Vanachai Group promotes a culture grounded in core values that include customer centricity, holistic sustainability, pursuit of excellence, and environmental innovation. These values are guided by the Forest Future Together strategy, which reflects the Company’s commitment to conserving natural resources, developing eco-friendly innovation, and working collaboratively toward a sustainable future.

This culture fosters pride, engagement, and inspiration among employees, while reinforcing stakeholder confidence in the Company’s transparency and accountability. By instilling these values at every level of the organization, Vanachai is shaping itself into a forward-thinking company of the future. It is a workplace of value and purpose, with a genuine commitment to making a positive impact on both society and the environment.

As at the end of the year 2024, the Company and its subsidiaries had 4 production factories including:

- Chonburi Factory** is located in Ban Bueng District, Chonburi Province, which produces MDF Board and Doorskin.
- Saraburi Factory** is located at Kaeng Khoi Industrial Estate, Saraburi Province, which produces MDF Board, Particleboard, Melamine Laminated on MDF Board, Melamine Laminated on Particleboard, and Laminated Flooring.
- Rayong Factory** is located at Map Ta Phut Industrial Estate which produces urea formaldehyde adhesive for selling to companies in the Group.

- Surat Thani Factory** is located in Wiang Sa District, Surat Thani Province, produces MDF Board, Particleboard, Oriented Strand Board (OSB), Melamine Laminated on MDF Board, and Melamine Laminated on Particleboard. There is a biomass power plants with a capacity 9.9 MW (Operated by Vanachai Energy Industries Company Limited - a subsidiary of the Company) to distribute electricity to Surat Thani Factory.

The total capacity of MDF Board, Particleboard, Doorskin, Laminated Flooring, and Oriented Strand Board (OSB) of the Company and its subsidiaries was 1,380,000 cubic meters per year, 840,000 cubic meters per year, 3.6 million sheets per year, 10.4 million square meters per year, and 210,000 cubic meters per year, respectively.

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VANACHAI GROUP CORE VALUES (C-H-A-I STANDS FOR VICTORY)



CUSTOMER CENTRIC

Customers are at the core and center of our business. The company places great importance on customer satisfaction and continuous product support, while also encouraging recommendations. This approach ensures that the company minimizes potential risks by continuously analyzing risks throughout the customer service process in a transparent manner, building and maintaining long-term customer relationships in a sustainable way.



HOLISTIC SUSTAINABILITY

We integrate sustainability and risk management across all aspects of our operations, from raw material sourcing to product distribution, ensuring a comprehensive approach to environmental responsibility and risk reduction. We adhere to regulations, maintain transparency, and uphold flexibility for long-term sustainability.



AIMING FOR EXCELLENCE

We are committed to excellence in all areas of our operations, from product quality to customer service. The company integrates risk management and sustainability practices into the operations of all teams. Through a strong team approach, the company sets high standards and continuously improves together to ensure that any potential risks are mitigated and prevented from recurring. All employees comply with regulations and strive for excellence, ensuring the sustainability of the business.



GREENER INNOVATION

By continuously creating innovative solutions and investing in environmentally friendly technologies and practices, the company integrates risk management into every aspect of the process. This fosters a culture of innovation with a comprehensive approach to risk analysis. This approach helps reduce environmental impact across product development, production, distribution, and services, ensuring that the company contributes to a greener and more sustainable future for generations to come.

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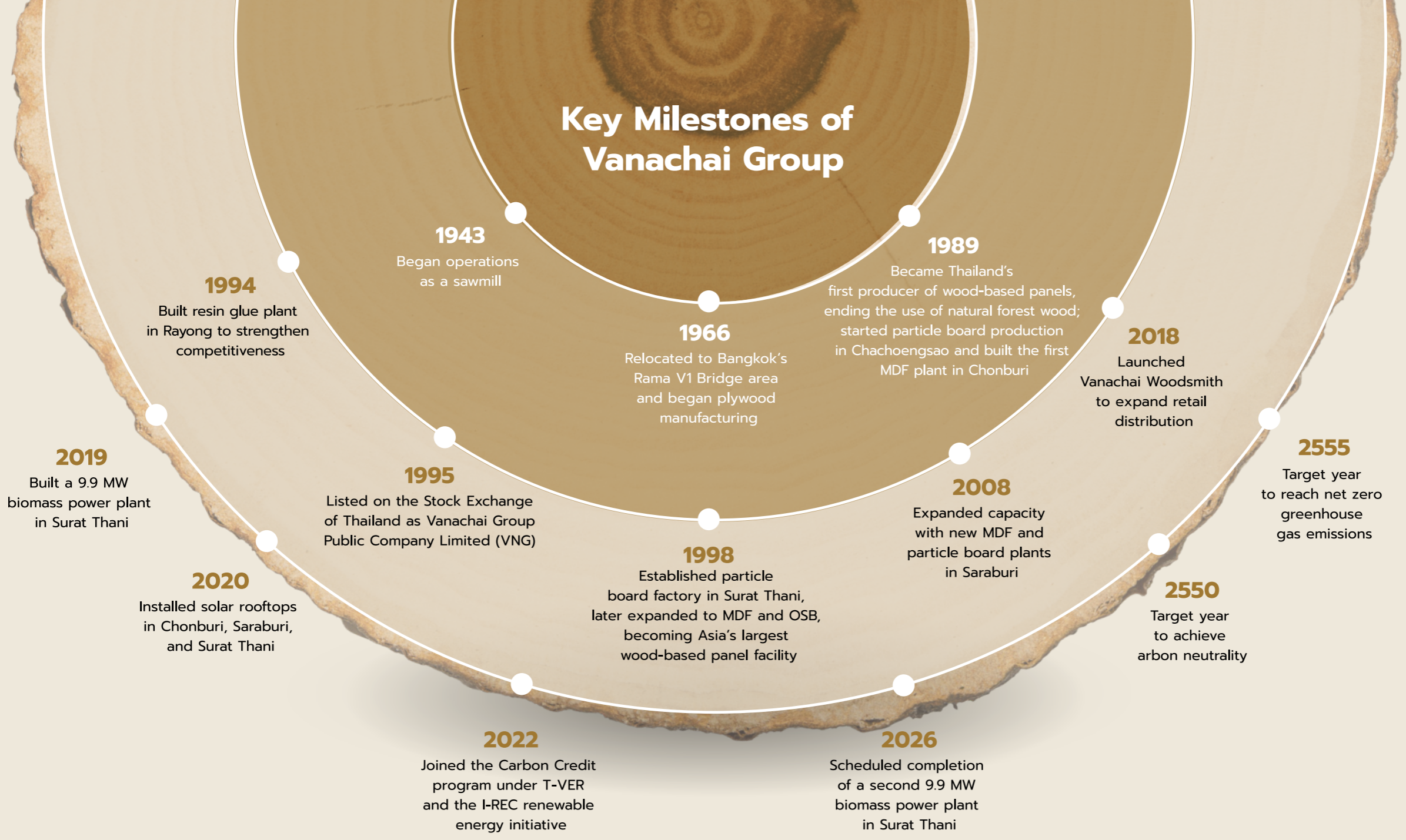
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Key Milestones of Vanachai Group



NATURE OF BUSINESS OPERATIONS

Vanachai Group Public Company Limited began as a sawmill producing processed hardwood, and has since evolved into one of Asia’s leading manufacturers of wood-based panels. The Company offers a range of wood-based panel products for construction and interior applications, emphasizing quality, durability, and versatility. All products are manufactured using advanced technology under international standards, with a strong commitment to environmental responsibility and long-term sustainability. Vanachai Group currently operates four manufacturing plants through the Company and its subsidiaries.

Saraburi

Annual Production Capacity.

MDF:	120,000 Cubic Meters.
Particle board:	360,000 Cubic Meters.
Melamine-faced panel:	8,573,000 Square Meters.
Laminate flooring:	6,000,000 Square Meters.
Impregnated paper:	59,500,000 Square Meters.

Surat Thani

Annual Production Capacity.

MDF:	1,170,000 Cubic Meters.
Particle board:	450,000 Cubic Meters.
Melamine-faced panel:	20,000,000 Square Meters.
OSB:	210,000 Square Meters.

Chonburi

Annual Production Capacity.

MDF:	226,100 Cubic Meters.
Door skin:	4,800,000 Sheets.

Rayong

Annual Production Capacity.

Formaldehyde-based resin:	175,500 Tons.
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VANACHAI GROUP PRODUCTS

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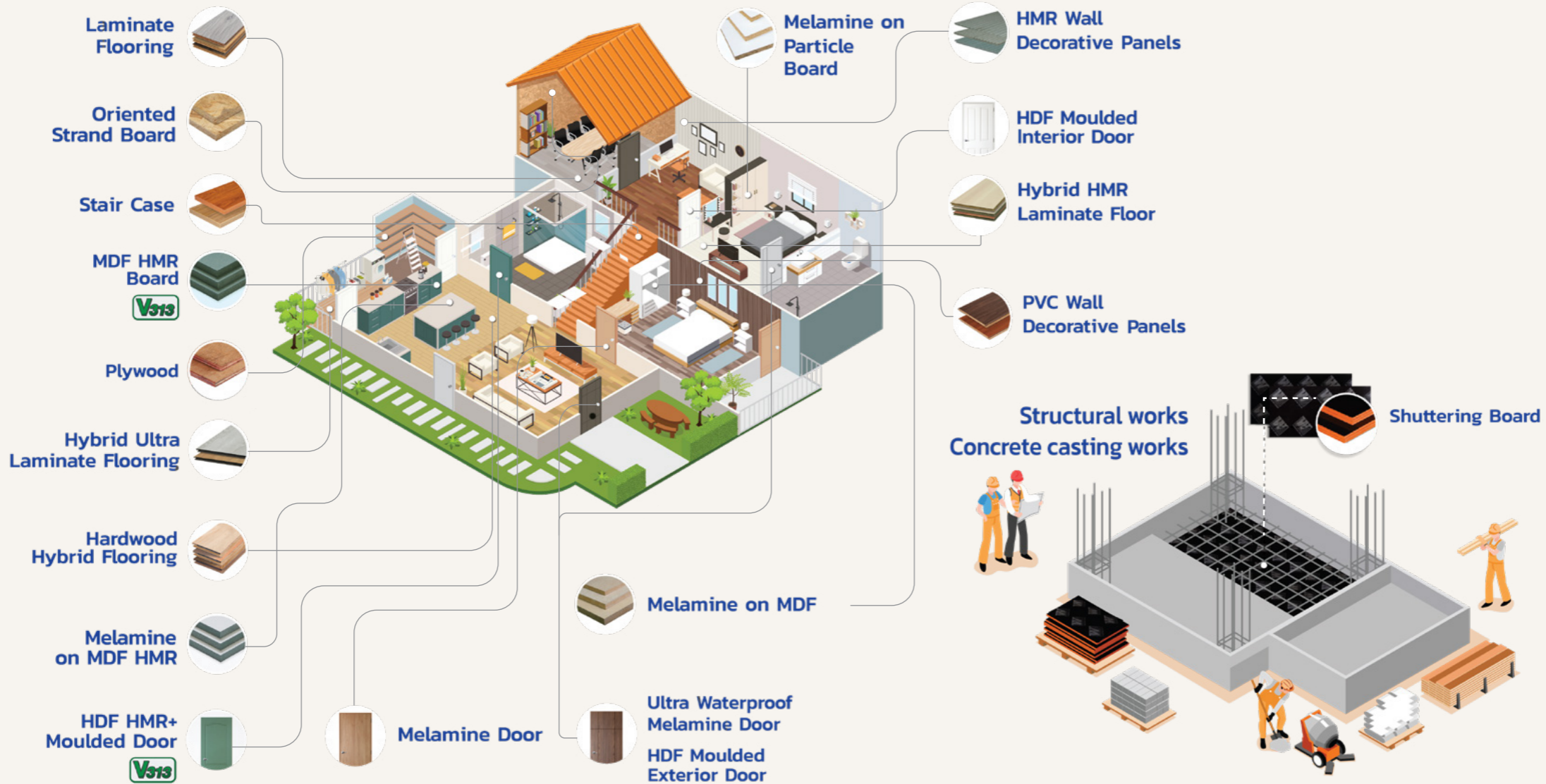
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2024 PERFORMANCE HIGHLIGHTS

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FOREST

BIOECONOMY

26 Million Trees

Use of wood-based panels in place of natural wood, equivalent to conserving no less than 70,400 hectares of natural forest annually.

100%

Biodiversity risk assessment conducted in all operational areas.

CIRCULAR ECONOMY

5.80%

Reduction in electricity consumption per unit of production, compared to the 2021 baseline.

10.95%

Increase in the share of renewable electricity and thermal energy used in production, compared to the 2021 baseline.

21.05%

Reduction in raw water consumption per ton of product (cubic meters per ton).



ZERO

Total waste volume sent to landfill.

SUSTAINABLE ECONOMY

42.90%

Reduction rate of nitrogen oxide (NO_x) emissions from biomass energy production processes.



16.47%

Reduction rate of Scope 1 and Scope 2 greenhouse gas emission intensity per production unit, compared to the 2021 baseline.

FUTURE

FUTURE OF A RESILIENT BUSINESS

100%

All employees receive training on the Company's Code of Conduct, with mandatory completion for all new hires.

3 New Countries

Expanded international market presence to China, Chile, and Guatemala, marking new markets entered in 2024.



Public declaration of commitment to the Thai Private Sector Collective Action Coalition Against Corruption (CAC).

FUTURE OF NEW MARKETS



97.4%

Customer satisfaction score on product quality.

97.0%

Customer satisfaction score on service performance.



1 New Products

ESG innovation project focused on durable, environmentally friendly materials and production processes.

FUTURE OF SUSTAINABLE BUSINESS PARTNERSHIPS

100%

Key suppliers signed the Supplier Code of Conduct to align on ethics, human rights, and environmental standards across the supply chain.

100%

Value chain activities assessed for sustainability-related risks and opportunities.

TOGETHER

TOGETHER, WE SAFEGUARD SOCIETY

98%

Customer satisfaction score after purchase and service experience.

1 New Products

Number of new products developed based on consumer insights and ESG-related trends.

TOGETHER, WE PRESERVE COMMUNITIES

85%

Community satisfaction with the Company's social responsibility initiatives.

1,590 Million Baht

Household income generated through the "Waste to Value" project by selling aged rubber trees no longer producing latex.

45 Hr./Person/Yr.

Average number of volunteer hours contributed by employees to community service.

TOGETHER, WE PROTECT OUR EMPLOYEES

97.01%

Employee engagement score reflecting organizational commitment.

23 Persons

Employment of vulnerable groups in compliance with legal hiring ratios.



6 Hr./Person/Yr.

Average training hours per employee focused on ESG principles and sustainable practices.

OUTSTANDING ENVIRONMENTAL GOVERNANCE AWARDS 2024

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Vanachai Group Public Company Limited (Saraburi)



Outstanding Environmental Governance Award 2024

Vanachai Chemical Industry Co., Ltd. (Rayong)



Environmental Governance and Safety Award for the 5th consecutive year



Green Industry Level 4 Award, 2024



Zero Accident Campaign 2024 Recognition

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SUSTAINABILITY MANAGEMENT



- *Vanachai Group's Business Value Chain*
- *Stakeholder Engagement*
- *Material Topics Assessment*

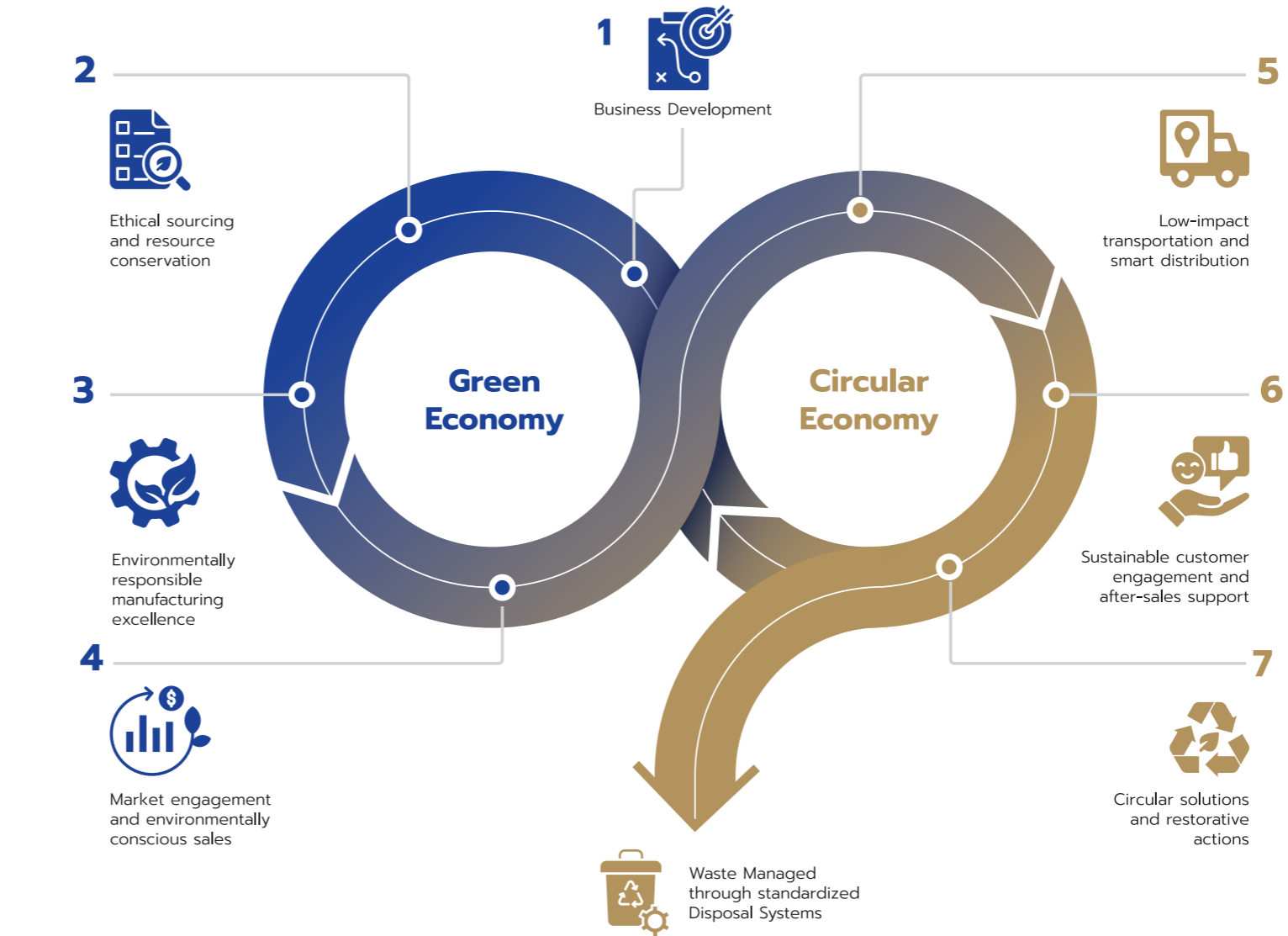
VANACHAI GROUP'S BUSINESS VALUE CHAIN

Vanachai Group is committed to driving sustainable growth by aligning its operations with all 17 Sustainable Development Goals (SDGs). This commitment extends across the entire value chain, from business foundation and product development based on customer and market needs to final delivery. The Company has clearly defined its value chain and identified material topics at each stage to ensure value creation, high-quality development, and inclusive stakeholder engagement. Further details on the materiality assessment process can be found in the section titled "Materiality Assessment and Stakeholder Engagement".

Sustainable Value Chain: Building the Future Together

Vanachai places great importance on creating shared value with all stakeholder groups by delivering high quality products that are truly customer centric. The Company adheres to principles of sustainable sourcing, responsible production, and conscious consumption throughout its value chain. Vanachai is committed to becoming a resource positive organization by reshaping operations and mindset holistically. The Company aims to sequester more carbon than it emits, integrating this approach into every step from raw material selection and low carbon manufacturing to environmentally friendly product distribution.

Sustainability is embedded as a core value in every stakeholder interaction and business partnership. The Company applies strict supplier selection criteria to promote sustainable sourcing, respect for human rights, and workforce development. Employee engagement is strengthened through continuous sustainability awareness and capacity building, enabling active contributions toward environmental and social goals. In parallel, Vanachai



fosters close collaboration with surrounding communities to create long-term value and generate positive social impact. With the understanding that business holds responsibility for the planet, customers, and partners, Vanachai operates under the principle of "co-creating sustainability" to ensure that every step forward leads to a better future for all.

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SUSTAINABILITY IMPACT ACROSS THE VALUE CHAIN

From designing environmentally and socially responsible products to sourcing leftover wood materials and managing post-production waste, Vanachai is committed to addressing significant sustainability impacts throughout the Company's value chain.

1 Strategic Sustainable Product Development

Vanachai prioritizes product development from the conceptual stage. Designs emphasize user safety and reduce reliance on harmful chemicals. Materials are used efficiently to minimize on-site waste and support cost savings. These practices reduce environmental impact while enhancing customer satisfaction and long-term value.



2 Ethical Sourcing and Resource Conservation

The Company uses reclaimed wood from the furniture industry: such as branches, bark, sawdust, and roots-achieving a reuse rate of over 95 percent. This reduces resource loss and promotes circular economy principles. Recycled paper cartons are used for flooring packaging. Responsible sourcing is further strengthened through collaboration with like minded suppliers and communities.



3 Environmentally Responsible Manufacturing

Across its four factories nationwide, Vanachai reduces production waste to under 5 percent by maximizing material reuse. Solar energy is used in manufacturing to lower greenhouse gas emissions. Water is fully recycled and reused, reducing environmental impact and promoting true sustainable production.



5 Low-Impact Transportation and Smart Distribution

Efficiency, safety, and environmental responsibility guide Vanachai's logistics strategy. A distribution center in Chonburi near Laem Chabang Port reduces transport distances and carbon emissions. The Company's GPS-monitored transport and All-in-One (SQL) system enable real-time tracking and integrated order-accounting workflows. TMS (Transportation Management System) supports route planning, vehicle safety, and maintenance for optimized, sustainable export logistics.



Community Engagement Within the Value Chain

Vanachai supports stakeholders across its value chain, with particular focus on nearby communities. The Company promotes shared growth through knowledge-sharing, the collection of valuable wood residues for resale, and joint safety initiatives between factories and communities. These efforts aim to generate positive social outcomes in line with the Company's sustainability strategy and values.

4 Environmentally Conscious Market Participation

Products are tailored to actual customer needs. Wood panel sizes are optimized for specific projects and furniture production to reduce site waste. Even for standard products, the Company analyzes core market preferences to offer efficient sizing that minimizes offcuts and supports sustainable use.



6 Sustainable Customer Engagement and After-Sales Support

Vanachai provides professional after-sales service with technical teams assisting contractors on-site. A customer support center (Hot Desk) and a Track & Trace system are in place to monitor and resolve issues quickly, building trust with both project developers and furniture manufacturers.



7 Circular Solutions and End-of-Life Product Recovery

The Company collaborates with business partners, including developers, to collect expired products such as laminate doors for recycling and reuse. This helps reduce disposal-related waste and promotes circular economy principles. Vanachai aims to build a product return and recovery system in partnership with key stakeholders.



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STAKEHOLDER ENGAGEMENT

Stakeholders play a vital role in sustainable development. Each group represents distinct interests, needs, and perspectives. Their involvement ensures that Vanachai’s initiatives do not result in negative social, environmental, or governance impacts.

Stakeholder engagement enhances collaboration, builds legitimacy, and encourages innovation. Ultimately, it contributes to long-term success by meeting stakeholder expectations, managing risks, and strengthening shared accountability.

Vanachai believes stakeholder engagement is fundamental to the sustainability journey. It reflects our commitment to building trust, promoting transparency, and fostering strong collaboration. These elements are key to achieving sustainable growth while conserving the environment. The Company recognizes stakeholders as instrumental in shaping business direction and strategic decision-making.

In this sustainability report, Vanachai identifies ten key stakeholder groups in 2023: employees, customers (distributors), consumers, shareholders and investors, business partners, creditors, local communities, regulators, government agencies, and competitors. The goal is to understand each group’s expectations, needs, and concerns clearly and consistently, allowing for effective alignment and shared progress.

Vanachai is committed to maintaining strong relationships with all stakeholders. The Company values inclusive engagement and incorporates feedback, both positive and critical into operational improvements. This approach supports continuous development, respects human rights, and ensures fairness and equality for all stakeholder groups. It is essential to building long-term confidence and trust.

***"STAKEHOLDERS:
DIVERSE PERSPECTIVES,
SHARED RESPONSIBILITY,
SUSTAINABLE SUCCESS"***

Vanachai uses the AA1000 Stakeholder Engagement Standards (AA1000SES) as a guiding framework to identify and manage stakeholder relationships across the business value chain. This includes analyzing stakeholder needs and expectations and assessing their relevance and priority based on their impact and influence on the Company’s operations.

STAKEHOLDER GROUPS FOR TARGETED ENGAGEMENT

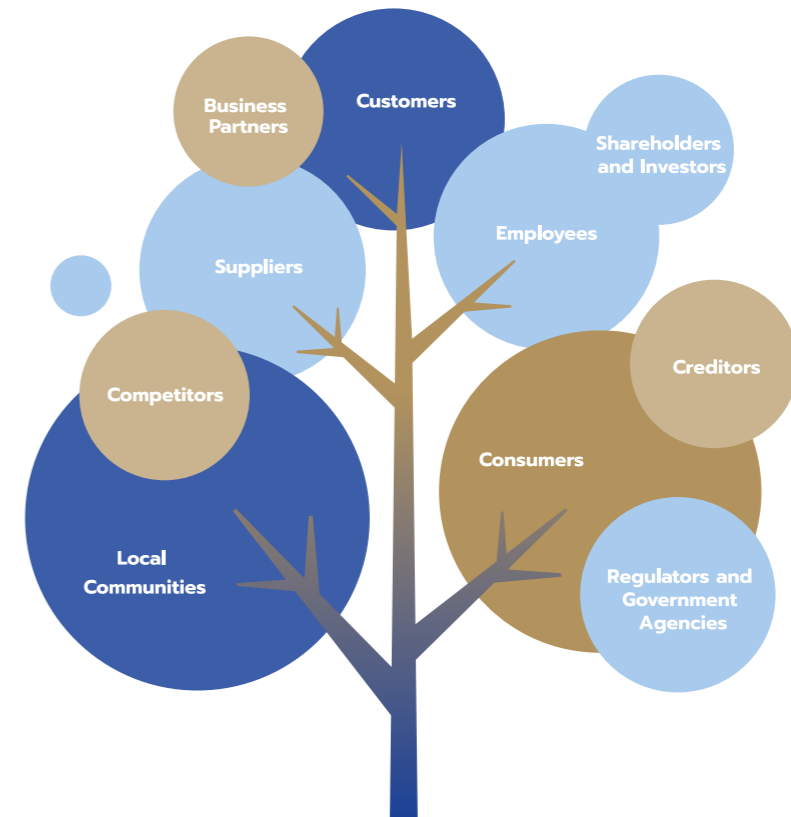


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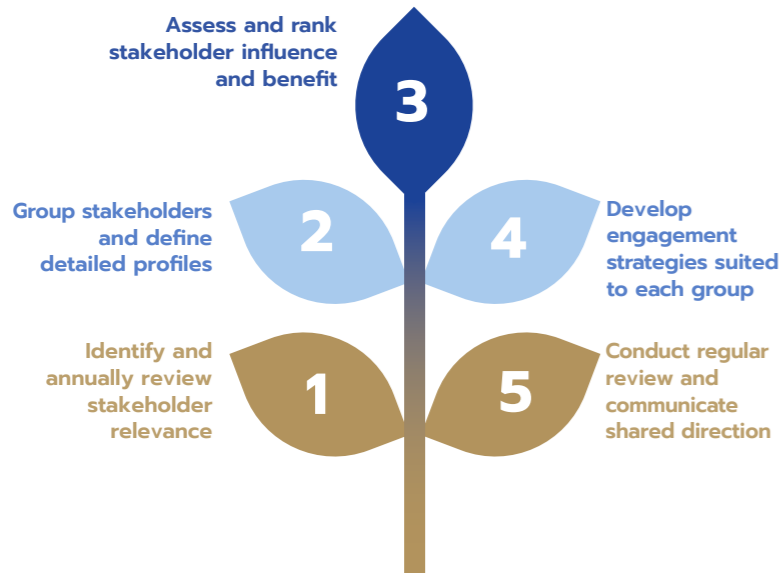
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STAKEHOLDER PRIORITIZATION AND ASSESSMENT

Stakeholder assessment and prioritization serve as essential tools that enable informed business decision-making. This process ensures that the most relevant stakeholder groups are identified for meaningful engagement. Stakeholder engagement is not only about maintaining good relationship, it is a strategic necessity that influences nearly all aspects of business and helps create long-term value aligned with both organizational objectives and stakeholder expectations.



Assessment Process

Step 1
Identify relevant stakeholders across the Company's value chain (see pages 25–28 of this report)

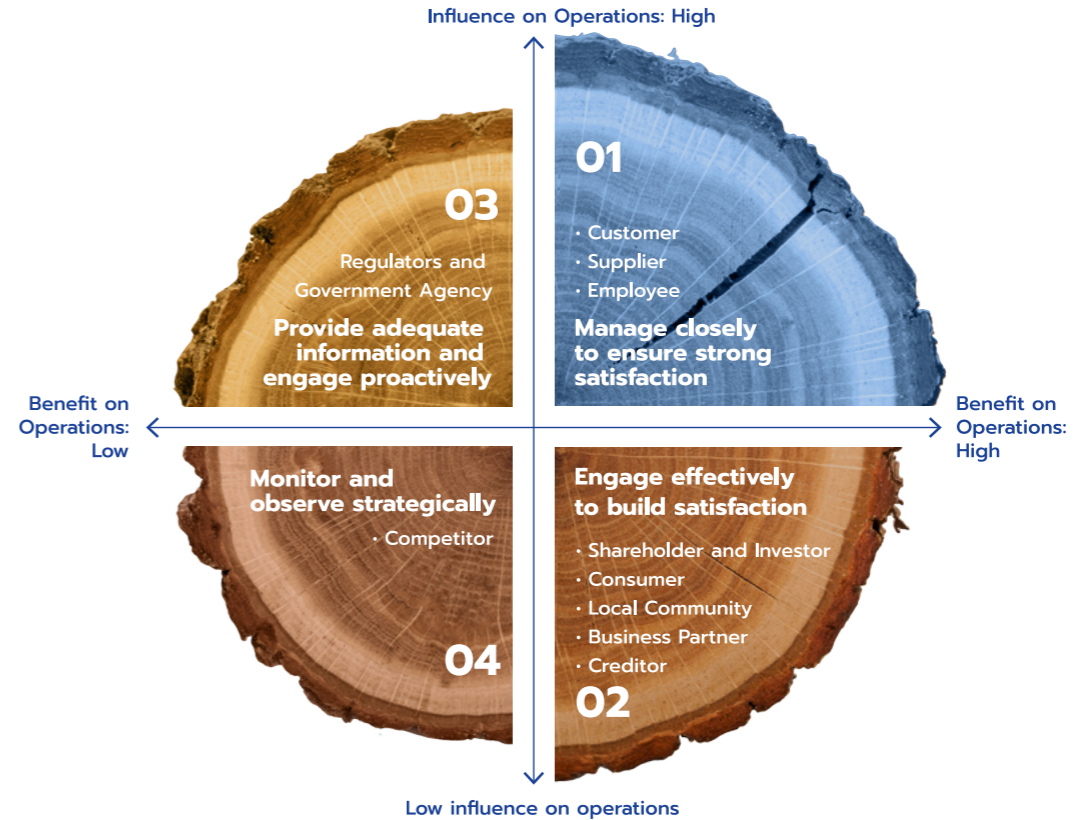
Step 2
Group stakeholders and develop clear profiles for consistent communication

Step 3
Evaluate and prioritize stakeholders using two criteria:

- The Y-axis represents the level of stakeholder influence on operations
- The X-axis reflects the benefit gained or risk experienced by stakeholders from engaging with the Company

Step 4
Develop tailored engagement plans for each stakeholder group

Step 5
Review, verify, and communicate alignment regularly, with annual assessments and updates



Stakeholder Group Prioritization Matrix

The Company categorizes stakeholders based on their level of influence and degree of benefit derived from operations:

01 High Influence, High Benefit:
Manage closely to ensure maximum stakeholder satisfaction

02 Low Influence, High Benefit:
Engage to maintain a high level of satisfaction

03 High Influence, Low Benefit:
Provide sufficient information and maintain active communication to prevent potential issues

04 Low Influence, Low Benefit:
Monitor and observe, as this group may become future partners or customers

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RESPONSIBLE STAKEHOLDER MANAGEMENT

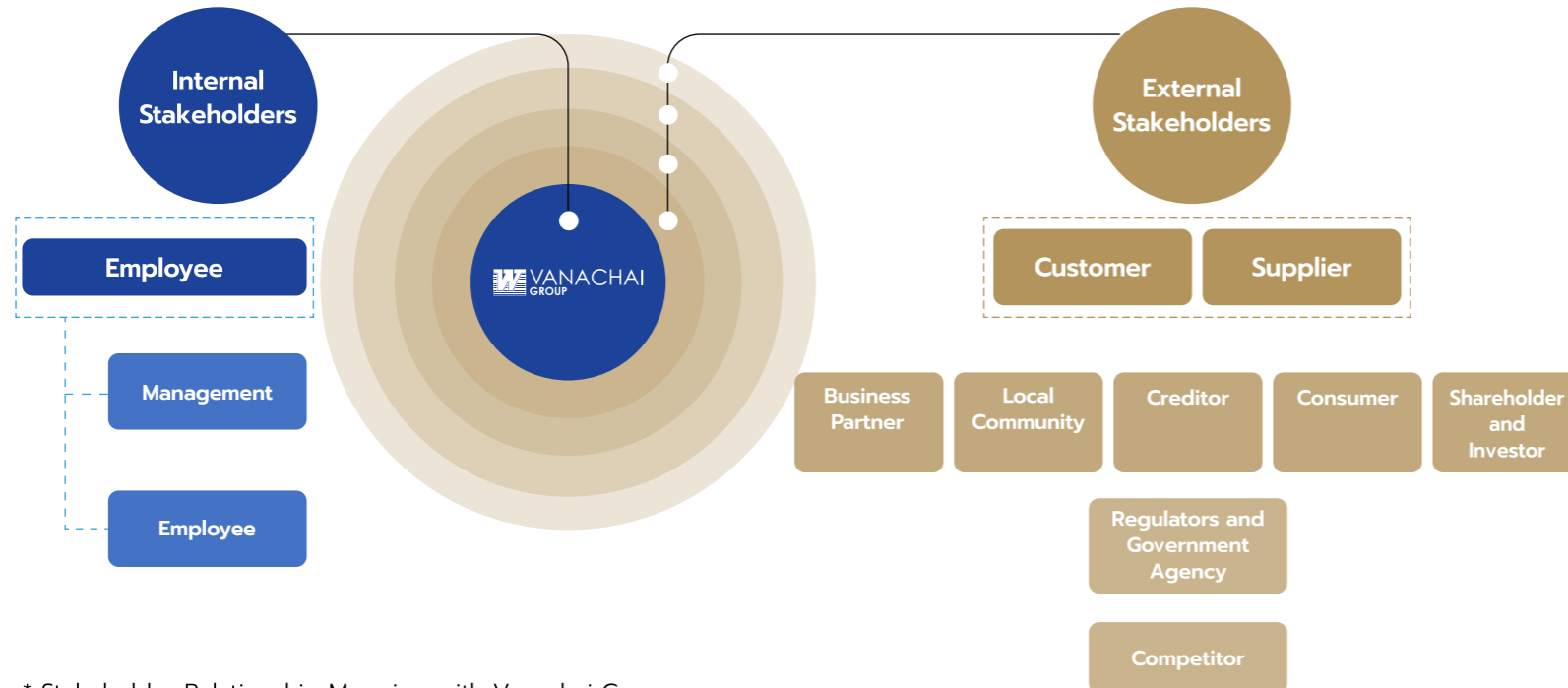
The Company is committed to conducting business with integrity and social responsibility. Operations are guided by the principle of creating shared value between the organization and all stakeholders to ensure mutual and lasting benefit. Oversight mechanisms are in place to ensure compliance with legal requirements and corporate

governance practices, so that stakeholders are treated fairly and appropriately protected.

Vanachai manages and engages directly with all individuals and groups that have a stake in its business. Based on stakeholder analysis, the Company has identified ten key groups: employees, shareholders and investors, customers, consumers, suppliers, business partners, creditors, local communities near operations, government agencies and regulators, and competitors.

Vanachai strives to instill environmental and social awareness among all stakeholders, ensuring that respect for nature and sustainability is embedded in every stage of the Company's operations.

Key Stakeholders of Vanachai Group Public Company Limited



* Stakeholder Relationship Mapping with Vanachai Group



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STAKEHOLDER ENGAGEMENT

Summary of Engagement Approaches for Each Stakeholder Group

The Company has established stakeholder engagement guidelines to enable effective planning and development of strong, context-appropriate relationships with each stakeholder group. The goal is to gain a clear and consistent understanding of the expectations, needs, and concerns of all stakeholders, thereby ensuring alignment and delivering shared value efficiently.

Management is responsible for ensuring that the stakeholder engagement policy and practices are implemented effectively

and deliver intended outcomes. This includes supporting appropriate resource allocation, assigning knowledgeable and skilled personnel, and ensuring proper budgeting. Accountability systems are in place with defined targets, performance indicators, and evaluation methods to ensure reliable and high-quality data.

These insights are integrated into strategic planning and operational management across all levels of the Company, supporting long-term sustainable development.

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Needs and Expectations	Response and Approach	Engagement Channels	2024 Performance Outcomes
<p>Employees group: This group plays a vital role in driving the Company’s success and growth. At Vanachai, the term “Employee Group” includes permanent staff, temporary workers, as well as persons with disabilities or those from underrepresented backgrounds. The Company ensures fair compensation and actively promotes equal opportunities for career advancement in line with its labor human rights policy.</p>			
<ul style="list-style-type: none"> • Fair compensation, benefits, and employee welfare, including engagement activities • Health, safety, and well-being in the workplace • Continuous learning, reskilling, and upskilling to meet business transformation • Fair performance evaluation processes • Effective communication across all levels of the organization • Established channels for submitting complaints and feedback 	<ul style="list-style-type: none"> • Foster a work environment that promotes a positive and fulfilling workplace culture (Happy Working Place) • Implement an effective and transparent performance evaluation system • Support employees in developing their potential and achieving meaningful career growth within the Company • Provide tailored training programs and promote innovation to encourage creativity and initiative • Organize and promote health and safety activities • Establish a clear career progression framework within the organization 	<ul style="list-style-type: none"> • Regular communication between the Company and employees through various channels throughout the year • Employee engagement and team-building activities • Company-wide Town Hall meetings • Executive sessions and dialogue with employees • Training programs to develop various professional skills • Complaint channels available via telephone, email at vanachaihotline@vanachai.com, and designated complaint mailboxes 	<ul style="list-style-type: none"> • Average training hours per employee: 6.82 Hours per Year • Total employee training investment: 3.39 Million Baht • Lost Time Injury Frequency Rate (LTIFR): Zero • Employee turnover rate: 12.4% • Turnover rate among high-performance employees: 0.04% • Number of code of conduct complaints: Zero • Female-to-male employee ratio: 1.00 : 2.05

Summary of Engagement Approaches for Each Stakeholder Group (Continued)

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Needs and Expectations	Response and Approach	Engagement Channels	2024 Performance Outcomes
<p>Shareholders and Investors: This group includes individuals, companies, or institutions that legally hold shares in Vanachai Group and benefit from capital gains or dividends. They receive regular business updates, can vote at shareholder meetings, subscribe to new shares, and engage in governance activities. The Company is committed to long-term growth, consistent returns, and transparent communication with its shareholders and investors.</p>			
<ul style="list-style-type: none"> Enhance business competitiveness and strategic focus Drive strong growth with consistent profits and dividends Ensure good governance and operational transparency Manage risks effectively with preventive actions Maintain a positive corporate image recognized by society 	<ul style="list-style-type: none"> Apply enterprise risk management across investment and operations, addressing environmental, social, governance, and human rights aspects Maintain strong governance, transparency, and a zero-tolerance policy on corruption Share accurate and transparent financial and non-financial information Support long-term shareholder value and capital gain opportunities Develop high-quality products and services for sustainable revenue 	<ul style="list-style-type: none"> Information disclosure through the Stock Exchange of Thailand (SET) and the Securities and Exchange Commission (SEC) Annual General Meeting (AGM) of shareholders and distribution of official reports Communication with shareholders via the Company's website, email at auditcommittee@vanachai.com, or by phone at +662 587 9556 	<ul style="list-style-type: none"> One Annual General Meeting (AGM) of shareholders held Price-to-Earnings Ratio (P/E): 9.51 Return on Equity (ROE): 3.15% Debt-to-Equity Ratio: 1.42 Retained Earnings: 4,139.8 Million Baht
<p>Customer Group: This group includes distributor customers who purchase Vanachai products for resale. They serve as sales agents and play a key role in communicating product value and driving sales to end use</p>			
<ul style="list-style-type: none"> Continuous development of certified, high-quality, and diverse products Competitive pricing Efficient supply chain and timely delivery Marketing and promotional support Training and knowledge transfer 	<ul style="list-style-type: none"> Provide full product training and installation demos for sales staff Develop detailed product manuals, troubleshooting guides, and demo videos Run ongoing sales support programs Operate a customer service center for complaint handling and issue resolution 	<ul style="list-style-type: none"> Annual customer seminars Regular visits by sales teams and executives Sales training and in-store product promotion (Product Consultant: PC) 	<ul style="list-style-type: none"> No outstanding product or service complaints remained unresolved within the specified timeframe
<p>Consumer Group: This group includes individuals or contractors who purchase and use Vanachai products directly or via WoodSmith retail outlets. As key stakeholders, consumers are vital to the Company's growth. Vanachai places strong emphasis on both customers and end-users, following its corporate governance policy: "Customers are important to us."</p>			
<ul style="list-style-type: none"> Quality products and services and transparent raw material sourcing Service that meets expectations and offers a good experience Clean, appealing WoodSmith store environment Advertising and promotions and fair product pricing Clear and accessible product information Eco-conscious business practices Personal data and privacy protection 	<ul style="list-style-type: none"> Understand customer needs to deliver fitting products and services Provide complete information to support informed decisions and offer full support pre- and post-sale Train front-line staff to enhance customer service Promote through responsible marketing Strengthen complaint handling for quick, effective resolution 	<ul style="list-style-type: none"> Customer satisfaction surveys Participation in "Architect Expo: ASA EXPO" Product demos and learning sessions at WoodSmith stores Promotions and product presentations Complaint handling via WoodSmith service channels 	<ul style="list-style-type: none"> Participation in Architect 2024: ASA EXPO, held from 30 April to 5 May 2024 Two product knowledge seminars organized at WoodSmith in 2024

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Summary of Engagement Approaches for Each Stakeholder Group (Continued)

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Needs and Expectations	Response and Approach	Engagement Channels	2024 Performance Outcomes
<p>Supplier Group: Suppliers include sellers, contractors, and service providers who conduct business with the Company. This group encompasses both individuals and legal entities, as well as any subcontractors engaged by them.</p>			
<ul style="list-style-type: none"> • Transparent procurement and fair compensation. • Financial stability of the Company. • Opportunities for future business collaboration with the Group. • Safe working conditions. • Reduction of energy consumption in production processes. • Protection against personal data breaches. 	<ul style="list-style-type: none"> • Provide equal opportunities for suppliers to compete in a fair business environment. • Ensure competitive bidding and fair, appropriate selection processes. • Apply clear criteria for supplier evaluation and selection, with contracts that are appropriate and aligned with international standards. • Develop and maintain long-term relationships with suppliers who demonstrate a strong commitment to quality and service. 	<ul style="list-style-type: none"> • Meetings between the Company and suppliers • Site visits and operational assessments to support joint business development • Supplier visits and ESG performance evaluations • Data protection procedures • Established channels for submitting complaints 	<ul style="list-style-type: none"> • 100% assessment coverage of Tier 1 critical suppliers • 16 suppliers site visit and evaluation conducted • Zero supplier-related complaints received
<p>Business Partner Group: This group includes individuals, groups, or companies that engage in long-term collaboration with the Company to support shared business objectives. The partnership brings together the strengths of all parties to achieve aligned strategic goals. Vanachai is committed to treating all business partners with equality and fairness, based on mutual benefit and shared success.</p>			
<ul style="list-style-type: none"> • Financial stability and strong corporate image of Vanachai Group • Capability, performance, and professionalism of the Company's team • Effective business management and good corporate governance • Commitment to long-term business partnerships 	<ul style="list-style-type: none"> • Maintain product and service quality while improving efficiency to meet evolving needs • Collaborate on strategic planning and business capacity development for long-term growth • Strictly adhere to the Business Code of Conduct and uphold zero tolerance for all forms of corruption • Establish communication channels for addressing operational issues and driving joint improvements 	<ul style="list-style-type: none"> • Meetings to monitor project progress and operational plans, including issue resolution at the management level • Discussions and negotiations on new projects or areas of collaboration • Relationship-building activities and networking engagements 	<ul style="list-style-type: none"> • A total of 30 successful projects utilized • Vanachai products and services 1.5 Million Square Meters of products used across all projects • Progress review meetings held at least once per month • One knowledge-sharing seminar conducted
<p>Creditor Group: This group includes banks and financial institutions that provide credit facilities to the Company.</p>			
<ul style="list-style-type: none"> • Strict compliance with agreed contractual terms and conditions • Timely repayment of principal and interest • Proper management of collateral • Clear contingency and business continuity planning for future scenarios 	<ul style="list-style-type: none"> • Strict adherence to the terms and conditions of loan agreements and debentures • Full compliance with financial institution regulations as governed by relevant state authorities 	<ul style="list-style-type: none"> • Coordinate and provide accurate, prompt, and complete information to bank credit analysts upon request • Cooperate with financial institutions offering expanded financial services • Remain open to opportunities from new financial institutions seeking to offer services 	<ul style="list-style-type: none"> • No loan or debenture covenant breaches occurred

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Needs and Expectations	Response and Approach	Engagement Channels	2024 Performance Outcomes
<p>Regulatory and Government Agencies Group: This group refers to state entities including government departments, state enterprises, public organizations, and agencies with authority to establish regulations, operational frameworks, or policy guidance. Vanachai strictly complies with all applicable laws, rules, and regulations. The Company also actively studies policy directions, including innovations, construction material development, and interior components to ensure full legal and regulatory compliance.</p>			
<ul style="list-style-type: none"> • Compliance with laws and regulations • Transparency and ethical business conduct • Good corporate governance practices • Advertising, product labeling, and consumer protection • Waste and wastewater management • Organizational carbon footprint assessment (Carbon Footprint for Organization: CFO) • Disclosure of environmental performance reports 	<ul style="list-style-type: none"> • Operate as a responsible organization with strict compliance to all applicable laws and regulations • Continuously improve operational efficiency while minimizing social and environmental impacts • Support collaborative initiatives to advance the United Nations Sustainable Development Goals (SDGs) • Cooperate with government agencies on academic efforts and public benefit activities 	<ul style="list-style-type: none"> • Respond to policy directives and support collaborative initiatives • Attend scheduled meetings and coordinate with relevant authorities as needed • Regular participation in government and regulatory meetings, seminars, and activities • Prepare annual reports and sustainability reports • Disclose information through the Company's website 	<ul style="list-style-type: none"> • Participated in one meeting or seminar organized by a regulatory or government agency • Hosted one official site visit
<p>Local Communities Around the Plant Group: This group refers to small communities located within a 1.5 kilometer radius of the Company's facilities, defined as close proximity communities. Vanachai is committed to supporting the local economy, society, and environment in these areas. The Company prioritizes environmental stewardship and has designated a unit responsible for social and community engagement. Vanachai also promotes a strong organizational culture and instills awareness among all employees of their shared responsibility to contribute to community development, environmental protection, and stakeholder well-being—ensuring that these efforts grow in parallel with the Company's sustainable development.</p>			
<ul style="list-style-type: none"> • Community development in areas surrounding the Company's facilities • Promotion of local employment and income generation • Respect for human rights • Consideration of social and environmental impacts on local communities • Support for society through various charitable initiatives 	<ul style="list-style-type: none"> • Operate the business while assessing risks to prevent or mitigate impacts on communities, society, and the environment • Strictly comply with all applicable laws and regulations • Communicate and disclose Company operations accurately, completely, and transparently 	<ul style="list-style-type: none"> • Establish a joint advisory committee with local communities • Conduct community opinion surveys and engage through on-site visits • Support activities that encourage community and social participation • Provide accessible channels for receiving complaints • Communicate through the community relations unit 	<ul style="list-style-type: none"> • A total of 88 social contribution projects implemented • 1,232 Employees participated in social and environmental activities • Average time spent on social and environmental activities: 4.5 Hours per Person per Year • Community satisfaction survey result: 85%
<p>Competitor Group: This group includes individuals, groups, or companies operating in the same or similar business sector, competing in areas such as products, services, marketing, and production. Such competition is beneficial to both producers and consumers, as it encourages continuous improvement, higher product quality, greater variety, and the development of new innovations, ultimately delivering greater value to consumers.</p>			
<ul style="list-style-type: none"> • Conduct trade practices fairly and in compliance with the law • Operate the business with transparency • Cooperate at the industry level to support national development 	<ul style="list-style-type: none"> • Comply with international competition standards and support fair competition policies • Refrain from making unfounded or defamatory claims against competitors without credible evidence • Cooperate in activities that benefit society and contribute to national development 	<ul style="list-style-type: none"> • Joint meetings with government agencies on collaborative initiatives • Participation in industry-related seminars and networking events 	<ul style="list-style-type: none"> • No ethics-related complaints were received from competitors • No negative complaints or adverse news reported regarding business conduct with competitors

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IDENTIFICATION OF MATERIAL TOPICS

Vanachai Group reviews and updates its material sustainability topics annually. In 2024, the Company retained the same material topics from 2023, as no major internal or external changes warranted reassessment. Several initiatives had already launched and required ongoing monitoring and improvement.

A total of 20 material topics were upheld, with seven identified as top priorities for sustainability progress:

- **Save the Forest:** Natural Forest conservation
- **Jump-start the Renewable Energy:** Promoting renewable energy adoption
- **Zero Waste:** Reducing waste generation
- **Change for The Better:** Driving innovation in business, society, and the environment
- **Fresh Air and Clean Water:** Managing emissions, water, and GHG to tackle climate issues
- **Social Responsibility:** Creating value through local development
- **Good Corporate Governance:** Promoting ethical business conduct

These seven core topics guide the “**Vanachai Sustainable Move**” strategy. Progress is monitored and reported annually to the Board of Directors. This framework remains in place unless future internal or external changes require a new assessment.

Vanachai remains committed to inclusive, sustainable practices that align with stakeholder needs and contribute long-term value to both society and the environment.

MATERIALITY ASSESSMENT PROCESS

Vanachai Group carries out a materiality assessment process to identify and prioritize ESG issues that significantly impact the business and its stakeholders. This process is based on engagement with both internal and external stakeholders to

ensure that the Company’s sustainability strategy aligns with global expectations and emerging trends. The objective is to effectively generate long-term sustainable value.



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STAKEHOLDER PERSPECTIVES ON MATERIAL TOPICS

The process of reporting stakeholder perspectives on material topics begins with identifying key stakeholders, as shown in the relationship diagram on the right. A stakeholder engagement plan is then developed, outlining objectives, methods, and timelines. The Company collects input through online surveys, interviews, and focus group discussions to gather stakeholder insights on material issues.

The collected data is analyzed and prioritized, followed by validation with stakeholders to ensure accuracy. These insights are integrated into the materiality assessment process, considering factors such as frequency and severity of concerns, and the potential business impact. Assessment results are transparently communicated through the sustainability report and corporate communications to ensure that stakeholder feedback meaningfully informs operational improvements.

Stakeholder Relevance to Vanachai Group's Business Operations

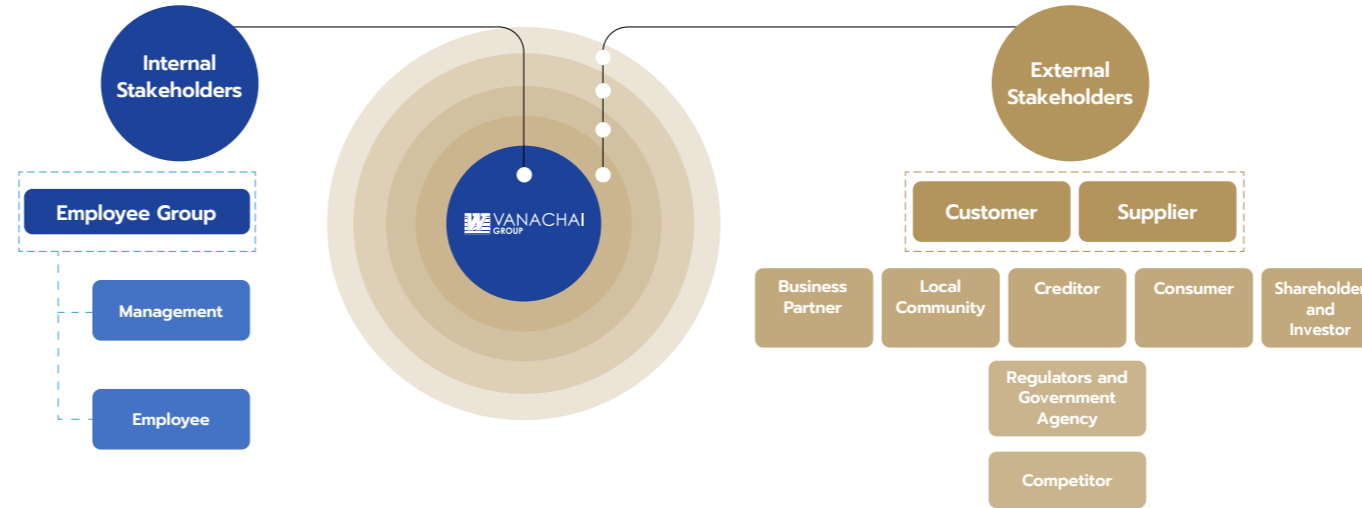


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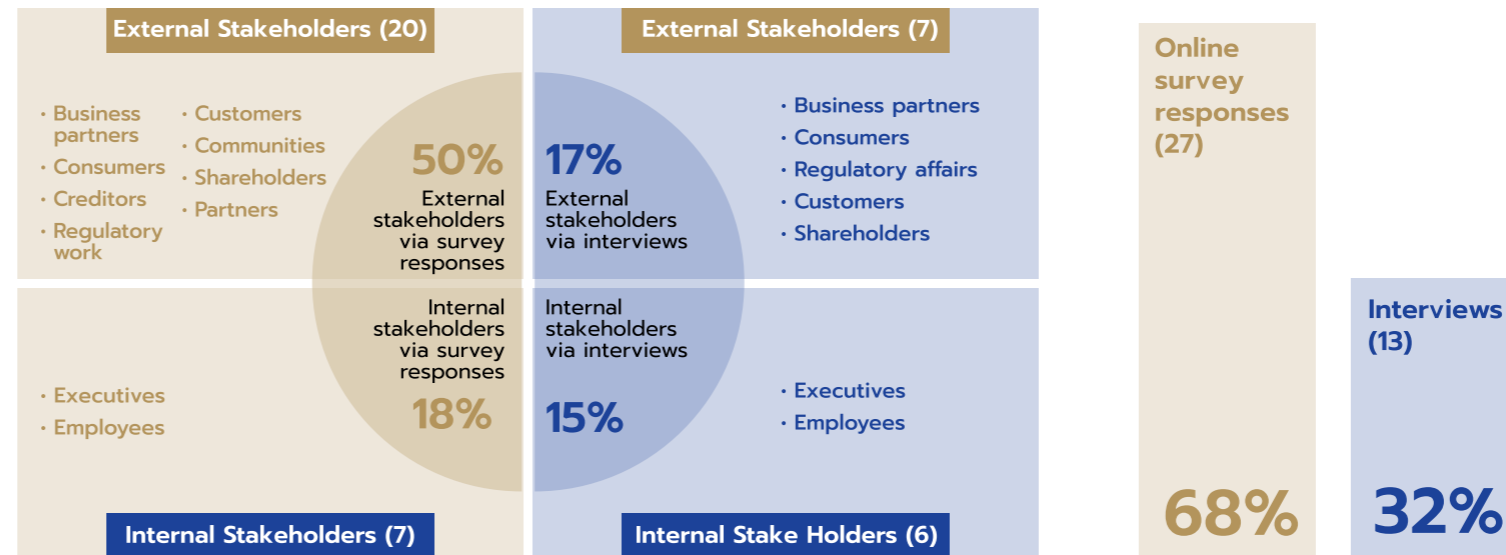
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Stakeholders Providing Input on Material Topics within the ESG Framework



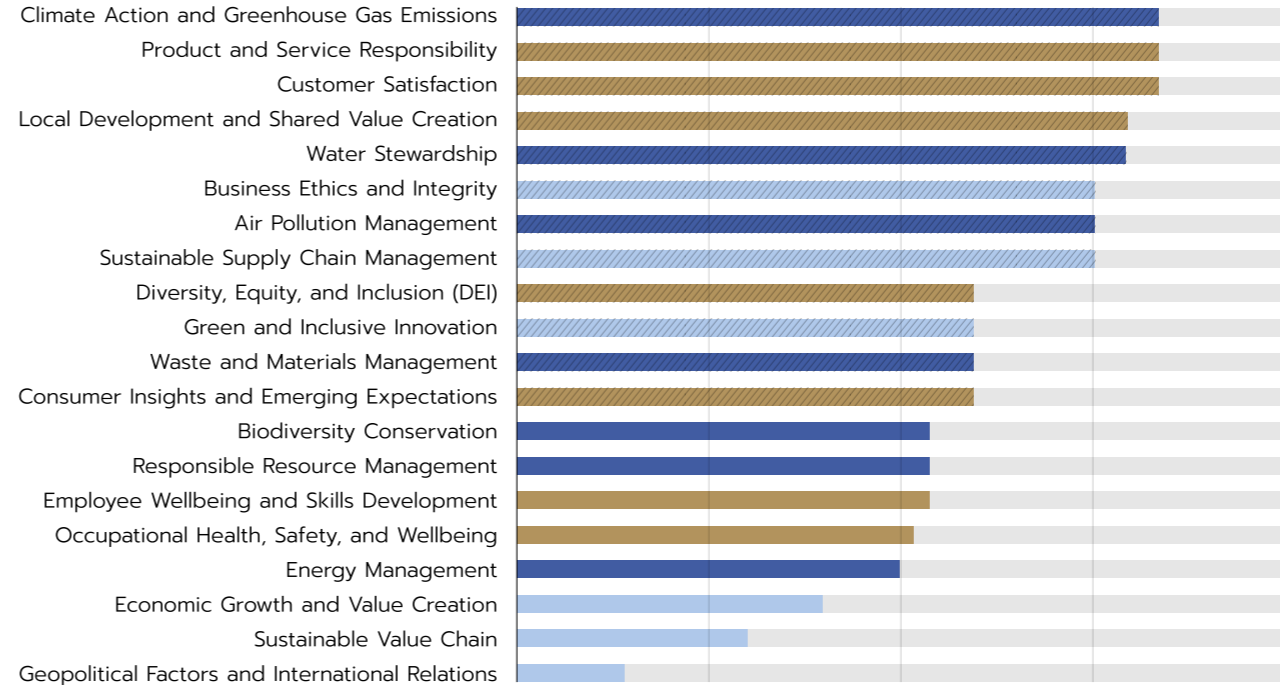
“THIS REPORT IS SHAPED BY THE VOICES OF OUR STAKEHOLDERS. THEIR OPINIONS AND EXPECTATIONS PROVIDE ESSENTIAL INSIGHTS THAT GUIDE OUR PRIORITIES AND SHARPEN OUR FOCUS ON THE SUSTAINABILITY ISSUES THAT MATTER MOST.”

STAKEHOLDER PERSPECTIVES ON MATERIAL TOPICS

Ranking: Relevance of Issues to Stakeholders

Interviews with key stakeholder groups, those vital to the success of the Company’s operations, revealed the most significant sustainability concerns. Based on interviews and survey responses from employees, farmers and planters, customers, and local communities surrounding the Company’s facilities, climate crisis emerged as a shared material concern across multiple stakeholder groups. This issue must therefore be addressed through clear operational planning to mitigate its impact. Failure to do so could directly affect the Company’s business performance.

Below is a summary of the top three high-impact material issues as identified by each of the four key stakeholder groups:



High Impact

Results of Stakeholder Engagement Survey

The stakeholder engagement survey identified the following as the top five issues of greatest importance to stakeholders: climate action and greenhouse gas emissions, product and service responsibility, customer satisfaction, local development and shared value creation, and water stewardship.

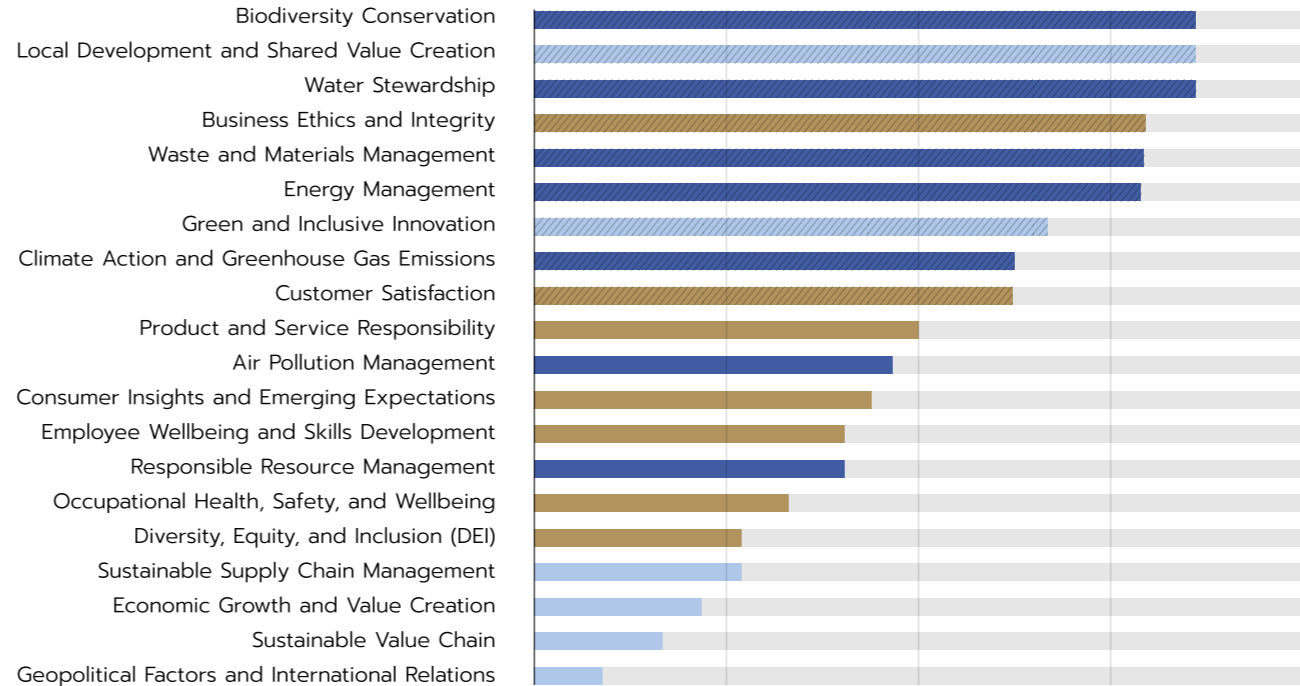
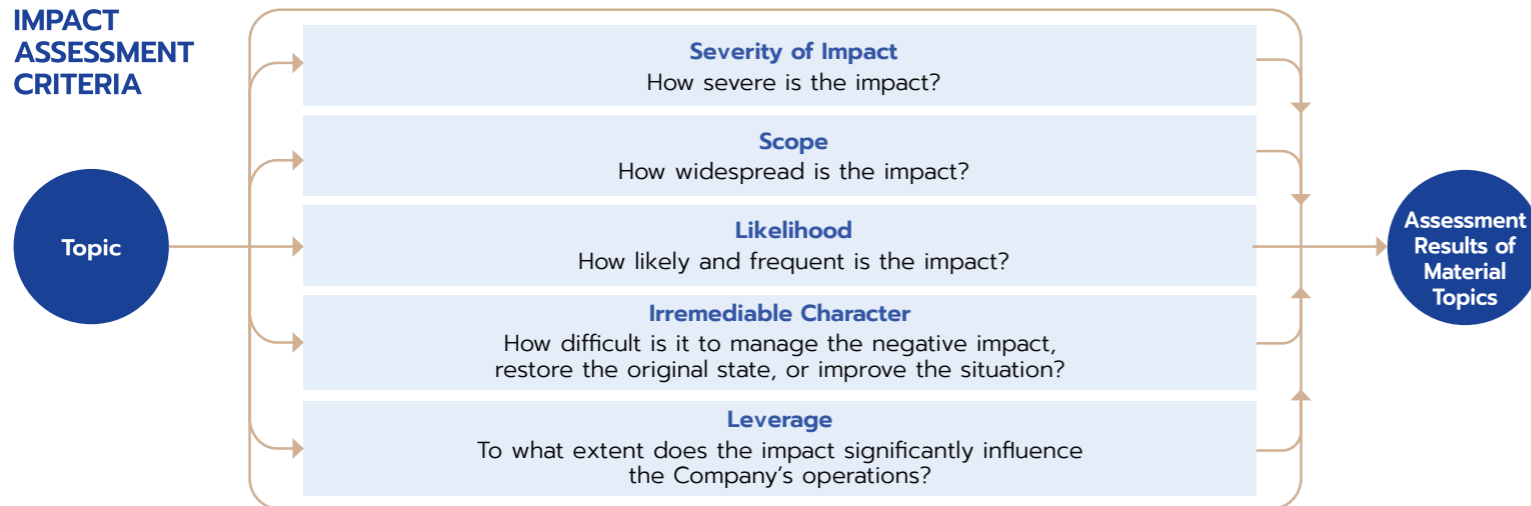
These priorities align with Vanachai Group’s assessment of financial impact and material significance. As a result, the Company will implement structured and timely measures to manage these topics effectively, aiming to minimize negative impacts and align business operations with stakeholder expectations.

ASSESSING OUTWARD IMPACT MATERIAL TOPICS

Outward Impact from VNG’s Business on Economy, Environment and Society

This approach focuses on the significant effects of the Group’s operations that extend beyond its direct boundaries. It considers the broader impact on the environment, society, and governance, viewed through a lens that goes beyond the Company and its immediate stakeholders. This holistic perspective enhances decision-making and performance evaluation by providing a more comprehensive understanding of the Company’s responsibilities. It enables Vanachai Group to recognize not only the direct outcomes of its actions but also the indirect consequences that arise across the value chain.

IMPACT ASSESSMENT CRITERIA



High Impact

Findings from the Impact Analysis

The analysis of impacts from the Company’s operations on society, the environment, and governance revealed five topics with the most severe outward impacts. These are: forest conservation (referred to by Vanachai as “Save the Forest”), local development and shared value creation, water stewardship, business ethics, and waste and byproduct management. Assessing material outward impacts enables the Company to better understand its broader role within the ecosystem, proactively manage risks, identify opportunities, and generate long-term value for all stakeholders.

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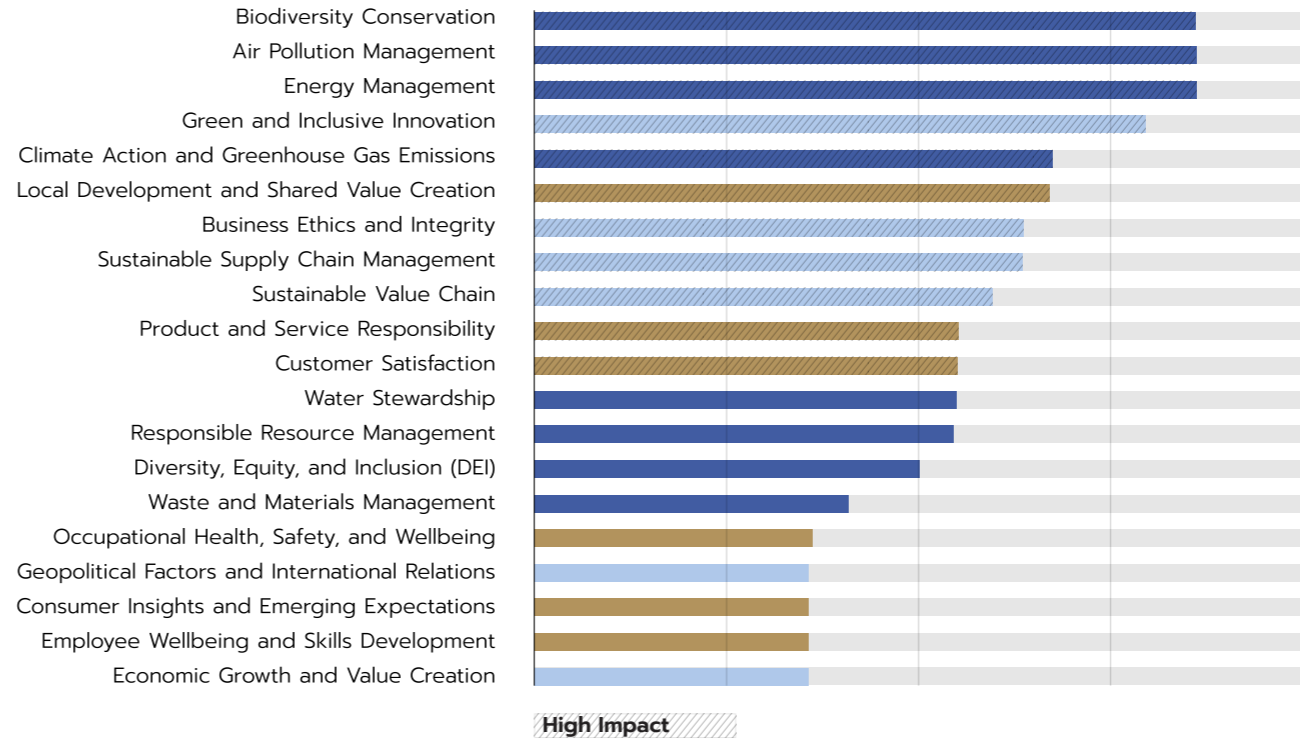
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ASSESSMENT OF FINANCIAL MATERIALITY FROM INTERNAL IMPACTS

Impact of ESG issues on the Company's financial performance and future viability.

This assessment examines the level of impact from ESG issues on the Company's financial performance and long-term business viability. Financial materiality refers to the internal financial implications of ESG topics, focusing on how these issues affect economic performance, the Company's financial health, and its ability to address challenges, drive improvements, or mitigate negative impacts. These considerations directly influence the Company's long-term sustainability.

"INTERNAL IMPACT ANALYSIS IS ESSENTIAL FOR UNDERSTANDING FINANCIAL PERFORMANCE, ENHANCING TRANSPARENCY, SUPPORTING DECISION-MAKING, AND DRIVING SUSTAINABLE VALUE CREATION FOR SHAREHOLDERS AND STAKEHOLDERS."



Vanachai Group identifies financially material ESG factors that significantly affect financial outcomes and stakeholder interests. The evaluation considers key criteria such as the likelihood and scale of each issue, its frequency, relevance, and volatility. The Company also defines key performance indicators (KPIs) to monitor and manage these impacts effectively.

This internal impact assessment enables the Group to gain valuable insights into financial performance, including profitability, liquidity, and operational efficiency. It allows management and investors to evaluate the Company's financial capacity and effectiveness in resource management.

By providing transparency and relevant financial data, the report enhances investor confidence and supports informed investment

decisions. This disclosure attracts capital to support the Company's sustainable growth.

It also facilitates performance benchmarking by comparing internal impact indicators with those of industry peers, offering strategic insights into the Company's competitive position. Such comparisons highlight areas for improvement and guide future planning and decision-making.

The Group is committed to reporting financial information accurately and transparently to regulators, shareholders, and other stakeholders. Compliance with accounting standards and financial reporting requirements further strengthens the Company's credibility.

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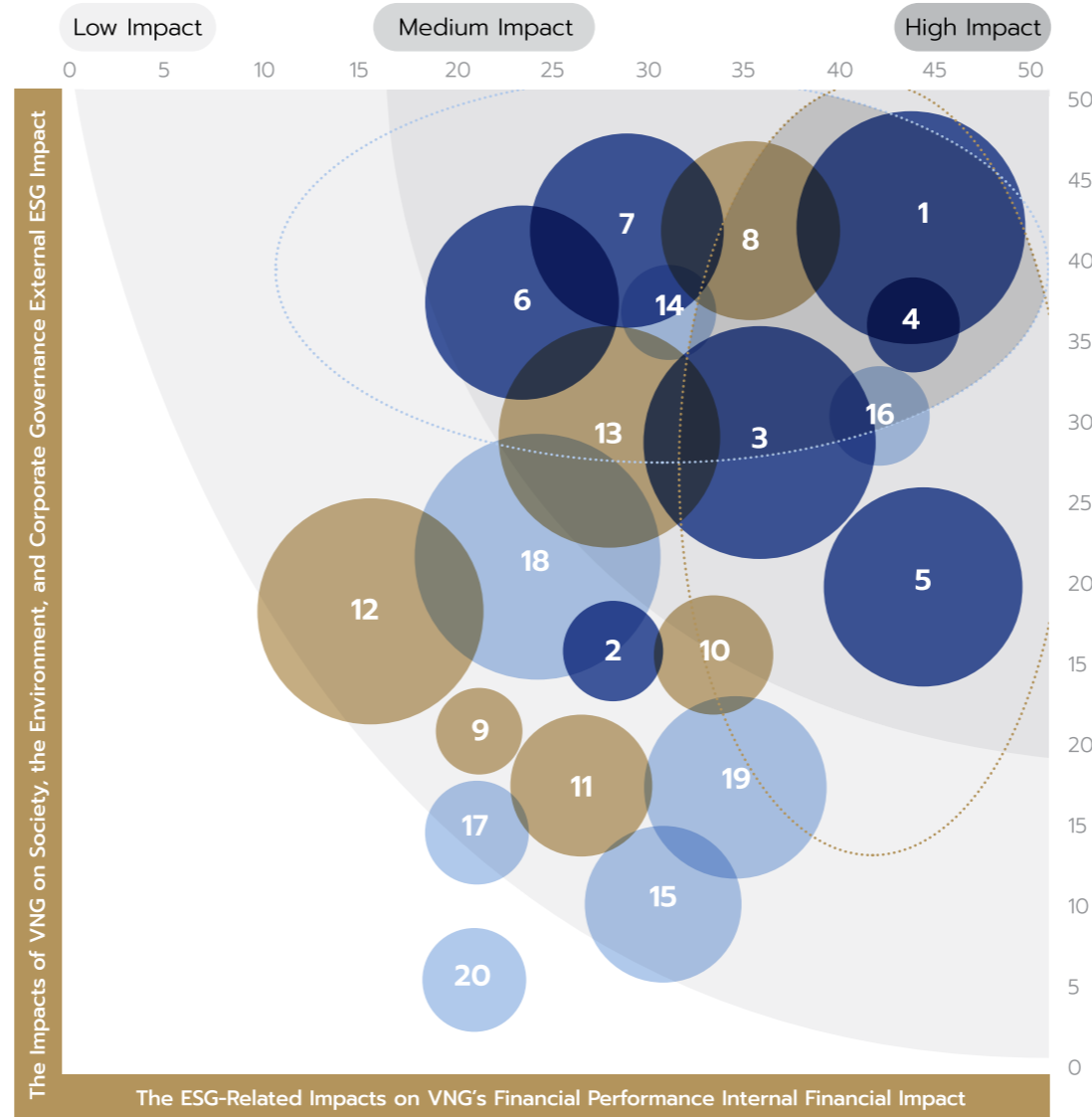
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PRIORITIZATION OF MATERIAL TOPICS

Prioritizing material topics enables the Company to focus on the most impactful issues and make the most effective use of limited resources. This analysis identifies seven key topics that are recognized as critical by stakeholders, society, the environment, and the Company alike. These topics represent a shared understanding of material issues and appear in the top right quadrant of the accompanying matrix. They include: biodiversity conservation, climate crisis, energy management, local development and value creation, and eco-social innovation.



Legend

- Environment (Dark Blue)
- Social (Brown)
- Governance (Light Blue)

Stakeholder relevance

Highly Relevant (Large bubble) → Low Relevant (Small bubble)

High business impact

- Social and environmental impact (Dashed line)
- Financial impact on enterprise value (Dotted line)
- Issues of highest mutual concern (Shaded area)

ENVIRONMENT

1. Biodiversity Conservation
2. Responsible Resource Management
3. Energy Management
4. Waste and Materials Management
5. Climate Action and Greenhouse Gas Emissions
6. Air Pollution Management
7. Water Stewardship

SOCIAL

8. Local Development and Shared Value Creation
9. Employee Wellbeing and Skills Development
10. Occupational Health, Safety, and Wellbeing
11. Diversity, Equity, and Inclusion (DEI)
12. Customer Satisfaction
13. Green and Inclusive Innovation
14. Consumer Insights and Emerging Expectations

GOVERNANCE

15. Business Ethics and Integrity
16. Sustainable Value Chain
17. Sustainable Supply Chain Management
18. Product and Service Responsibility
19. Economic Growth and Value Creation
20. Geopolitical Factors and International Relations

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SUSTAINABILITY STRATEGIES AND GOALS



- *Market Trends*
- *Corporate Governance and Risk Management*
- *Vanachai and Sustainability*
- *Sustainability Strategy and Implementation Framework*
- *Delivering on Our Sustainability Commitments*



MARKET TRENDS

In recent years, Thailand’s construction and interior design industries have increasingly shifted toward the use of engineered wood panels as alternatives to natural wood. This transition is driven by rising awareness of environmental sustainability, resource conservation, and growing expectations around material performance standards, particularly from the new generation of consumers who value safety and eco-consciousness in everyday life.

Engineered panels such as MDF, HDF, and particle board have seen a steady rise in demand due to their uniform quality, cost-efficiency, and compatibility with environmentally responsible manufacturing technologies. Progressive manufacturers like Vanachai Group have developed product lines with low formaldehyde emissions meeting international standards, low levels of volatile organic compounds (VOCs), and high durability and safety for both interior and moisture prone applications. Many of these products are also certified for environmental performance, especially in moisture resistance and low-impact production.

The growing trend in green building certification, including TREES, LEED, and WELL, is becoming a key differentiator in real estate projects. Project developers, architects, and building owners are actively selecting materials that meet health and environmental benchmarks required for certification. Engineered wood panels with a low environmental footprint have thus become a strategic choice, helping to enhance long-term asset value, attract quality-conscious customers, and support ESG commitments.

In summary, integrating science and technology into product innovation not only raises the quality of engineered wood panels but also repositions them from being viewed as “alternatives” to being the “preferred choice” for modern construction and design. This shift reinforces the Company’s leadership in a market that values innovation, safety, and sustainability.

In light of global economic concerns, the ongoing conflict between Israel and Palestine, which affects the Middle East where many of the Group’s overseas customers are located, has continued since early in the fourth quarter of 2023 through 2024. This situation has impacted maritime shipping and led to increased insurance premiums. At the same time, the prolonged war between Russia and Ukraine has raised the cost of various production inputs, particularly energy prices.

These external factors have contributed to increased volatility and uncertainty in demand across the industry. Market competition has intensified, and the foreign exchange rate, especially the United States dollar, has shown high volatility throughout 2024. This has affected pricing in foreign markets and created uncertainty in sales revenue.

As a result, the Group’s total sales revenue in 2024 declined by approximately 4 percent compared to the same period in 2023, mainly due to a 9 percent decrease in MDF product sales volume. Although the average selling price increased by around 3 percent compared to 2023, other products experienced a drop in average prices due to greater impacts. This resulted in an overall reduction in sales revenue and a decrease in total gross profit margin by approximately 3 percent from the previous year.

Economic, Social, and Environmental Landscape

In 2023, the global economy remained fragile due to continued geopolitical pressures, particularly the prolonged conflict between Russia and Ukraine and the ongoing unrest in the Middle East. These developments led to heightened volatility in energy prices, rising logistics costs, and disruptions in global trade. Such factors have directly affected the construction materials industry, including wood-substitute manufacturers, who are now facing rising production costs and declining export margins.



In 2024, despite signs of recovery in the service and tourism sectors, global inflation and interest rates remain high, particularly in major economies such as the United States and Europe. These conditions have led consumers and businesses to become more cautious in their investments, especially in real estate and furniture industries, which are key downstream markets for engineered wood products.

On the social front, businesses are facing growing expectations for responsible operations, including human rights, labor protection, and fairness in employment. At the same time, consumers worldwide are increasingly mindful of choosing environmentally friendly, non-toxic materials that originate from responsible sources, particularly in Asia Pacific and European markets.

In terms of the environment, climate change continues to dominate the global agenda. The outcomes of COP28 reaffirmed the urgency for countries to accelerate the transition toward carbon neutrality. As a result, environmentally preferred materials such as low-formaldehyde wood panels made from agricultural residues or products compatible with green building construction are gaining significant attention. This trend is encouraging manufacturers like Vanachai to pursue innovations that align with global environmental standards and future market demands.

Source of Reference: Department of Climate Change and Environment, Thailand. “Thailand’s Direction and Mission on Climate Change Adaptation.” Available at: <https://www.dcce.go.th/2755/>

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RISK MANAGEMENT

“AT VANACHAI, SMART RISK MANAGEMENT MEANS BALANCING PROFITABILITY WITH THE RESPONSIBLE STEWARDSHIP OF NATURAL RESOURCES.”

Vanachai Group engages in the manufacture and distribution of wood-based products as substitutes for natural wood, serving manufacturers and customers in the construction, interior design, and furniture industries both domestically and internationally. The Company operates in a dynamic business environment where constant changes may affect the ability to achieve its strategic goals and mission. Vanachai believes that systematic and organization wide risk management is a key factor in achieving business objectives, enabling timely adaptation to change and sustaining long-term business continuity and opportunity.



Corporate Governance and Risk Management

The Board of Directors is responsible for establishing governance policies to ensure effective and efficient risk management. The Audit Committee oversees the risk management process, ensuring it is comprehensive and addresses risks that may impact the Company’s business operations, ability to achieve its vision, objectives, goals, or strategies. The Executive Committee supervises the implementation of systematic risk management and assigns clear accountability to ensure risks remain within acceptable levels.

The Company integrates risk management across its operations by promoting awareness and understanding of risk at all employee levels. Risk considerations are embedded into core business processes to raise awareness of potential uncertainties, define the acceptable level of risk, and communicate these standards across the organization. Looking forward, the Company plans to adopt a more structured risk management framework based on international standards, such as the Committee of Sponsoring Organizations of the Treadway Commission (COSO ERM-2017). This will serve as an effective tool for aligning risk management with corporate objectives, goals, and strategies, and extending its application to address Environmental, Social, and Governance (ESG) related risks under the COSO ERM ESG framework.

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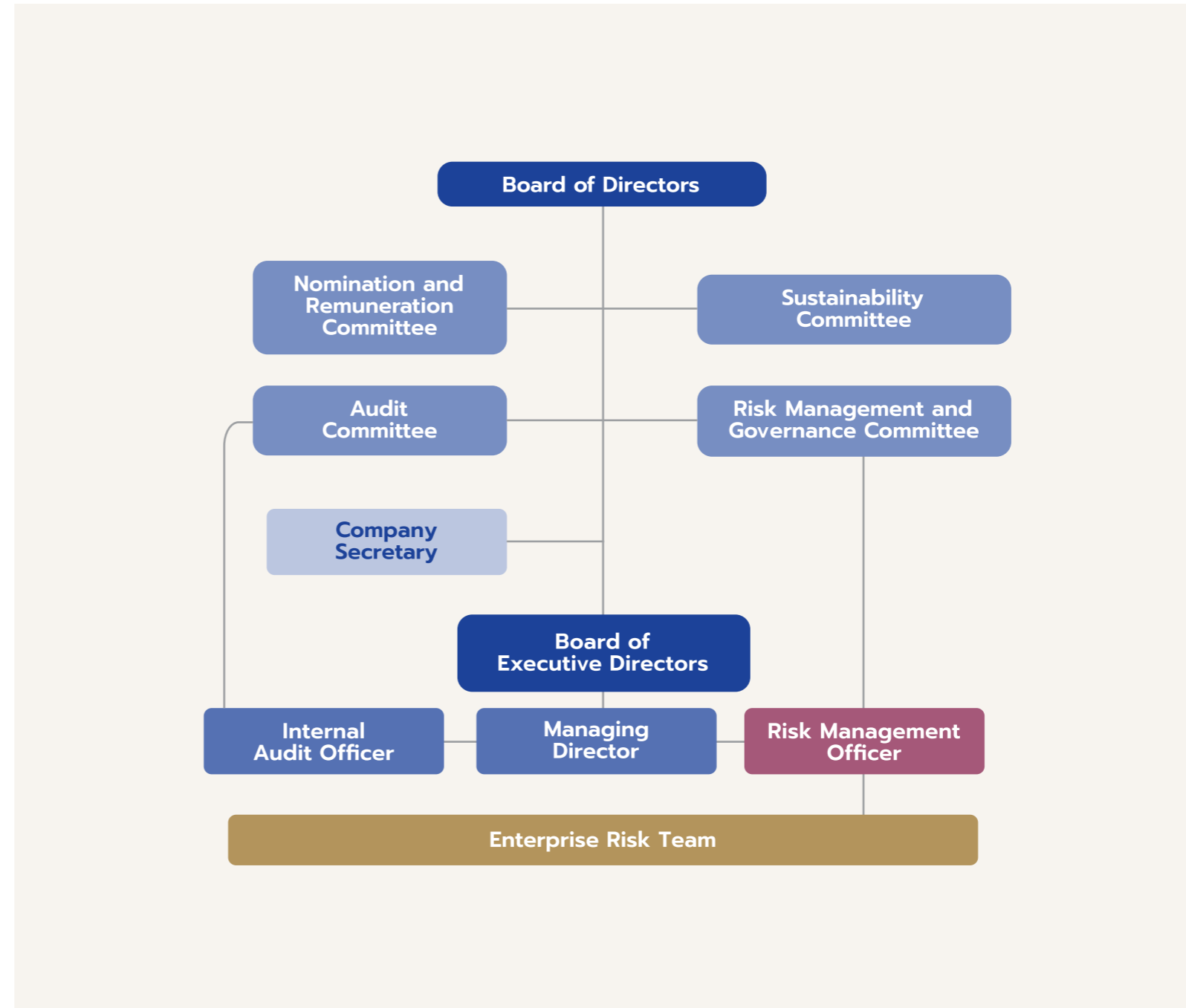
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Structure of the Risk Management Working Group

To enhance the effectiveness and alignment of risk management with corporate policy, Vanachai Group has established a Corporate Risk Management Working Group. This team plays a key role in analyzing, monitoring, and controlling risks across all dimensions of the organization. Operated independently from business units, the group ensures neutrality, transparency, and the absence of conflicts of interest in overseeing corporate risks.

The structure of the working group is overseen by the Risk Management Committee and directly linked to the Audit Committee and the Board of Directors, enabling transparent and timely reporting of material risks. The working group comprises specialized teams focusing on Strategic Risk, Operational Risk, and Compliance and ESG Risk. Each function is supported by designated Risk Coordinators responsible for collecting and forwarding risk data from across departments to the central team. This integrated approach ensures that risk assessments and mitigation plans are both comprehensive and aligned with the Group's overall objectives.

Ms. Satrirat Sapphiboon has been appointed as the Head of the Corporate Risk Management Working Group to lead the development of a systematic risk management approach aligned with international standards such as COSO ERM, ensuring effective and efficient implementation.



OPERATIONAL RISK MANAGEMENT

Type of Risk	Potential Impact on the Company	Risk Management Approach/Plan
Strategic Risk		
<p>Product and Market Competition Risk:</p> <ul style="list-style-type: none"> The Company generates the majority of its revenue from exports and faces ongoing challenges related to price competition, market access in various countries, and demand volatility across regions. Inability to adapt promptly to market trends may affect the Company's ability to maintain sales volume and market share. 	<p>1) Product Risk: The increasing number of players in the wood-based product industry has intensified product-level competition, potentially impacting the Company's market share and profitability.</p> <p>2) Competitive Risk: As the Company relies heavily on international markets, rising competition in these markets poses a risk. This could result in supply outpacing demand, leading to price pressures and potential impacts on operating performance.</p>	<p>1) The Company addresses this risk by continuously investing in research and development of new products and by optimizing its product mix to better meet market needs.</p> <p>2) It is also expanding its market presence in the Middle East to ensure long-term competitiveness and diversify revenue sources.</p> <p>3) The Company is increasing bulk shipment channels, which offer lower freight costs and faster payment cycles compared to container shipping, which faces container shortages and more complex logistics.</p>
Operational Risk		
<p>Risk of Inefficient Cost Management in Production:</p> <ul style="list-style-type: none"> Effective cost control is a core requirement in industrial operations, especially during periods of intense price competition. If the Company is unable to maintain low unit costs while preserving production efficiency, it may lose its competitive advantage. 	<p>1) Risk from Raw Material Sourcing: The Company's production depends heavily on natural resources. There is a risk that production capacity may grow beyond the availability of natural resources.</p> <p>2) Risk from Transportation Costs: Export costs may rise due to geopolitical tensions, which could also result in longer shipping times to international markets.</p>	<p>1) Optimize production planning by increasing MDF production capacity by approximately 40 percent alongside effective inventory management.</p> <p>2) Foster relationships with local communities to ensure a consistent supply of raw materials.</p> <p>3) Set selling prices to cover logistics costs.</p> <p>4) Continuously evaluate cost control performance by comparing actual costs to monthly budgets (Actual versus Budget), identifying root causes, and implementing corrective actions if deviations exceed acceptable levels.</p>
<p>Human Resource Management Risks:</p> <ul style="list-style-type: none"> The Company is facing challenges from the generational transition in the workforce and the growing influence of technologies such as artificial intelligence (AI) and automation. Inadequate succession planning, especially for executive and critical roles, may affect business continuity. 	<p>1) Succession in key positions: The development or availability of qualified successors may not keep pace with business needs.</p> <p>2) Access to artificial intelligence technology: The Company's workforce may have limited capabilities in utilizing AI effectively.</p> <p>3) Risk of missing the transition to a future ready organization: A lack of visionary and innovation driven talent may hinder the Company's ability to evolve into a forward-looking enterprise.</p>	<p>1) Promote continuous training and development to identify talent, supported by performance evaluations, promotion pathways, and competitive compensation.</p> <p>2) Encourage employees to adopt emerging technologies to enhance efficiency, speed, and competitiveness.</p> <p>3) Establish a structured succession plan by identifying "critical positions" in core functions and assigning high-potential employees for targeted development.</p> <p>4) Conduct individual competency gap assessments and implement tailored Individual Development Plans (IDP).</p>

Operational Risk Management (Continued)

Type of Risk	Potential Impact on the Company	Risk Management Approach/Plan
Financial Risk		
Financial Risk: <ul style="list-style-type: none"> The Company generates over 60% of its total revenue from exports, resulting in a significant portion of income being denominated in foreign currencies. This exposes the Company to high levels of exchange rate volatility. Effective financial risk management is therefore critical to maintaining the Company's competitiveness in global markets and ensuring the stability of cash flows. 	<ol style="list-style-type: none"> Foreign Exchange Risk: International sales expose the Company to currency volatility, potentially impacting financial performance depending on market shifts. Interest Rate Risk: Changes in economic interest rates may affect borrowing costs and financial obligations, influencing overall financial stability. Covenant Compliance Risk: Failure to meet financial covenants in loan agreements may result in penalties or limit future financing options. 	<ol style="list-style-type: none"> Pricing and Currency Risk Management: Product pricing aligns with global benchmarks. The Company manages exchange rate risk through natural hedging, with senior management monitoring currency trends to limit exposure. Interest Rate Flexibility: Borrowings are tied to floating rates, allowing responsive and efficient interest cost control based on market shifts. Board and Executive Oversight: The Board and Executive Committee provide active oversight to ensure sound financial risk management and long-term stability.
Liquidity Risk: <ul style="list-style-type: none"> The Company's capital-intensive model demands significant working capital to support raw material sourcing, production, logistics, and inventory. Sufficient liquidity is essential to ensure smooth operations and timely payments to suppliers, employees, and financial institutions. 	<ol style="list-style-type: none"> Liquid Asset Risk: These assets carry risk if poorly managed, such as low inventory turnover or slow receivables collection. Credit terms affect the adequacy of impairment provisions. Doubtful Debt Risk: This arises when the Company is unable to collect payments from customers due to economic downturns. 	<ol style="list-style-type: none"> Strict Credit Policy: Credit is granted based on debt repayment ability and sales terms, with reduced or withheld credit for customers with poor payment history. Advance Payment Sales: Selling to non-credit customers with payment before delivery helps minimize collection risk.
Regulatory Risk		
Compliance Risk from Policies, Laws, and Regulations: <ul style="list-style-type: none"> The Company operates in large-scale manufacturing and must comply with diverse legal requirements, including environmental, labor, tax, trade, and industrial safety regulations. 	<ol style="list-style-type: none"> Foreign Government Oversight in Trade Partner Countries: With over 90 percent of customers overseas, the Company is highly sensitive to changes in foreign laws, regulations, and policies. Ongoing monitoring and updates on country-specific compliance remain essential. 	<ol style="list-style-type: none"> The Company assigns the Risk Management and Governance Committee and Compliance team to monitor legal changes in Thailand and operating countries, assess regulations, and evaluate impacts on the Group. It also maintains communication with authorities to ensure full compliance with applicable laws and procedures.
Corruption Risk: <ul style="list-style-type: none"> The Company maintains transparency, accountability, and good governance under a strict zero-tolerance policy for all forms of corruption. Any breach can severely impact its reputation, business relations, and operations. 	<ol style="list-style-type: none"> Conflict of Interest: Due to its large group structure, the Company engages in related-party transactions that may present pricing risks if not properly managed. Engagement with Public Officials: Employees may risk seeking unfair advantage through gifts, political donations, or facilitation payments when interacting with public officials. Government Bidding: Risks include attempts to secure public procurement contracts through improper practices. 	<ol style="list-style-type: none"> The Company has established an anti-corruption policy and guidelines, communicated to employees and business partners, with regular monitoring and audits. Regular training is provided to ensure employee awareness and adherence to the anti-corruption policy.

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Operational Risk Management (Continued)

Type of Risk	Potential Impact on the Company	Risk Management Approach/Plan
Environmental, Social, and Governance (ESG) Risk		
<p>Occupational Health, Safety, and Workplace Environment Risk:</p> <ul style="list-style-type: none"> The Company operates large scale manufacturing facilities across several provinces involving heavy machinery, flammable materials, and high-risk processes. Employee safety and well-being at all levels are a top priority. This is a critical factor in ESG evaluations by both domestic and international assessors. 	<ol style="list-style-type: none"> A safe working environment is essential to promote good hygiene and reduce the risk of workplace accidents. Community and social impacts, particularly from production processes, may include wastewater, dust, or emissions affecting nearby residents. Employee health may be affected by wood dust, noise, or chemical exposure, leading to increased medical costs and reduced productivity. Non-compliance may result in legal penalties under labor or safety laws, including temporary shutdowns, fines, or license revocation. 	<ol style="list-style-type: none"> Provision of personal protective equipment for employees. The Company offers annual health check-ups and group insurance. Factory employees are required to undergo safety training, with strict penalties for non-compliance. Safety performance targets are set to ensure safe operations within all manufacturing facilities. The Company manages its value chain by reusing water and wood waste from production as input materials across upstream to downstream processes, effectively minimizing related risks.
<p>Human Rights Risk:</p> <ul style="list-style-type: none"> The Company employs a large workforce in its factories and production lines, involving diverse labor groups, including vulnerable populations such as local workers, the elderly, and socially disadvantaged individuals. This issue is increasingly critical to both domestic and international stakeholders, especially global customers and business partners. 	<ol style="list-style-type: none"> Equal treatment in human rights applies to all stakeholders, including full-time staff, outsourced workers, and external service providers. Loss of trust from customers and business partners, especially international companies with Human Rights Due Diligence policies in their supply chains. Risk of lawsuits, complaints, or media exposure, potentially damaging the Company's reputation and public image. Potential disqualification from procurement programs or ESG-related criteria set by banks or business partners. 	<ol style="list-style-type: none"> Establish a monitoring and control system to ensure external service providers comply with the Company's human rights policy framework. Conduct a Human Rights Risk Assessment at least once a year, covering key activities such as employment, procurement, raw material sourcing, and labor management. Provide a secure and anonymous grievance mechanism to allow employees to report violations without fear of retaliation. Train executives and supervisors on human rights, fair labor practices, and proper communication.

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EMERGING RISK MANAGING

Businesses today face rapid changes that give rise to emerging risks, which Vanachai Group must closely monitor and manage. These risks may affect the Company's operations over the next

three to five years. Examples include shifts in geopolitical dynamics or the impacts of climate change.

Emerging Risks	Impacts of Emerging Risks on the Company	Approach and Risk Management Plan for Emerging Risks
<p>Geopolitical Risk:</p> <ul style="list-style-type: none"> The prolonged conflict between Israel and Palestine poses a concern, as the region includes a significant portion of the Company's customer base. Additionally, the ongoing war between Russia and Ukraine shows no sign of resolution, further contributing to global instability. 	<ol style="list-style-type: none"> Supply Chain Disruption: Delays in product delivery due to restricted transport routes and port operations in high-risk areas. Rising Costs: Increased expenses from higher freight charges, insurance premiums, energy, and raw material costs. Currency Volatility: Fluctuations in exchange rates affect revenue and pricing in export markets using foreign currencies. Sales and Market Confidence: Delivery delays or business links with conflict zones may weaken customer trust. Margin Pressure: Profit margins are under strain from intense competition and weakened demand, especially in low-price product segments. 	<ol style="list-style-type: none"> Diversify Export Markets: Reduce dependence on high-risk regions by expanding into more stable markets. Closely Monitor Global Events: Track geopolitical developments to adjust logistics and sales strategies accordingly. Maintain Financial Liquidity: Ensure strong working capital to manage through economic volatility. Implement Business Continuity Planning (BCP): Prepare contingency plans for disruptions, including backup facilities or domestic service providers. Transparent Stakeholder Communication: Maintain trust through clear and timely updates during periods of uncertainty.
<p>Cybersecurity Risk:</p> <ul style="list-style-type: none"> In an era where businesses rely heavily on digital technologies and automated control systems, particularly in production and data management, cyber threats have become a critical and growing risk. System intrusions, data breaches, and malware can disrupt IT operations and directly affect the Company's business activities. 	<ol style="list-style-type: none"> Production Disruption: Cyberattacks targeting technology-controlled machinery may halt production lines, making it impossible to operate as planned. Damage to Critical Data: Unauthorized access to sensitive information such as customer records, employee data, financial reports, or business patents may harm the Company's reputation and credibility. System Recovery Costs and Legal Implications: Significant expenses may be required to restore affected systems, along with potential penalties from regulators if data protection laws are not met. Reputational and Trust Impact: Cyber incidents causing data leaks or service outages may erode customer and partner confidence over the long term. 	<ol style="list-style-type: none"> Strengthen IT Infrastructure Security: The Company prioritizes internal controls for data security and conducts regular audits of internal data systems. Cyber Risk Assessment: Risks to systems and data are identified and assessed to define appropriate preventive and responsive measures. Incident Response Plan: A structured plan is in place to investigate, analyze, and resolve cybersecurity incidents effectively. Training and Awareness: All employees receive training on secure IT practices and recognizing behaviors that may pose cybersecurity risks.

Emerging Risk Managing (Continued)

Emerging Risks	Impacts of Emerging Risks on the Company	Approach and Risk Management Plan for Emerging Risks
<p>Climate Change Risk:</p> <ul style="list-style-type: none"> Climate change, as reflected in El Niño and La Niña events, has intensified natural disasters such as floods, droughts, and rising PM 2.5 levels. These factors may directly affect the Company’s supply chain and key raw materials, particularly wood waste and natural resource-based inputs. 	<ol style="list-style-type: none"> Raw Material Risk: Severe weather changes may reduce the availability of wood waste or hinder its collection during certain seasons. Raw Material Storage: The Company must increase storage volume and duration, leading to higher inventory costs and space requirements. Production Impact: Managing raw materials under uncertainty may cause greater cost volatility in production. Environmental Risk: Issues such as PM 2.5 may affect manufacturing processes and employee health at factory sites. 	<ol style="list-style-type: none"> Enhance Raw Material Storage Efficiency: Improve wood storage systems to handle higher volumes during crises and extend shelf life without compromising quality. Integrate Real-Time Climate Data into Production Planning: Use live weather data to support production planning and inventory management. Monitor Climate Trends: Track El Niño–La Niña patterns and adjust raw material procurement plans in advance. Mitigate PM 2.5 Impact: Implement measures such as air filtration in work areas and adjust outdoor activities to protect employee health.
<p>Emerging Infectious Disease Risk:</p> <ul style="list-style-type: none"> Emerging diseases are increasingly prevalent, driven by climate change, global warming, and ecosystem disruption. These conditions facilitate the transmission of zoonotic and novel infectious diseases. Outbreaks may be acute, such as respiratory infections or viral mutations, or systemic, affecting the workforce through PM2.5-related illnesses or seasonal viruses. COVID-19 also remains an intermittent threat. 	<ol style="list-style-type: none"> Production Disruption: An outbreak in the factory or nearby communities may require partial or full shutdown of production lines. Labor Shortage: Employee absences due to illness or quarantine can lead to sudden labor gaps, affecting production capacity. Increased Prevention Costs: Additional expenses may arise from protective equipment, disinfection systems, distancing measures, and employee health protocols. Supply Chain Impact: Outbreaks in sourcing or logistics regions may cause delays and higher costs in procurement and distribution. Reputational and Trust Risk: Inadequate preventive measures may reduce customer and partner confidence in the Company’s crisis management capabilities. 	<ol style="list-style-type: none"> Develop Business Continuity Plans: Prepare specific response plans for emerging diseases, such as staggered production shifts, backup workforce plans, and remote work for certain roles. Proactive Public Health Monitoring: Collaborate with local and national health agencies to track disease trends and update prevention protocols. Conduct Drills and Training: Organize simulations and employee training on outbreak response, including evacuation and isolation procedures. Enhance Internal Health Systems: Implement mobile health check units, temperature and symptom monitoring, and support seasonal vaccination programs. Promote a Safety Culture: Encourage employees to take personal responsibility for their health and that of their coworkers. Establish Effective Internal Communication: Set up alert and reporting systems for at-risk cases to enable rapid response and containment.

RISK MANAGEMENT IMPLEMENTATION

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Risk Category	Key Risk Indicators: KRIs	Risk Tolerance Level	Impact and Action Plan	Primary Risk Owner	Impact	Likelihood
1) Supply Chain and Distribution	Average Export Lead Time	Delivery delays must not exceed 5 percent of total orders per year.	Exceeding this threshold may impact international customer satisfaction and long-term reputation; the Company secures backup logistics partners in each region with local expertise.	Logistics Department	3	5 , 3
2) Finance and Foreign Exchange	Financial expenses as a percentage of total revenue (%)	Losses from exchange rate fluctuations should not exceed 3 percent of total revenue.	Given the high proportion of foreign currency sales, the Company implements exchange rate risk hedging measures.	Finance Department	3	4 , 2
3) Energy Cost Management	Average energy cost per unit of production	Total energy cost increase should not exceed 15 percent compared to the 2021 baseline.	If exceeded, the Company must implement plans to expand renewable energy capacity, such as biomass and solar rooftop systems.	Production Department	3	4 , 1
4) Environmental Performance	GHG Emissions Scope 1 and 2	Scope 1 and 2 GHG emissions must remain within annual targets and continuously decline in line with the Company's Carbon Neutrality and Net Zero roadmap.	This is a core long-term objective, with targets set for 2050 and 2055 respectively, and integrated into performance evaluations for employees at all levels.	Production Department	2	4 , 2
5) Corporate Reputation Management	External Complaints	External complaints (from customers or regulatory bodies) must not exceed five cases per month.	If exceeded, the Company must conduct an investigation, communicate with stakeholders, and implement corrective actions within 15 days. Prompt resolution is strictly enforced to maintain stakeholder confidence.	Marketing Department	1	5 , 1
6) Labor and Workforce Management	Voluntary Employee Turnover Rate	Voluntary turnover rate must not exceed 8 percent annually.	Exceeding this threshold may affect continuity in production or service delivery. The Company enforces retention policies for high-performing talent.	Human Resources Department	3	3 , 2
7) Key Export Market Performance	Year-on-Year Change in Export Sales Share in Core Markets (%)	A decline of up to 15 percent in specific markets is acceptable if offset by expansion into new markets.	This approach ensures flexibility in responding to geopolitical challenges. The Company focuses on core export markets in regions with lower risk and high growth potential.	Sales Department	3	5 , 2
8) Macroeconomic and Market Conditions	Sales Growth Rate (%)	A sales growth decline of no more than 10 percent per year is acceptable compared to the 2021 baseline.	This impacts the Company's ability to expand into new markets and make future investments. The Company must identify competitive alternative markets.	Sales Department	3	4 , 3
9) Procurement and Raw Material Costs	Raw Material Cost vs. Annual Budget (%)	An increase in raw material costs of up to 10–15 percent above the annual budget is acceptable. If exceeded, contingency plans such as alternative sourcing must be implemented.	A significant decline in gross margin requires the Company to secure backup suppliers and develop innovative approaches to alternative material management.	Procurement Department	4	5 , 2

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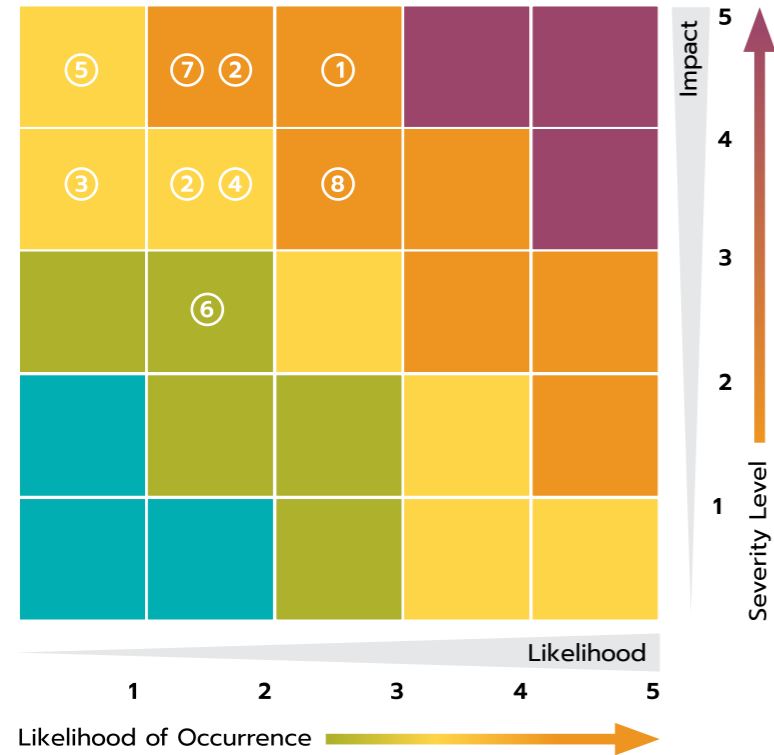
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RISK ASSESSMENT MATRIX



STATEMENT ON RISK APPETITE AND TOLERANCE

As part of its Enterprise Risk Management (ERM) framework, the Company defines its risk appetite and tolerance levels by risk category as follows:

Financial and Cost Risk: The Company maintains a moderate risk appetite in managing financial risks and cost control. It is willing to tolerate a certain level of cost volatility or financial variability to pursue operational efficiency and growth opportunities. However, financial risks are not tolerated if they threaten long-term profitability or financial stability. ②

Strategic Business Risk: The Company has a moderate to occasionally high-risk appetite for strategic risks, particularly when pursuing competitive advantage and long-term growth. It is willing to engage in new investments or business ventures following thorough risk assessment. However, strategic risks must remain within controllable boundaries and must not endanger long-term business continuity or overall operational integrity. ③ ⑥ ⑦ ⑧

Reputational and Customer Risk: The Company has a very low risk appetite for reputational damage or customer dissatisfaction. It places the highest priority on product and service quality, customer trust, and stakeholder confidence. No tolerance is given to risks that may significantly harm the Company's brand, such as product defects or negative public incidents. ⑤

Environmental Risk: The Company maintains a low-risk appetite regarding environmental matters. It emphasizes strict compliance with environmental laws, conservation of natural resources, and adherence to relevant environmental standards. Significant environmental violations or irreversible impacts are not tolerated, and the Company is committed to minimizing such risks to the lowest practicable level. ④

Supply Chain and Procurement Risk: The Company accepts a moderate risk appetite for supply chain and raw material procurement. Efficient sourcing strategies are paired with contingency planning to ensure business continuity. While limited supply chain risks are acceptable, the Company does not tolerate wide-scale or prolonged disruptions that may threaten operations. Risk must be justified by measurable business benefit and supported by mitigation plans. ① ⑨

Cybersecurity and Information System Risk: The Company has a very low risk appetite for cybersecurity and IT-related threats. It adheres to strict data security policies and implements internationally recognized standards such as ISO/IEC 27001. The Company enforces robust data backup and incident response plans. No tolerance is given to data breaches that compromise confidentiality, integrity, or availability of critical systems. ⑤

SEVERITY LEVEL

- Critical Risk Level
- High Risk Level
- Moderate Risk Level
- Low Risk Level
- Very Low Risk Level

RISK TOLERANCE SCALE

- Very High Tolerance
- High Tolerance
- Moderate Tolerance
- Low Tolerance
- Very Low Tolerance

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CRISIS MANAGEMENT

Business Continuity Management (BCM)

Vanachai Group recognizes that both internal and external factors may disrupt its ability to operate according to set objectives, whether at headquarters or across regional production facilities. Such disruptions may lead to production downtime, delays in product delivery, and potential reputational damage.

To mitigate these risks, the Company prioritizes the structured and effective development of a Business Continuity Management (BCM) system. Key initiatives include:

1. Risk Review and Assessment – 2024:

- Identify external threats such as natural disasters (floods, fires), acts of sabotage, pandemics, political instability, and cyberattacks.
- Identify internal threats including IT system failures or absence of key executives and personnel.
- Assess the likelihood and impact of each threat and rank them based on severity.

2. Business Impact Analysis (BIA):

- Analyze potential impacts on operations, such as loss of revenue, reputational damage, and stakeholder dissatisfaction, especially from delays in product delivery to key customers.

3. Response Planning and Strategic Measures

- Develop backup production plans utilizing facilities in alternative locations such as Chonburi, Rayong, Saraburi, and Surat Thani to offset any production disruption.
- Implement data backup systems and cyber incident recovery plans to ensure IT resilience.

4. Development of Operational Procedures

- Initiate with Work Instructions (WI) for fire prevention and evacuation plans, covering actions before, during, and after an incident.
- Define responsibilities, stakeholder communication protocols, and procedures to prevent the release of pollutants during emergencies.

5. Testing and Plan Improvement

Conduct annual testing and simulation drills to ensure the effectiveness and relevance of the continuity plans under evolving conditions.

6. Training and Awareness

- Train employees at all levels to understand their roles, responsibilities, and emergency response procedures. For example, a fire drill was conducted at the Surat Thani plant in 2024.
- Implement specialized training for cybersecurity response, targeting IT personnel and those with access to critical data systems.

7. Integration of BCM Across Head Office and Plants

- Develop an integrated business continuity framework linking headquarters and production sites, enabling centralized response coordination.
- The headquarters serves as the command center for decision-making, resource allocation (raw materials, production capacity, manpower), and inter-department communication.
- Establish a rapid communication structure for situational updates to support real-time production adjustments, distribution continuity, and post-crisis recovery.



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Fire Drill and Evacuation Exercise – Surat Thani Plant

Vanachai Group places high importance on workplace safety and emergency preparedness, particularly in response to fire incidents, which can pose severe risks to personnel, assets, and business continuity.

As part of its commitment, the Company organized its annual fire drill and evacuation exercise at the Surat Thani plant. The objective was to ensure that all employees clearly understand emergency procedures, are aware of their roles and responsibilities, and can respond effectively and safely during an incident.

This activity forms an integral part of the Company’s Business Continuity Management (BCM) plan, which emphasizes readiness at all levels of the organization.



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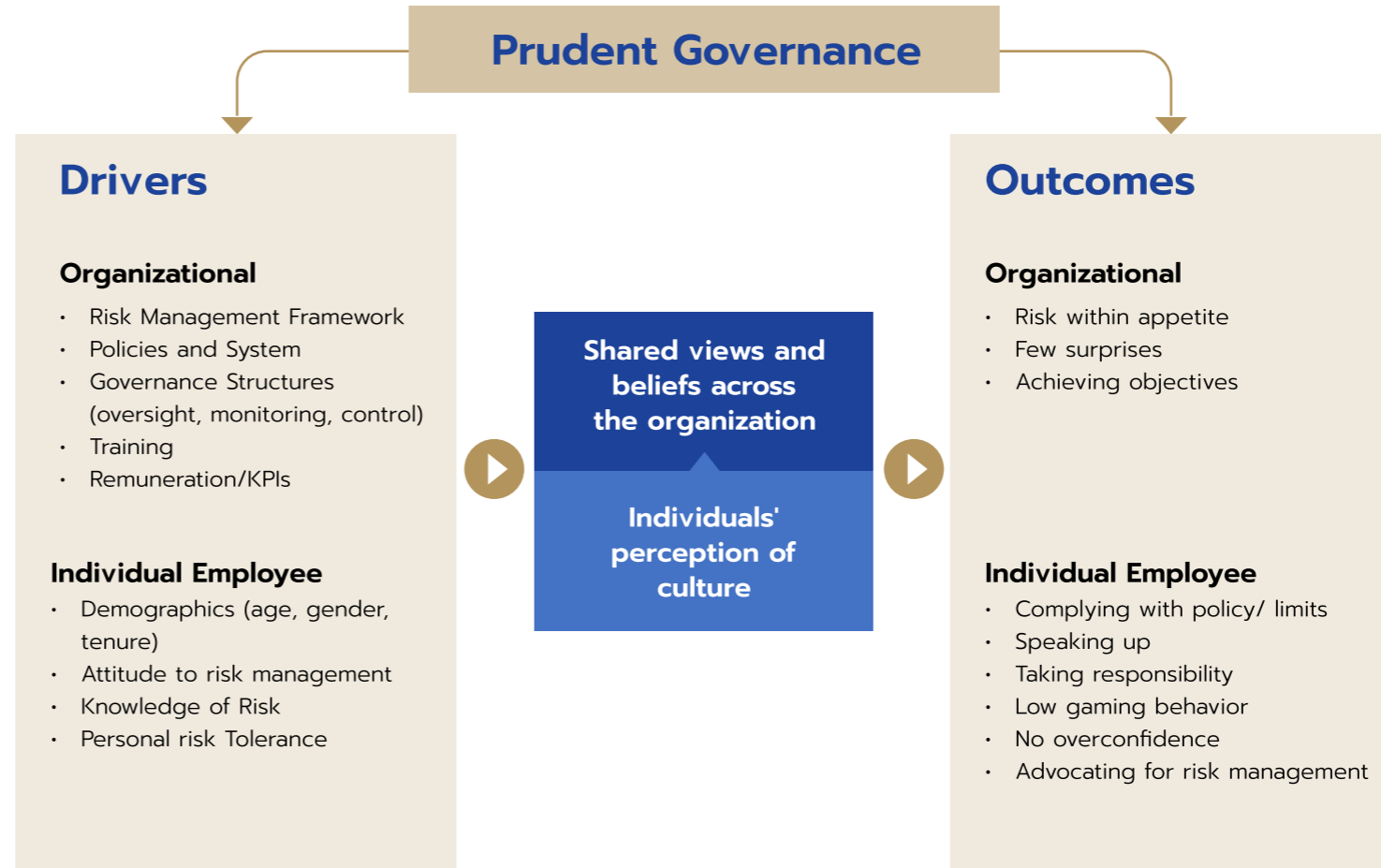
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Strengthening Risk Management Culture



Level of Risk Training Participation	Number of Participants	Participation Rate by Level (%)
Board of Directors	8	53.3%
Senior Management	19	34.5%
Employees	21	1.1%

Vanachai Group places strong emphasis on cultivating a risk management culture across the organization. The objective is to ensure that employees at all levels possess the knowledge, understanding, and awareness necessary to manage risk systematically. This enables the Company to respond effectively to uncertainties and supports the achievement of business objectives with stability and resilience.

The Company promotes this culture through the integration of Risk-Based Thinking in line with the ISO 9001:2015 management system certification. Employees at all levels are encouraged to participate in risk identification, assessment, mitigation, and reporting through a structured process. This shared understanding is reinforced by formal tools such as the Risk and Opportunity Analysis Manual (WI-VPI61001), which embeds risk management into daily operations. In addition, defined risk tolerance levels are used as a basis for decision-making throughout the organization.

The Board of Directors plays a key role in overseeing the implementation of a consistent risk management system across the Vanachai Group, ensuring alignment with good governance principles and the expectations of the Stock Exchange of Thailand (SET). In 2024, the Company launched a risk management training program for all employee levels, including senior management. The program was designed to strengthen the risk culture using global frameworks such as COSO ERM 2017 and COSO ERM 2018 (ESG). The content is integrated with existing business processes to ensure practical application in each functional area and to raise awareness of strategic uncertainties that could affect the Company's goals.



**“OWN THE RISK...
LEAD THE CHANGE.”**



VANACHAI AND SUSTAINABILITY

Vanachai Group is committed to conducting business on the foundation of sustainability, guided by policies, strategic plans, and long-term goals that align with the Company’s vision of contributing to forest resource stewardship, improving quality of life, and fostering an environmentally responsible world. The Company aspires to lead in the development of natural wood alternatives through innovation and environmentally conscious technologies, securing a sustainable future for both business and ecosystems.

Vanachai operates with a strong commitment to good governance, social and environmental responsibility, and the circular economy. It focuses on efficient resource use, waste reduction, and targets carbon neutrality by 2050, supported by investments in clean energy such as biomass and rooftop solar power. The Company also promotes biodiversity conservation and advances resource management practices to minimize climate impacts.



On the economic front, Vanachai emphasizes the development of eco-friendly products, the enhancement of production efficiency, and the strengthening of a resilient supply chain. It fosters partnerships with suppliers to elevate sustainability standards across the value chain. In the social dimension, the Company champions human rights, workplace safety, employee development, and community engagement through locally contextualized area-based development initiatives.

Furthermore, the Company ensures transparency in its operations and maintains a robust Environmental, Social, and Governance (ESG) risk management system. It continuously monitors and evaluates its performance in alignment with its sustainability policies, with the full support of the Board of Directors. Vanachai is committed to achieving balanced and enduring growth, particularly through responsible production and consumption, climate resilience, and cross-sector collaboration driving the organization toward genuine long-term sustainability.

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Review of the Sustainability Development Approach

In 2024, Vanachai Group continued to advance its sustainability agenda, reaffirming that sustainability is not merely an organizational goal, but a core principle driving responsible and balanced growth across environmental, social, and governance (ESG) dimensions. The Company aspires to embed sustainability as the foundation of long-term business operations.

Key Strategic Progress on Sustainability in 2024

- Establishment of the Sustainability Committee**
To embed sustainability in all levels of business decision-making, the Company established a Sustainability Committee responsible for setting strategic direction and aligning long-term sustainability goals with global trends. The Committee oversees the integration of sustainability objectives across departments and formally approves ESG key performance indicators (KPIs) for the Managing Director, senior executives, and sustainability teams.
- Appointment of the Sustainability Development Task Force**
To ensure the execution of plans, the Company formed a cross-functional Sustainability Development Task Force. This team plays a key role in implementing sustainability education initiatives relevant to each department, supporting projects related to environmental innovation, resource efficiency, and creating positive social impact. The task force ensures that ESG goals and KPIs are measurable and actionable.
- Capacity Building through Sustainability Training**
To foster a sustainability-driven corporate culture, the Company launched training programs for its sustainability team and key personnel. These programs are designed to strengthen knowledge in areas such as carbon reduction, resource

efficiency, and social responsibility—laying a strong foundation for in-house leadership in sustainability. A key objective is to cascade this knowledge throughout all employee levels, ensuring continuous internal capacity building and the long-term institutionalization of sustainability knowledge.

Sustainability Governance and Management

Vanachai Group views sustainability governance as a critical foundation in driving its mission to become a leader in innovative alternatives to natural wood, while preserving forest ecosystems and the environment. The Company integrates Environmental, Social, and Governance (ESG) principles into its business strategy to embed sustainability into every core process.

The Sustainability Committee plays a strategic role in setting policies, defining sustainability goals, and aligning initiatives with international standards. A dedicated sustainability working team, in collaboration with senior management, is responsible for implementing programs, monitoring progress, and driving continuous improvement across all departments.

Vanachai is committed to transparent, responsible, and ethical business practices. The Company applies a comprehensive risk management system that addresses ESG-related risks and opportunities, including climate change, environmental impacts, and social issues. It also promotes a sustainability-driven corporate culture by engaging employees, partners, and stakeholders through responsible practices such as advancing the circular economy, reducing carbon emissions, and fostering social development alongside innovation and operational excellence.

Governance mechanisms are regularly reviewed and refined to stay responsive to emerging trends and evolving stakeholder expectations. Through this commitment, Vanachai Group aims to generate long-term value, uphold stakeholder trust, and contribute to a resilient and sustainable future—preserving natural resources for generations to come.

SUSTAINABILITY GOVERNANCE STRUCTURE

Vanachai Group has restructured its sustainability management framework to fully align with ESG principles, encompassing environmental, social, and governance dimensions. Sustainability principles have been embedded at the policy level and operationalized across the organization.

The Sustainability Committee is responsible for setting direction, formulating policies, strategies, and operational frameworks for sustainable business practices across economic, social, and environmental aspects. These guidelines serve as a reference for executives and employees, enabling proactive management and effective adaptation to emerging risks and evolving conditions. To implement these policies, the Company has established the **Corporate Sustainability Management Team (Task Force)**, led by Khun Viman Sroisuk, with a mandate to translate policy into action, evaluate performance, and report progress to the Sustainability Committee. The task force works in coordination with the Risk Management Task Force and its leadership to ensure that governance, sustainability, and risk oversight are integrated into core business operations, based on material issues and stakeholder expectations.

The Chair of the Corporate Sustainability Management is also the **Chair of the Sustainability Committee**, with participation from executives and representatives from each business unit. The team meets quarterly to oversee, monitor, and drive progress toward ESG and organizational sustainability targets.

The Sustainability Development Task Force acts as the central unit for tracking, collecting data, and evaluating performance, reporting

to the Sustainability Committee at least twice annually. The key objective of this structure is to execute the Group’s strategic commitment to environmental conservation, specifically the goal of achieving carbon neutrality by 2050 and net-zero greenhouse gas emissions by 2055. These are among the highest-priority issues for the organization.

Role in Driving Organizational Sustainability

Sustainability Committee

- 1) Establishes corporate sustainability policies and strategies.
- 2) Oversees and ensures alignment of implementation with strategic direction.
- 3) Promotes the integration of ESG into core business processes.
- 4) Enhances transparency and stakeholder trust.
- 5) Supports long-term targets such as Carbon Neutrality by 2050 and Net Zero Emissions by 2055.

Head of the Sustainability Development Task Force

- 1) Translates sustainability policies into practical implementation.
- 2) Sets strategic goals and defines key performance indicators (KPIs).
- 3) Coordinates training, knowledge-sharing, and organizational-level execution.
- 4) Oversees and monitors progress across functions.
- 5) Leads the cultivation of a sustainability-driven organizational culture.
- 6) Reports outcomes to the Sustainability Committee and relevant stakeholders.

Sustainability Development Task Force

- 1) Implements the Company’s sustainability policies and strategies.
- 2) Oversees and monitors the progress of sustainability initiatives.
- 3) Coordinates data sharing and sustainability knowledge across departments.
- 4) Manages ESG-related risks and opportunities.
- 5) Promotes stakeholder engagement and participation.

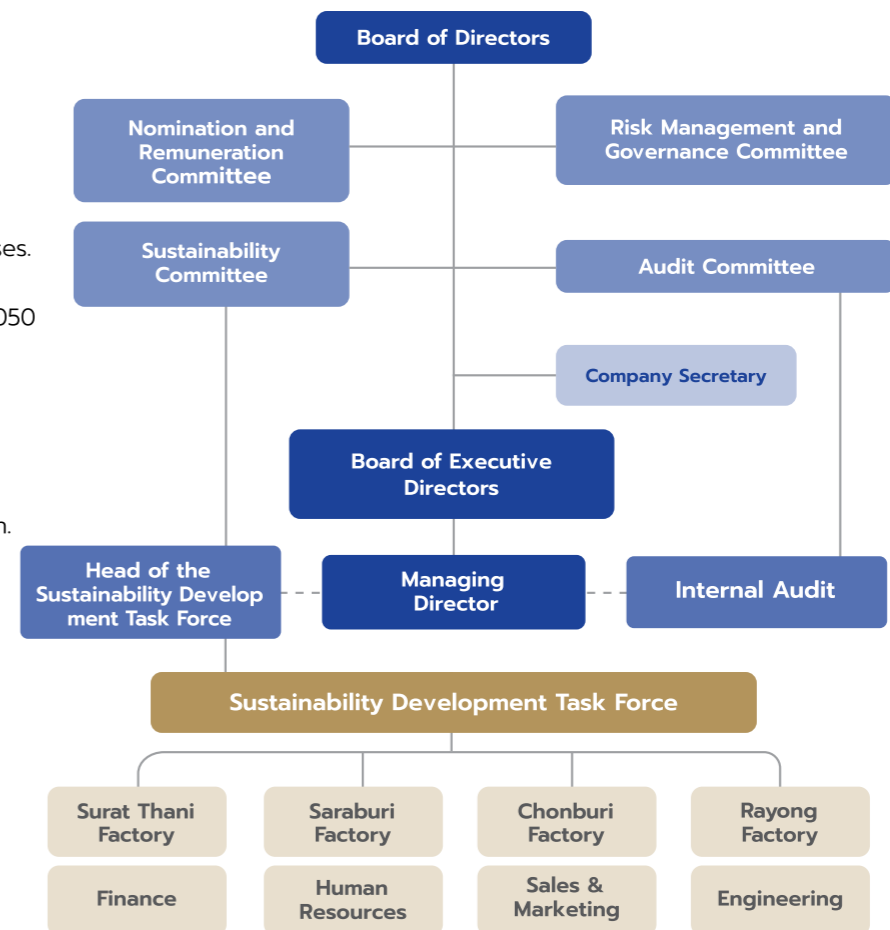


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VANACHAI GROUP'S SUSTAINABILITY DEVELOPMENT PURPOSE

FOREST | FUTURE | TOGETHER

FOR A

**SUSTAINABLE
LIVING**

**BY EMBRACING ECO-
CONSCIOUS INNOVATION,**

we safeguard forests and inspire harmony between
humanity and nature for generations to come.

Corporate Sustainable Purpose

Vanachai Group recognizes the importance of **inspiring sustainable living** by delivering high-quality, world-class wood-based products through trusted innovation, while actively supporting forest conservation.

Amid the escalating impacts of climate change, there is an urgent need to protect the environment and natural resources. In response, Vanachai is dedicated to developing sustainable product innovations that serve as alternatives to forest-based materials, reducing dependence on natural forests, mitigating deforestation, and helping preserve wildlife habitats.

By supporting forest conservation efforts, the Company contributes to the protection of vital ecosystems, biodiversity, and carbon sequestration, key elements in addressing climate change and maintaining ecological balance.

Delivering high-quality, sustainable wood products not only meets the rising demand for environmentally friendly materials, but also **promotes responsible consumption and production practices**.

Through these commitments, Vanachai Group fosters a culture of sustainable living, addresses global environmental challenges, and **contributes to a more resilient and environmentally conscious future for all**.

SUSTAINABILITY STRATEGY AND IMPLEMENTATION APPROACH

Vanachai Group operates with sustainability as a core pillar of its corporate strategy, guided by the vision: **“Together we preserve the future of forests and lead toward a greener tomorrow through Vanachai’s natural wood alternatives, supporting sustainable living and protecting forest ecosystems”.**

The Company is committed to balancing performance, environmental stewardship, and fair social development.

Vanachai’s sustainability approach is guided by the **“VANACHAI SUSTAINABILITY MOVE”** framework, which drives the organization toward ESG goals in a structured manner.

- It focuses on 10 material sustainability topics that require urgent action, including greenhouse gas reduction, circular resource use, occupational safety, governance, and community engagement.
- These are consolidated into 7 core operational methods: innovation, organizational and human development, stakeholder

engagement, environmental investment, strong governance systems, enabling technologies, and fostering a sustainable corporate culture.

This is distilled into the overarching strategy: **“FOREST–FUTURE–TOGETHER”** which reflects the Company’s commitment to natural resource stewardship, forward-thinking innovation, and inclusive collaboration addressing all ESG dimensions comprehensively.

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Sustainability Strategy Framework 2023–2025



SUSTAINABILITY STRATEGIC PLAN 2023 TO 2026

Vanachai Group has established a three-year short-term sustainability strategy (2023–2026) focused on translating material sustainability topics into clear, actionable practices. The strategy addresses environmental, social, and governance (ESG) dimensions to mitigate risks, unlock opportunities, and deliver value to stakeholders at all levels.

This strategy is designed to align directly with the Company’s core business processes, including sustainable product development, responsible supply chain management, enterprise risk management, and structured engagement with communities surrounding its manufacturing sites.

Over this three-year period, the Company aims to embed sustainability into decision-making at all levels and position it as a key driver in the transition toward a stronger, more balanced, and sustainable business. The strategy emphasizes measurable outcomes and transparent communication of progress to the public.



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FOREST



- Promote the Bio-Economy
- Enhance the Circular Economy
- Transition towards a Green Economy

Vanachai Group’s environmental strategy focuses on natural forest conservation, responsible resource management, and climate change mitigation. The Company prioritizes sustainable resource use, the protection of natural forests, and the responsible sourcing of raw materials. To address the climate crisis, Vanachai implements carbon reduction strategies, promotes the use of renewable energy, and enhances energy efficiency to support the transition toward a low-carbon economy. The Company also emphasizes pollution control, waste, and water resource management through advanced waste treatment systems, aiming to minimize environmental impact and improve circular economy efficiency.

These efforts position Vanachai as a leader in forest conservation and environmentally responsible manufacturing, contributing to a more sustainable future.

FUTURE



- Build a Future for Business Resilience
- Build a Future for Emerging Market Growth
- Build a Future Strengthening Business Partnerships

Vanachai Group’s corporate governance strategy is grounded in the belief that strong governance is essential for stable and sustainable growth. The Company is committed to ethical business practices, operating with transparency, integrity, and in alignment with international standards. Recognizing the importance of a sustainable value chain and responsible supply chain management, Vanachai fosters collaboration with partners who share its sustainability vision. This approach enhances supply chain resilience while reinforcing long-term strategic alignment. The Company also promotes social and environmental innovation through the development of products that reduce environmental impact and contribute to industrial sustainability. Economic growth is pursued in tandem with responsibility, ensuring that products and services align with sustainability principles.

Vanachai closely monitors geopolitical trends to remain agile in the face of rapid changes in global trade dynamics, reinforcing its readiness and adaptability in international markets.

TOGETHER



- Together, We Safeguard Society
- Together, We Preserve Communities
- Together, We Protect our Employees

Vanachai Group’s social strategy is built on the belief that sustainability extends beyond business operations, it is about creating positive impact for employees, communities, and customers. The Company is committed to enhancing the quality of life in its operating areas by supporting sustainable community development programs in education, healthcare, and livelihoods. In terms of labor practices, Vanachai provides employment opportunities for vulnerable groups to help ease family burdens and promote inclusion. The Company also prioritizes employee well-being through safe and healthy working environments, while fostering skill development, equality, and diversity. This ensures that all employees have the opportunity to grow and reach their full potential.

In response to evolving consumer behavior, Vanachai continues to develop environmentally friendly products that meet the growing demand for sustainability. The Company is dedicated to achieving high levels of customer satisfaction through responsible innovation and service.

FROM FOREST CONSERVATION TO A SUSTAINABLE FUTURE

(FROM FOREST TO FUTURE)

Our planet is facing urgent environmental challenges such as climate change, biodiversity loss, and unsustainable resource consumption, alongside widening social inequalities. Vanachai Group is committed to driving sustainable innovation that addresses these global issues. Guided by a circular economy approach, the Company promotes the use of environmentally friendly alternative materials and strives toward carbon neutrality.

Rooted in strong corporate values and ethical business practices, Vanachai's pursuit of sustainability is not only a necessity but also a foundation for long-term success.

Vanachai Group's strategy is structured around three core pillars: **FOREST**, **FUTURE** and **TOGETHER**, which are aligned with the Company's key sustainability issues.



Biodiversity Conservation



Responsible Resource Management



Waste and Materials Management



Water Stewardship



Energy Management



Air Pollution Management



Climate Action and Greenhouse Gas Emissions



Business Ethics and Integrity



Economic Growth and Value Creation



Geopolitical Factors and International Relations



Green and Inclusive Innovation



Product and Service Responsibility



Sustainable Supply Chain Management



Sustainable Value Chain



Customer Satisfaction



Consumer Insights and Emerging Expectations



Local Development and Shared Value Creation



Diversity, Equity, and Inclusion (DEI)



Employee Wellbeing and Skills Development



Occupational Health, Safety, and Wellbeing

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FOREST

Forest Conservation and Environmental Protection

Bio-Economy

Vanachai Group is committed to promoting biodiversity and improving resource efficiency through sustainable sourcing and circular economy practices to support a strong bio-based economy.

Relevant Sustainability Topics:



Relevant SDGs:



Circular Economy

Vanachai Group aims to reduce waste and enhance energy efficiency through effective resource management, recycling, and sustainable production processes to advance the circular economy.

Relevant Sustainability Topics:



Relevant SDGs:



Green Economy

Vanachai Group is focused on reducing greenhouse gas emissions, managing pollution, and strengthening climate resilience through sustainable approaches that support the transition to a sustainable green economy.

Relevant Sustainability Topics:



Relevant SDGs:



FUTURE

Building a Sustainable Future

Future for Business Resilience

Vanachai Group upholds business ethics, drives economic growth, and responds to geopolitical challenges to build a resilient and sustainable future for our business.

Relevant Sustainability Topics:



Relevant SDGs:



Future for Emerging Market Growth

Vanachai Group advances green innovation and delivers responsible products and services to meet evolving market needs and support a sustainable future.

Relevant Sustainability Topics:



Relevant SDGs:



Future Strengthening Business Partnerships

Vanachai Group collaborates with partners and suppliers to drive sustainable supply chain management and build a responsible, resilient, and future-ready value chain.

Relevant Sustainability Topics:



Relevant SDGs:



TOGETHER

Together, We Care

Together, We Safeguard Society

Vanachai Group is committed to enhancing customer satisfaction and promoting sustainable behavior by supporting environmentally friendly products to help create a better society and a more sustainable future.

Relevant Sustainability Topics:



Relevant SDGs:



Together, We Preserve Communities

Vanachai Group supports community development and shared value creation through local sourcing and employment at its factories, fostering mutual growth between the community and our business.

Relevant Sustainability Topics:



Relevant SDGs:



Together, We Protect Our Employees

Vanachai Group is dedicated to promoting equity, diversity, and employee well-being through skill development and by providing a safe, healthy, and inclusive work environment.

Relevant Sustainability Topics:



Relevant SDGs:



KEY SUSTAINABILITY STRATEGY OUTCOMES IN 2024 AND LONG-TERM SUSTAINABILITY GOALS

(VANACHAI SUSTAINABLE MOVE)

Vanachai Group has established seven key sustainability goals; each aligned with the Company’s ESG strategic framework. These goals are derived from the 20 material sustainability topics and are structured across short-term, medium-term, and long-term timeframes. They demonstrate how each topic is relevant to or impacts the business and reflect the Company’s commitment to supporting the United Nations Sustainable Development Goals (SDGs) through clearly defined linkages.



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GOAL 1

SAVE THE FOREST

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Support Environmental Strategy: Promote the Bioeconomy through Maximized Wood Utilization

Materiality Topic	Impact on Business Operations	Key Performance Index: KPI	Unit	Result	Target			Relevant SDGs
				2024	2024	2030	2050	
Biodiversity Conservation (Biodiversity and Ecosystem Protection)	<ul style="list-style-type: none"> Ensure Long-Term Wood Supply and Supply Chain Stability Protect biodiversity and ecosystems, which are core to the business Use wood residues from communities and agriculture in high volumes and sustainable ways Reduce environmental, regulatory, and reputational risks 	Using natural wood alternatives in business operations is equivalent to preserving natural forests	Hectares/Year	70,400	70,400	93,280	>93,280	
		Promote and increase the use of underutilized rubberwood to maximize efficiency	Million Trees	2.21	2.00	2.65	>2.65	
		Support tree planting and expand green spaces in communities through local development and Creating Shared Value (CSV) projects	Trees (Cumulative Trees)	2,822 (Cumulative Trees)	2,700 (Cumulative Trees)	12,000 (Cumulative Trees)	50,000 (Cumulative Trees)	





Reduce Deforestation
The Company uses only wood residues such as branches, bark, and sawdust, processed with advanced technology to produce high-quality and environmentally friendly construction materials.

VANACHAI GROUP'S PRODUCTION RAW MATERIALS

5% ADHESIVES AND OTHERS





GOAL 1 SAVE THE FOREST

Support Environmental Strategy: Promote the Bioeconomy through Maximized Wood Utilization

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GOAL 1.1

Using Natural Wood Alternatives to Preserve Natural Forests



GOAL 1.1.1

Valuing Every Part of the Tree is a way of giving back to the forest. Every product manufactured helps preserve natural forests by reducing the need for industrial deforestation.

Vanachai Group’s production process supports forest conservation by sourcing rubberwood from plantations past their latex-producing cycle, as well as buying wood residues and branches from local communities that would otherwise be burned, causing pollution.



Product manufacturing is equivalent to reducing deforestation of natural forests (by Area in Hectares).

Performance Results	Long-Term Plan	
	2030	2050
2024	93,280	>93,280



GOAL 1.1.2

Reduce Open Burning and Pollution: Vanachai Group purchases leftover wood residues directly from local communities to use as raw materials in product manufacturing.

Creating Jobs Without Illegal Logging: Now, instead of burning branches and creating pollution and PM10 emissions, wood waste is collected and sold to Vanachai. These residues are then transformed into high-quality, eco-friendly wood-based construction materials.



Volume of Wood Residues Purchased from Communities (Million Tons)

Performance Results	Long-Term Plan	
	2030	2050
2024	2.12	>2.12

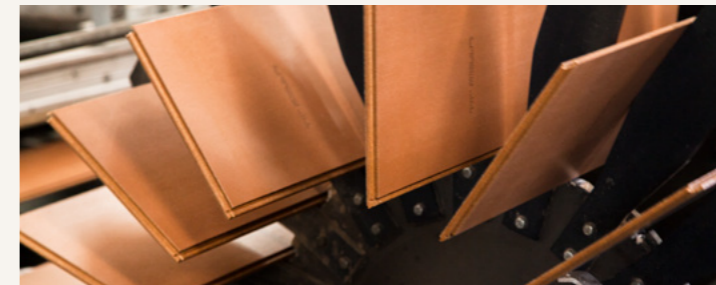


GOAL 1.2

Promote and Increase the Use of Rubberwood with Value-Added Innovation:

Rubberwood creates value and expands opportunities, as Thailand is one of the world’s leading producers. It serves as an effective alternative to declining natural forests and contributes to expanding national green spaces.

Rubberwood from Retired Trees: Vanachai Group purchases rubber trees that have reached the end of their latex-producing life cycle, maximizing their use and developing export products from rubberwood for emerging global markets.



Volume of Rubberwood Used in Production (Million Tons)

Performance Results	Long-Term Plan	
	2030	2050
2024	2.65	>2.65

GOAL 2

JUMP-START THE RENEWABLE ENERGY

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Support Environmental Strategy: Enhance the circular economy and promote sustainable use of natural resources


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Materiality Topic	Impact on Business Operations	Key Performance Index: KPI	Unit	Result	Target			Relevant SDGs
				2024	2024	2030	2050	
Energy Management	<ul style="list-style-type: none"> • Reduce reliance on fossil fuels by transitioning to renewable energy such as solar and biomass • Minimize energy loss from waste heat and leakage • Lower production costs by improving machine energy efficiency • Contribute to greenhouse gas reduction and carbon neutrality targets • Strengthen the Company's eco-friendly image and compliance with energy regulations 	• Total Energy Consumption (electricity and heat)	Gigajoules (GJ)	4,197,757				
		• Total Renewable Energy Consumption (electricity and heat)	Gigajoules (GJ)	2,304,691				
		• Share of Renewable Energy Usage (electricity and heat)	%	54.9%	50%	55%	>60%	
		• Renewable Energy Generation (electricity and heat)	GWh/ Year	21.29	21.29	29.10	>29.10	
		• Solar Energy (converted from MWp)	MWh/ Year	21,280	21,280	29,078	>29,078	
		• Biomass Energy	MWh/ Year	9.90	9.90	19.80	>19.80	

GOAL 3

SET ZERO WASTE GOALS IN MANUFACTURING

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Support Environmental Strategy: Transition toward a green economy by achieving carbon neutrality

Materiality Topic	Impact on Business Operations	Key Performance Index: KPI	Unit	Result	Target			Relevant SDGs
				2024	2024	2030	2050	
Responsible Resource Management	<ul style="list-style-type: none"> Utilize wood residues and production scraps to generate biomass energy Design production processes to minimize waste generation Improve raw material efficiency and promote circular economy practices Maximize resource utilization (rubberwood as the primary raw material) 	• Reclaimed Materials Used	Tons	552,122	350,000	>550,000	>550,000	
		• Reclaimed Materials Used	%	25.0%	15.0%	>25.0%	>25.0%	
		• Rate of Reused Products per Ton of Production Capacity	%	29.6%	20.0%	>30.0%	>30.0%	
Waste and Materials Management	<ul style="list-style-type: none"> Systematically separate and manage waste to minimize environmental impact Promote the circular economy by reintegrating residual materials into the value chain 	• Production Process Waste Reduction	%	Zero	Zero	Zero	Zero	

GOAL 4

FOCUS ON FRESH AIR AND CLEAN WATER

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Support Environmental Strategy: Advancing the transition to a green economy and achieving carbon neutrality




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Materiality Topic	Impact on Business Operations	Key Performance Index: KPI	Unit	Result	Target			Relevant SDGs
				2024	2024	2030	2050	
Air Pollution Management	<ul style="list-style-type: none"> Improve production processes to reduce air pollution Install dust, smoke, and noise control systems in factories to minimize impact on nearby communities Use efficient technology and machinery to reduce emissions and environmental discharge Comply with environmental regulations and complete Environmental Impact Assessments (EIA) for energy projects Strengthen community trust and reduce regulatory risks 	• Nitrogen Oxide (NOx)	Kg. per Ton of Production	0.04	0.03	0.01	0.00	
		• Carbon Monoxide (CO)	Kg. per Ton of Production	0.38	0.40	0.00	0.00	
		• Total Suspended Particulate (TSP)/PM10	Kg. per Ton of Production	0.03	0.04	0.01	0.00	
		• Greenhouse Gas Emission Intensity (Scope 1 and 2) per Unit of Production	tCO ₂ e	0.071	0.075	0.010	0.00	
Water Stewardship	<ul style="list-style-type: none"> Reuse treated water in production processes to support circular economy principles Prevent wastewater discharge that could impact the environment and surrounding communities Use water efficiently in production to reduce the need for fresh water 	• Water Consumption per Unit of Production	M ³ per Ton of Production	0.30	0.35	<0.30	<0.30	
		• Wastewater Discharge Rate from Factories	M ³ per Ton of Production	0	0	0	0	
		• Proportion of Treated or Reused Wastewater	%	100%	100%	100%	100%	
Climate Action and Greenhouse Gas Emissions	<ul style="list-style-type: none"> Use renewable energy such as solar and biomass to reduce dependence on fossil fuels Mitigate regulatory risks related to climate change and meet stakeholder expectations 	• Reduction Rate of Greenhouse Gas Emissions (Scope 1 and 2) Compared to the 2018 Baseline	%	22.84%	20.00%	60%	100%	

GOAL 5

SOCIAL RESPONSIBILITY



Support Social Strategy: Strengthen communities by improving the quality of life in areas where Vanachai operates

Materiality Topic	Impact on Business Operations	Key Performance Index: KPI	Unit	Result	Target			Relevant SDGs
				2024	2024	2030	2050	
Local Development and Shared Value Creation	<ul style="list-style-type: none"> Utilize wood residues and locally sourced raw materials in production to build a local value chain Support local employment and continuously promote community-based economic development 	<ul style="list-style-type: none"> Number of Stakeholders Joining CSR Activities 	No. of Participants in CSR Activities per Year	1,232	1,000	4,000	4,800	  
		<ul style="list-style-type: none"> Employee Volunteering Engagement Rate 	%	68.3%	50%	75%	100%	

GOAL 6

CHANGE FOR THE BETTER

Support Governance/ Economic Strategy: Create future markets through eco-friendly, innovative products

Materiality Topic	Impact on Business Operations	Key Performance Index: KPI	Unit	Result	Target			Relevant SDGs
				2024	2024	2030	2050	
Green and Inclusive Innovation	<ul style="list-style-type: none"> Promote circular product design to minimize environmental impact throughout the product life cycle Apply innovative production methods to reduce waste 	<ul style="list-style-type: none"> Quantifiable benefits from innovation management 	Million Baht	3.47 (Q4 Sales, 2024)	14.0 (Full-Year Sales)	35.0	>35.0	 

GOAL 7

GOOD CORPORATE GOVERNANCE

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Support Governance/Economic Strategy: Build a resilient business future through sound corporate governance

Materiality Topic	Impact on Business Operations	Key Performance Index: KPI	Unit	Result	Target			Relevant SDGs
				2024	2024	2030	2050	
Business Ethics and Integrity	<ul style="list-style-type: none"> Operate with integrity, transparency, and accountability Establish and communicate business ethics policies and guidelines to employees and business partners across the organization Build trust and confidence among stakeholders including investors, customers, and local communities 	Ethical Knowledge for Directors and Employees	% of Employees Trained on Ethics	100%	100%	100%	100%	
		Number of Incidents or Complaints Related to Ethics and Governance	Total Number of Complaints	Zero	Zero	Zero	Zero	

FOREST

FOREST CONSERVATION AND ENVIRONMENTAL STEWARDSHIP

- Promote the Bio-Economy
- Enhance the Circular Economy
- Transition towards a Green Economy

“Vanachai Group is committed to sustainability by minimizing environmental impacts through innovation and responsible business practices.”

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PATHWAY TO NET ZERO: ADVANCING SUSTAINABILITY THROUGH GREEN INNOVATION

Vanachai Group is committed to achieving Net Zero by 2055 through tangible environmental impact reduction initiatives. These include reducing greenhouse gas emissions, improving energy and water efficiency, minimizing waste, utilizing resources efficiently, and continuously transitioning to renewable energy sources. The Group also supports forest planting and expansion to strengthen ecosystems, biodiversity, and long-term sustainability. It promotes green innovation in production and responsible practices throughout the supply chain, while fostering environmental awareness among employees and stakeholders to drive a truly environmentally friendly and sustainably nature-aligned future.



Key Performance Indicators:

95.19%

Proportion of materials reused/recycled

10.95%

Increased share of renewable electricity and heat consumption in production compared to the 2021 baseline

16.47%

Reduction in greenhouse gas emissions intensity (Scope 1 and 2) per unit of production compared to the 2021 baseline



Promote the Bio-Economy:

Promoting biodiversity and efficient resource utilization through circular economy practices and sustainable sourcing, supporting a robust bioeconomy.



Enhance the Circular Economy:

Reducing waste and enhancing energy efficiency through resource management, recycling, and sustainable production processes to advance the circular economy.



Transition towards a Sustainable Economy:

Reducing greenhouse gas emissions, controlling pollution, and strengthening resilience to climate crises, to support a sustainable green economy.

The company is committed to developing green innovations, reducing carbon emissions across the supply chain, promoting renewable energy, improving resource efficiency, balancing ecosystems, and engaging communities and partners to advance environmentally friendly and sustainable growth.





PROMOTE THE BIO-ECONOMY

Driving a Sustainable Bioeconomy

Vanachai Group is committed to advancing a sustainable bioeconomy by balancing economic growth with environmental responsibility. This is achieved through the conservation of natural forests and the protection of biodiversity, using renewable resources efficiently and responsibly to maintain ecosystems and support long-term sustainable development.

The bioeconomy is a fundamental pillar of the company’s strategy as it promotes the use of sustainable raw materials, particularly rubberwood at the end of its latex-producing life cycle, as the company’s primary production feedstock. This reduces dependence on natural forests and mitigates environmental impacts. The company continues to develop manufacturing technologies to add value to raw materials by embracing circular economy principles and reducing carbon emissions across every stage of its value chain.

In addition, the company supports sustainable forest management, ecosystem restoration, and biodiversity conservation in collaboration with local communities and supply chain partners. This contributes to building a resilient low-carbon future that delivers sustainable value for the business society and the planet. The bioeconomy is therefore not only an environmental commitment but also a strategic pathway to genuine long-term success.

Key Related Material Topics:



Responsible
Resource
Management



Natural forests
and Biodiversity
Conservation



Responsible Resource Management

Why this matters for Vanachai Group

Responsible resource management is a material issue for Vanachai Group that directly supports its sustainability mission and drives the circular bioeconomy. As a producer of wood-based products to replace natural wood, the company inevitably depends on natural resources. Therefore, efficient and responsible resource management is at the heart of both environmental conservation and long-term business stability.

The company prioritizes making full use of wood residues, small-diameter wood, and renewable raw materials to reduce dependence on natural forests and to maximize the value of

leftover materials. This approach also enhances production efficiency, reduces costs, and mitigates environmental impacts across every stage of the business value chain, from raw material sourcing through to production processes, supported by environmentally friendly technologies and strict pollution controls.

Responsible resource management also contributes to biodiversity conservation, reducing climate change impacts, and building stakeholder trust while advancing toward carbon neutrality, a circular production system, and sustainable forest stewardship.



*"RESPONSIBLE RESOURCES FOR A
RESILIENT TOMORROW"*

Targets for 2024

▲ **95.4%**

All wood residues from production will be reused as renewable raw material

▲ **3.1%**

All other production residues will be recycled into products

Our Approach

Vanachai Group operates under the Chairman’s guiding philosophy **“We will Maximize the Value of Our Resources”** by adopting a holistic resource management principle that covers everything from root to crown. The company follows the strategy **“Maximizing the Value of the Entire Rubber Tree”** which demonstrates a commitment to making use of every part of the tree, including the trunk, branches, twigs, leaves, and any leftover materials from the production process. This also includes prioritizing recycled materials instead of newly sourced natural resources whenever possible. The goal is to minimize waste, avoid excessive resource consumption, and promote a sustainable circular economy while creating balanced value for society, communities, and the environment.



Utilization of wood residues and production by-products:

The Group sources raw materials from end-of-life rubber trees, as well as other leftover wood and pruned branches from farmers, and wood scraps from furniture factories that were traditionally burned for disposal. Vanachai transforms these into valuable resources under a Waste to Value concept.



Purchasing raw materials from communities:

Vanachai procures raw materials directly from local communities, utilizing leftover wood that would otherwise be burned. This supports a secure supply of raw materials while creating household income and encouraging community self-reliance.



Environmental protection:

Reusing wood scraps that would otherwise be burned helps reduce PM 2.5 and PM 10 particulate emissions, a source of air pollution, and supports the country’s climate change mitigation goals.



Internal communication and employee training:

- Training on circular resource use and the value loop.
- Raising awareness using simple and accessible language such as “Smart Resource Use” or “Using Resources from Root to Top”.



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Creating Value from End-of-Life Rubber Trees (Renewable and Zero Waste)

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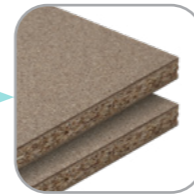
TWIGS
Medium Density Fiberboard (MDF)
or medium-density fiberboard panel

- Produced by breaking down wood residues into fibers and pressing them into boards using an adhesive as a binder.



BRANCHES
OSB (Oriented Strand Board)
or Layered pressed wood panels

- Produced by layering small wood flakes and pressing them into boards using an adhesive binder.



SLABS OR OFFCUTS
PARTICLE BOARD (PB)

- Particle Board is manufactured from small pieces of wood left over from sawmill processing, which are formed into boards and bonded with adhesive.



TRUNK BASE
PLYWOOD

- Plywood is produced by layering thin wood veneers and pressing them together with adhesive.

ROOTS

- The roots are used as raw material for biomass power plants, helping reduce the cost of fuel for in-house electricity generation.



Raw Material Use	2021	2022	2023	2024
Use of recycled raw materials and wood residues* (unit: Tons)				
• Recycled raw materials	1,918,616	1,785,198	2,140,663	2,208,486
• Percentage of recycled raw materials	94.85%	95.07%	95.34%	95.19%
• Rate of recycled raw materials used per production capacity (%)	95.60%	98.45%	97.8%	98.52%
• Increase or decrease in the rate of recycled raw materials used per production	N/A	2.85	-0.65	0.72
Use of other recycled materials converted into new products (unit: Tons)				
• Recycled raw materials	28,092	23,638	28,492	28,910
• Percentage of raw materials	3.02%	3.04%	3.03%	3.05%
• Rate of other recycled materials used per production capacity (%)	1.55%	1.55%	1.54%	1.55%
• Increase or decrease in the rate of other recycled materials used per production	N/A	0	-0.01	0.01

* Note: Bark under size equals 25 percent of standard

In 2024 Vanachai Group demonstrated continued progress in resource efficiency compared to the base year 2021. In particular, the proportion of recycled raw materials and wood residues reused increased from 1,918,616 tonnes in 2021 to 2,208,486 tonnes in 2024, representing an increase of approximately 15.1 percent. This reflects the Group's commitment to driving sustainable production, supporting SDG 12.2 and SDG 12.5.

Although the share of recycled raw materials relative to total raw materials rose only slightly from 94.85 percent to 95.19 percent, the rate of recycled raw material use per production capacity increased from 95.60 percent in the base year to 98.52 percent in the current year, equivalent to a 2.9 percent increase. This is a positive outcome of ongoing process efficiency improvements under circular economy principles in line with GRI 301-2.

For the use of other recycled materials in producing new products, volumes rose from 28,092 tonnes in the base year to 28,910 tonnes in 2024, an increase of approximately 2.91 percent, while the rate of use per production capacity remained steady at 1.55 percent, consistent with GRI 301-1.

These performance results demonstrate progress in raw material management by prioritizing efficient resource use, reducing dependence on virgin raw materials, and promoting reuse in accordance with circular economy principles, aligning with GRI 301: Materials and supporting SDG 12 Responsible Consumption and Production.

RESOURCE USE PERFORMANCE IN 2024

(Base Year 2021)

95.19%

of total raw materials, a portion is reused as renewable resources

3.05%

of total raw materials, a portion is recycled into new products



Natural forests and Biodiversity Conservation (Biodiversity and Ecosystem Protection)

Why this matters for Vanachai Group

Biodiversity and ecosystem integrity are critically important for Vanachai Group, which depends on sustainably sourced wood and is committed to promoting a circular bioeconomy. Protecting biodiversity and healthy ecosystems supports the long-term security of raw material supplies and the stability of the supply chain. The degradation of natural forests could lead to biodiversity loss, climate imbalance, and a decline in essential ecosystem services such as carbon sequestration, water regulation, and soil fertility, all of which are vital to the company’s sustainable operations and growth.

Neglecting biodiversity-related risks could expose the company to reputational, operational, and regulatory risks and affect its

ability to meet the growing demand from customers who increasingly require sustainably sourced products.

Furthermore, protecting natural forests aligns with global frameworks such as the Convention on Biological Diversity (CBD) and the United Nations Sustainable Development Goals, particularly Goal 15 (Life on Land). By prioritizing biodiversity protection and reducing deforestation, Vanachai not only minimizes environmental impacts but also builds stakeholder trust, strengthens compliance with environmental standards, and mitigates the effects of climate change. This contributes to conserving natural resources and promoting environmental sustainability for future generations.

Target for 2024

100%

Assess Biodiversity Risks in operational areas

▲ 26 Million Trees/Year

Use substitute wood products equivalent to conserving at least 70,400 Hectares of Natural Forest per year



Our Approach

Vanachai Group has begun its journey to conserve natural forests and protect biodiversity by conducting a Biodiversity Risk Assessment (BRA). This assessment aims to understand potential ecosystem impacts resulting from its operations and to identify high-risk areas.

This assessment provides the company with valuable insights into environmental challenges within its value chain and serves as a guide for developing appropriate strategies to mitigate biodiversity risks. The company's approach focuses on responsible raw material sourcing, the conservation of natural forests, and the prevention of deforestation, aligning with global standards such as the Convention on Biological Diversity (CBD) and the United Nations Sustainable Development Goals, particularly Goal 15 (Life on Land). To achieve its biodiversity conservation targets, Vanachai Group is committed to implementing the following approaches:



Operations fully covered by a biodiversity policy at 100 percent:

To ensure that all operational sites follow biodiversity guidelines and best practices to minimize ecosystem impacts.



Implement Biodiversity Management Plans (BMPs):

At high-risk operational sites and with key partners to reduce ecosystem impacts.

In addition, the company is committed to identifying and mitigating biodiversity risks through Biodiversity Risk Assessments (BRA) and by monitoring ecosystem conditions in and around its operational sites. The focus is on integrating biodiversity considerations into business decision-making processes to ensure long-term sustainability.

Vanachai Group uses substitute wood equivalent to conserving natural trees.

**26 Million Trees
or 70,400
Hectares/Year**

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Vanachai Group has advanced its mission to conserve biodiversity through concrete, area-based actions. The Group has completed comprehensive Biodiversity Risk Assessments (BRA) to map ecologically sensitive areas and use this information to develop impact mitigation measures tailored to each location. All of the Group's operational sites are fully covered under a biodiversity policy. In addition, staff responsible for biodiversity management at the four main production sites have been trained to strengthen their knowledge and practical skills in ecosystem conservation.

The company emphasizes the use of renewable resources from sustainably managed forests, such as wood residues from industry, end-of-life trees (including mature rubber trees that produce little or no latex), and unused wood from communities. This supports the utilization of wood scraps and community wood residues, reducing open burning that causes air pollution and greenhouse gas emissions.

The company's products feature natural wood patterns without contributing to deforestation, helping conserve wildlife habitats, carbon sinks, and watershed areas. In addition, wood scraps and sawdust are efficiently reused, minimizing landfilling and burning. Altogether, these actions have led to a clear improvement in the surrounding environment, with no environmental complaints recorded.

In 2024 this marks an important starting point for serious implementation, paving the way for deeper integration of biodiversity considerations in the future.



PERFORMANCE RESULTS

100%
Biodiversity Risk Assessment conducted in operational areas

26 Million Trees/Year
Use of substitute wood equivalent to conserving natural trees, representing no less than 70,400 Hectares per Year

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Using Substitute Wood Responsibly to Allow Natural Forest Regeneration

Vanachai Group is committed to protecting, restoring, and promoting the sustainable use of terrestrial ecosystems, with a Life on Land policy as follows:

1. Forest conservation and reforestation, working in partnership with local communities on forest planting initiatives and sustainable forest management.
2. Maximizing the use of wood raw materials by ensuring zero waste in production processes so that no wood raw material is left unused.
3. Circular economy and waste management practices to maximize resource efficiency and minimize waste by utilizing wood by-products and agricultural residues, creating value, reducing waste, and enhancing the efficient use of raw materials.

Protecting ecosystems and conserving forests through the company's use of substitute wood is equivalent to conserving natural forests. This approach reduces the demand for natural timber, decreases deforestation, and minimizes environmental impacts, creating opportunities for natural ecosystems to recover on their own. In addition, using substitute wood is a form of circular economy, waste management, and promotes the efficient and sustainable use of resources.

Participatory Biodiversity Protection Project

An example of a participatory biodiversity protection project, which delivers significant benefits by reducing the open burning of wood residues that causes air pollution, helps maintain the ecological balance and biodiversity of forests, and generates income for communities.

- 1) The project involves purchasing wood residues directly from local community members to use as raw materials for production, allowing farmers to collect unused wood and sell it to the company. In 2024, a total of 1.766 Million Kilograms was procured through this program.
- 2) Another initiative involves purchasing rubberwood from plantations with trees over 10 years old that have reached the end of their latex production cycle.

This ensures the entire tree is utilized, from root to crown, to maximize product value. In 2024, a total of 2.21 Million Tons of rubberwood was used in the production process.

Biodiversity Projects	2021	2022	2023	2024
Purchase of wood residues from communities (million kilograms)	1,671	1,443	1,668	1,766
Volume of rubberwood used in production processes (million tons)	1.92	1.79	2.14	2.21



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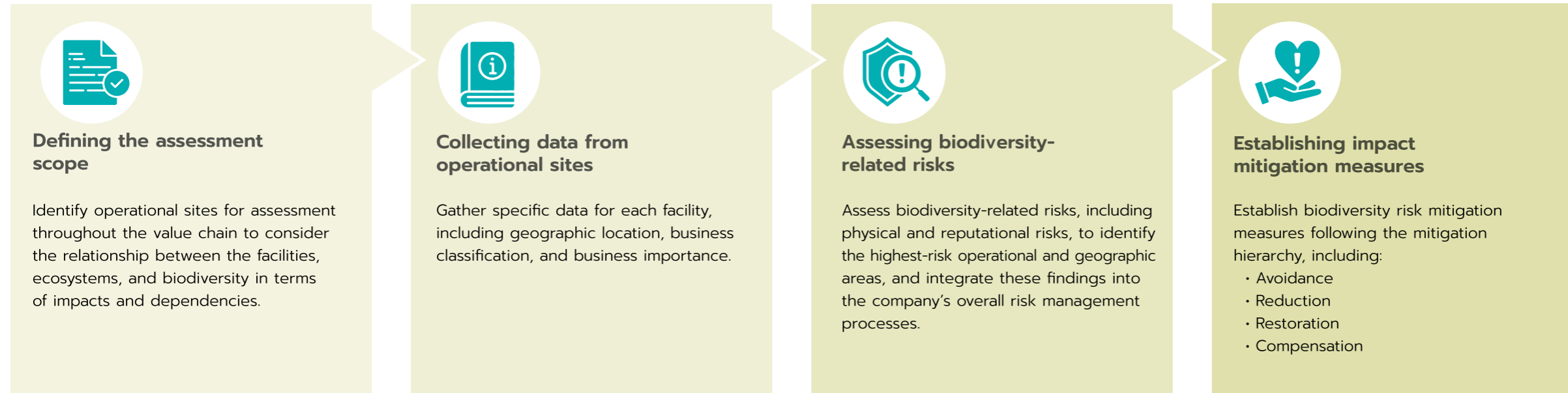
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Biodiversity Risk Assessment Process



This process helps identify, assess, and mitigate potential impacts from the organization's operations on biodiversity and ecosystems. It enables Vanachai Group to protect biodiversity by pinpointing high-risk areas, reducing environmental impacts, and integrating biodiversity considerations into business decision-making processes.

Defining the Scope of Biodiversity Assessment

unit: Hectares

Operational Site or Location	Total area	Green area	% of green area
Vanachai Group Headquarters, Bangkok Province	1.17	0.14	12.3%
Surat Thani Plant, Wiang Sa District	177.28	43.61	24.6%
Rayong Plant, Map Ta Phut Industrial Estate	3.96	0.20	5.0%
Chonburi Plant, Ban Bueng District	48.00	9.60	20.0%
Saraburi Plant, Kaeng Khoi Industrial Estate	47.84	9.57	20.0%
Depot by Vanachai, Chachoengsao Province	5.13	0	0.0%

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Biodiversity Risk Assessment

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No.	Location	Activity	Risk Identification	Ecosystem	Species involved	Key Risks	Impact level	(Likelihood of Occurrence)	Risk Control and Mitigation	Net Risk (After Controls)
1	Vanachai Group Headquarters Building, Bang Sue District, Bangkok	<ul style="list-style-type: none"> - Office Building - Vanachai Woodsmith: Showroom/ Training Center 	<ul style="list-style-type: none"> - Urban Expansion and Land Use Change: The operations of the headquarters may indirectly influence urban growth and resource use - Energy and Resource Use: Electricity, water, and other resource consumption in office operations could impact nearby ecosystems - Waste Generation and Disposal: Without proper waste management systems, there is a risk of environmental contamination 	Urban green spaces	<ul style="list-style-type: none"> • Urban birds, such as the Oriental Magpie-Robin and White-vented Myna • Insects and small organisms associated with urban vegetation, such as butterflies, dragonflies, and bees 	<ul style="list-style-type: none"> • Urban expansion and land use change 	Low	Low	<ul style="list-style-type: none"> - Design office facilities to minimize ecological impacts - Green area ratio compared to the total project area 	Low
				Canal and drainage system (Khleng Sompoi)	<ul style="list-style-type: none"> • Aquatic species in the drainage area, such as Nile tilapia and catfish 	<ul style="list-style-type: none"> • Energy and resource consumption 	Low	High	<ul style="list-style-type: none"> - Apply energy-saving measures - Use renewable energy wherever possible - Install water-saving devices in restrooms 	Low
					<ul style="list-style-type: none"> • Waste generation and disposal 	Medium	Medium	<ul style="list-style-type: none"> - Implement a recycling program - Promote waste separation in the office - Collaborate with certified waste management companies 	Low	
2	Surat Thani Plant, Wiang Sa District, Surat Thani Province	<ul style="list-style-type: none"> - MDF, PB, OSB, MDF-coated, and PB-coated panel production facility - Biomass production facility - Solar rooftop electricity system installation 	<ul style="list-style-type: none"> - Biomass Power Plant (9.9 MW): Uses agricultural residues as fuel, which could impact biodiversity if biomass sourcing affects surrounding ecosystems - Solar Rooftop (3.242 MWp): Helps reduce greenhouse gas emissions (2,016.8 tCO₂/year) but has minor impacts on usable space - Wastewater and Air Pollutant Emissions: Potential contamination of nearby ecosystems if not properly managed - Dust from Wood Residues and Production By-products: Improper dust management could affect air quality and surrounding vegetation 	Nearby tropical rainforest ecosystem	<ul style="list-style-type: none"> • Birds: such as egrets and herons 	<ul style="list-style-type: none"> • Biomass Power Plant (9.9 MW): biomass fuel sourcing and land use changes 	Medium	Low	<ul style="list-style-type: none"> - Source biomass sustainably from certified partners - Promote reforestation and maintain green buffer zones 	Low
				Nearby tropical rainforest ecosystem	<ul style="list-style-type: none"> • Small mammals: such as civets, rats, or other small animals in biomass sourcing areas 	<ul style="list-style-type: none"> • Solar Rooftop (3.242 MWp): solar rooftop installation (land use) 	Low	Low	<ul style="list-style-type: none"> - Optimize installation areas to minimize impact on habitats 	Low
				Agricultural areas (Biomass Raw Material Sources)	<ul style="list-style-type: none"> • Aquatic species: such as Nile tilapia, catfish, and other aquatic organisms in water bodies potentially affected by wastewater discharge 	<ul style="list-style-type: none"> • Wastewater and Air Pollutant Emissions: use of agricultural residues as fuel 	Medium	Medium	<ul style="list-style-type: none"> - Install advanced wastewater treatment systems and regularly monitor water quality - Install high-efficiency air filtration systems - Strictly comply with air quality standards 	Low
					<ul style="list-style-type: none"> • Vegetation: native plants near the factory that may be impacted by dust or pollution 	<ul style="list-style-type: none"> • Dust from Wood Residues, Emissions, and Particulate Matter: dust and production by-product management 	Low	Low	<ul style="list-style-type: none"> - Use proper dust collection and waste disposal systems - Continuously monitor and assess dust management 	Low
						<ul style="list-style-type: none"> • Factory Expansion or Additional Development 	Low	Low	<ul style="list-style-type: none"> - Conduct environmental impact assessments (EIA) - Implement biodiversity offset programs if necessary 	Low

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No.	Location	Activity	Risk Identification	Ecosystem	Species involved	Key Risks	Impact level	(Likelihood of Occurrence)	Risk Control and Mitigation	Net Risk (After Controls)
3	Rayong Plant, Map Ta Phut Industrial Estate, Map Ta Phut District, Rayong Province	- Urea-formaldehyde adhesive production plant, melamine-impregnated paper (MCP)	<ul style="list-style-type: none"> - Urea-formaldehyde adhesive production plant (UF Glue Factory): risks from chemical use, toxic emissions, and potential leaks that could impact the surrounding environment - Melamine Impregnated Paper (MIP): production processes may generate waste and chemical residues 	<ul style="list-style-type: none"> • Industrial area near agricultural zones and mangrove forests • Water systems in nearby water bodies, such as rivers or river mouths 	<ul style="list-style-type: none"> • Freshwater fish and aquatic species: at risk of contamination from wastewater (e.g., Nile tilapia, catfish) • Birds: mangrove birds such as egrets, kingfishers, and storks • Invertebrates: soil organisms potentially affected by formaldehyde and chemical contamination 	• Chemical leaks and contamination	High	Medium	<ul style="list-style-type: none"> - Install double-layer spill prevention systems - Regularly maintain and inspect systems - Use more environmentally friendly adhesives 	Low
						• Emissions of gases and volatile organic compounds (VOCs)	Medium	High	<ul style="list-style-type: none"> - Install high-efficiency air filtration and VOC reduction systems - Monitor and control formaldehyde and VOC emissions - Comply with air quality standards 	Low
						• Wastewater and chemical discharges	Medium	Medium	<ul style="list-style-type: none"> - Install advanced wastewater treatment systems - Regularly monitor water quality 	Low
						• Waste and paper scraps	Low	Low	<ul style="list-style-type: none"> - Implement recycling systems and reuse waste - Ensure safe waste disposal and monitor disposal systems 	Low
						• Land use and infrastructure expansion	Low	Low	<ul style="list-style-type: none"> - Conduct environmental impact assessments (EIA) - Maintain buffer zones and green areas near the plant 	Low

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No.	Location	Activity	Risk Identification	Ecosystem	Species involved	Key Risks	Impact level	(Likelihood of Occurrence)	Risk Control and Mitigation	Net Risk (After Controls)
4	Chonburi Plant, Ban Bueng District, Chonburi Province	<ul style="list-style-type: none"> - MDF, PB, HDF, and EDS production plant - Distribution center - Solar rooftop electricity system installation 	<ul style="list-style-type: none"> - MDF (Medium Density Fiberboard): risks from wood dust, emissions, and raw material sourcing - PB (Particle Board): risks from wood residues and adhesive use in production - HDF (High Density Fiberboard): risks related to emissions and higher energy use compared to MDF - EDS (Embossed Door Skin Panels): risks from chemical residues used in surface coating - Distribution Center: risks associated with transportation, storage, and handling of wood products - Solar Rooftop (3.291 MW): helps reduce greenhouse gas emissions by 2,047.3 tCO₂/year, with minimal biodiversity impact, but slight impacts on land use or heat accumulation 	<ul style="list-style-type: none"> • Agricultural areas and urban buffer zones • Lowland areas in Chonburi • Ecosystems within the industrial estate area 	<ul style="list-style-type: none"> • Birds: such as egrets, storks, and wetland bird species • Aquatic species in water systems: such as catfish, Nile tilapia, and estuarine aquatic life • Mangrove and wetland plants: sensitive to changes in water quality and chemical contamination • Soil microorganisms: potentially affected by chemical residues and production waste 	Emissions and wood dust	Medium	High	<ul style="list-style-type: none"> - Install high-efficiency dust collection and air filtration systems - Continuously monitor air quality and dust levels 	Low
						Chemical residues from surface coating	Medium	Medium	<ul style="list-style-type: none"> - Use environmentally friendly and ecosystem-safe chemicals - Store and dispose of chemicals properly 	Low
						Wastewater and waste management	Medium	Medium	<ul style="list-style-type: none"> - Install advanced wastewater treatment systems - Regularly monitor water and waste quality 	Low
						Land use and distribution center activities	Low	Low	<ul style="list-style-type: none"> - Maintain buffer zones to protect nearby habitats - Manage land use sustainably 	Low
						Solar rooftop (land use changes)	Low	Low	<ul style="list-style-type: none"> - Optimize space utilization to reduce ecosystem impacts - Maintain green areas to help reduce heat accumulation effects 	Low

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No.	Location	Activity	Risk Identification	Ecosystem	Species involved	Key Risks	Impact level	(Likelihood of Occurrence)	Risk Control and Mitigation	Net Risk (After Controls)
5	Saraburi Plant, Kaeng Khoi Industrial Estate	<ul style="list-style-type: none"> - MDF, PB, MDF-coated, PB-coated, and timber flooring production plant - Solar rooftop electricity system installation 	<ul style="list-style-type: none"> - MDF (Medium Density Fiberboard): risks related to wood dust, emissions, and raw material sourcing - PB (Particle Board): risks associated with wood residues and adhesive use - MDF-Coated and PB-Coated: risks from chemical residues during surface coating and waste disposal - Timber Flooring: risks from adhesive use and waste generated from wood processing - Solar Rooftop (8.667 MWp): helps reduce greenhouse gas emissions by 5,391.7 tCO₂/year, with minimal biodiversity impacts, but may affect heat absorption and alter surface characteristics 	<ul style="list-style-type: none"> • Dry dipterocarp forest ecosystems and agricultural areas in Saraburi • Water sources and drainage systems in nearby industrial zones • Urban buffer zones and green areas surrounding the factory 	<ul style="list-style-type: none"> • Birds: such as mynas, sparrows, and pigeons inhabiting nearby green areas • Freshwater fish and aquatic species: in drainage systems and small water bodies that are sensitive to chemical contamination • Soil microorganisms and insects: at risk from chemical residues and airborne dust • Local vegetation: plants near the facility that may be affected by emissions and wastewater 	Emissions and wood dust	Medium	High	<ul style="list-style-type: none"> - Install high-efficiency dust collection and air filtration systems - Continuously monitor air quality and dust levels 	Low
						Chemical residues from surface coating	Medium	Medium	<ul style="list-style-type: none"> - Use low-formaldehyde, environmentally safe surface coatings - Manage chemicals safely and dispose of waste properly 	Low
						Wastewater and chemical discharges	Low	Medium	<ul style="list-style-type: none"> - Install advanced wastewater treatment systems - Regularly monitor water and chemical quality 	Low
						Waste from wood processing	Low	Low	<ul style="list-style-type: none"> - Establish recycling systems and reuse waste - Manage waste appropriately to prevent ecosystem impacts 	Low
						Land use and surface alterations	Low	Low	<ul style="list-style-type: none"> - Install solar rooftops in a way that minimizes heat accumulation impacts - Maintain buffer zones and green spaces around the factory 	Low



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No.	Location	Activity	Risk Identification	Ecosystem	Species involved	Key Risks	Impact level	(Likelihood of Occurrence)	Risk Control and Mitigation	Net Risk (After Controls)
6	Depot by Vanachai: Ban Pho District, Chachoengsao Province	<ul style="list-style-type: none"> - A building materials center with restaurant and café areas - Provides drive-through service for easy customer access - Bio Swale: a garden-based water drainage and absorption system that avoids conventional piping, helping to capture and recycle water - Uses solar rooftops for electricity generation 	<ul style="list-style-type: none"> - Restaurant and café areas: risks related to waste management and potential contamination from food waste and chemicals - Drive-through service: increases vehicle emissions, noise, and may disturb nearby wildlife - Bio Swale (natural water absorption garden): supports sustainable water management, but if not maintained properly, could affect plants and animals in the ecosystem - Solar rooftop for electricity generation: minimal impact on biodiversity, but slight effects on heat absorption and surface changes 	<ul style="list-style-type: none"> • Urban and suburban ecosystems surrounding the retail center • Water bodies and drainage systems connected to the bio swale • Green spaces and landscaped vegetation 	<ul style="list-style-type: none"> • Birds: such as pigeons, sparrows, and urban mynas • Insects: bees and butterflies, which play a key role in pollination within garden areas • Aquatic species in nearby water bodies: potentially affected by contaminated water from the bio swale • Soil microorganisms: potentially impacted by improperly managed waste or chemicals 	Waste generation and disposal	Medium	Medium	<ul style="list-style-type: none"> - Establish a waste separation and recycling program - Collaborate with waste management companies to ensure proper waste disposal 	Low
						Vehicle emissions and noise pollution	Medium	Medium	<ul style="list-style-type: none"> - Promote the use of electric vehicles (EVs) and install EV charging stations - Install sound barriers or green buffer zones to reduce noise impacts 	Low
						Bio swale maintenance and water quality	Low	Low	<ul style="list-style-type: none"> - Regularly inspect and maintain the bio swale to prevent blockages and standing water - Use native plant species to help maintain ecosystem balance 	Low
						Land use changes and solar rooftop impacts	Low	Low	<ul style="list-style-type: none"> - Design solar panel installations to minimize heat absorption impacts - Increase green space around buildings to reduce heat accumulation effects 	Low

Biodiversity Risk Heatmap	High Impact	Medium Impact	Low Impact
Likelihood - High	Critical Risk → Immediate inspection	High Risk → Urgent Mitigation	Medium to Low Risk
	High Risk → Continuous monitoring	Medium Risk → Establish Measures	Low Risk
Likelihood - Medium	Medium Risk → Readiness Check	Low Risk	Acceptable



ENHANCE THE CIRCULAR ECONOMY



Driving the Circular Economy for Sustainable Growth

Vanachai Group has adopted the circular economy concept as a critical approach to reducing environmental impacts and supporting long-term business sustainability. This is achieved by enhancing resource efficiency, minimizing waste, and improving energy use, creating value while protecting the planet. Waste, water, and energy management are key pillars of this strategy, helping to reduce greenhouse gas emissions, conserve natural resources, and strengthen operational resilience.

The company focuses on developing technologies and innovations that maximize production efficiency, while also promoting the use of renewable resources and clean energy through responsible practices and circular business models. Vanachai is committed to advancing toward a more sustainable and environmentally friendly future.

Key Related Material Topics:



Energy Management



Waste and Materials Management



Water Stewardship



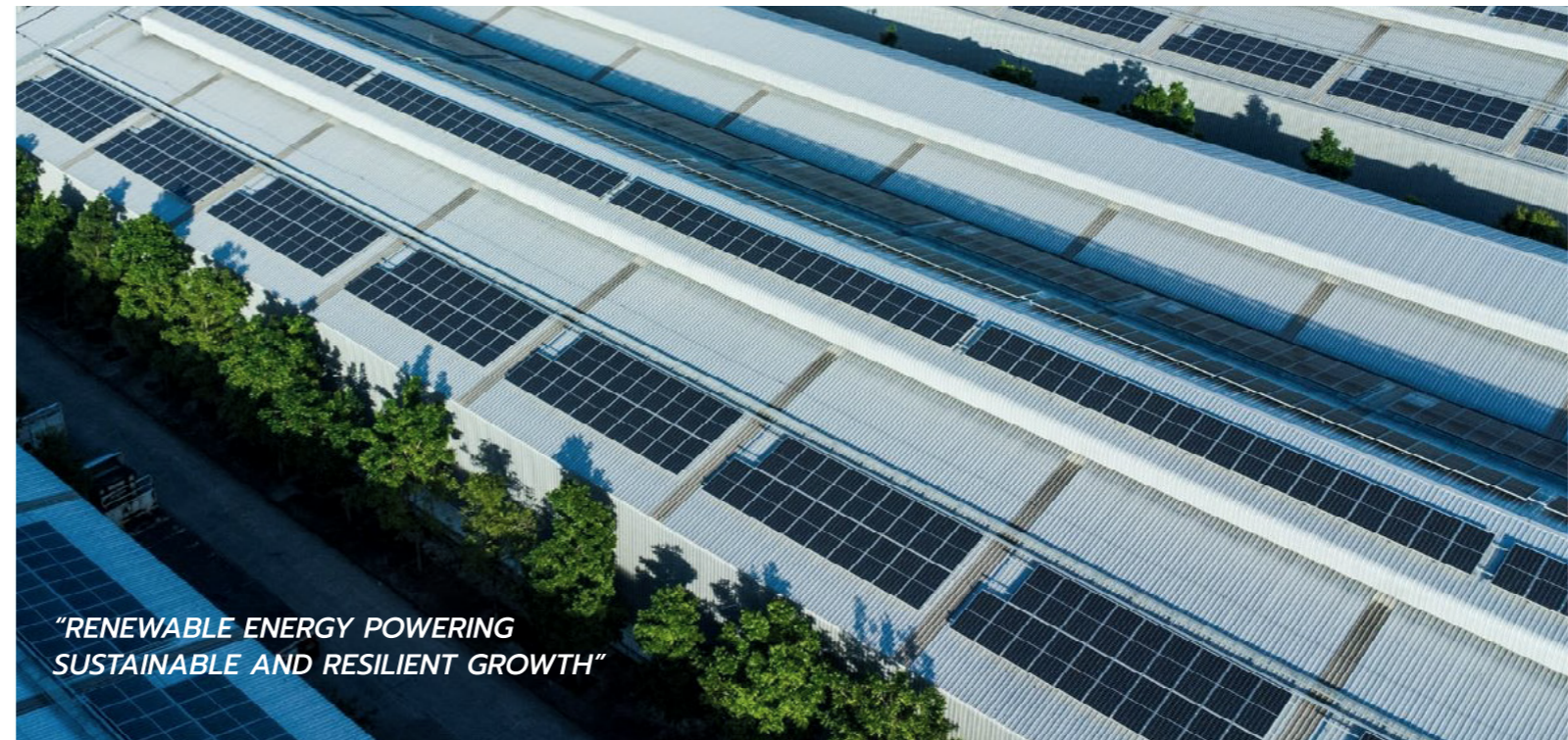
Construction Material Quality and Waste Reduction

Why this matters for Vanachai Group

Energy management is a critical driver for sustainable economic and social development. However, wasteful and inefficient energy consumption, particularly from fossil fuels, has led to severe and rapid environmental problems and climate change.

Vanachai Group recognizes the urgency of this issue and is committed to being part of the solution to the global climate crisis through efficient and sustainable energy management. The company has established systematic energy conservation policies and measures, forming an energy conservation working group to drive both short-term and long-term targets in concrete ways.

The focus is on improving the energy efficiency of production machinery, reducing energy loss from leaks and waste heat, and applying energy control standards at every stage of production. In addition, the company prioritizes transitioning to renewable energy sources, such as solar power and biomass fuels, to reduce dependence on fossil fuels. At the same time, Vanachai actively promotes awareness, understanding, and a sense of responsibility among employees to encourage their participation in energy-saving initiatives, moving toward becoming a truly environmentally friendly organization.



*"RENEWABLE ENERGY POWERING
SUSTAINABLE AND RESILIENT GROWTH"*



Energy Management

Target for 2024

▼ **5%**

Reduction of electricity consumption per unit of production compared to the 2021 base year

▲ **10%**

Increase in the proportion of renewable electricity and heat used in production compared to the 2021 base year

▼ **5%**

Reduction of energy costs per unit of production compared to the 2021 base year

Our Approach

Energy management is a key issue for Vanachai Group, as it directly affects sustainability targets, operational efficiency, and the commitment to carbon neutrality. Efficient energy management involves optimizing energy use, transitioning to renewable energy sources, and applying innovation to improve processes and reduce energy losses. The company prioritizes this issue because its wood panel and flooring production processes are energy-intensive. Therefore, it has implemented energy-saving technologies, increased the use of renewable energy, and adopted waste-to-energy solutions, all of which help reduce environmental impacts and operating costs.

In addition, educating employees and integrating energy conservation practices throughout the entire business value chain helps make energy management a collective effort across the organization. This shared understanding enables all departments to contribute effectively to Vanachai Group's energy and sustainability goals. Energy management is divided into electricity, heat energy, and renewable energy.



Improving machinery and internal systems efficiency:

Through regular maintenance, transitioning to energy-efficient machinery, and optimizing production processes to minimize unnecessary energy use.



Increasing the share of renewable energy:

By shifting to solar energy and biomass fuels to replace fossil fuels, helping to reduce greenhouse gas emissions.



Building an organizational culture of energy conservation:

By encouraging participation of employees at all levels through training, internal communication, and awareness campaigns to instill understanding and behaviors that support energy savings across all work processes.

Overall Energy Management Efforts

In 2024 Vanachai Group took concrete action to reduce energy consumption, especially electricity, by activating rooftop solar energy systems with a total capacity of 15.200 megawatt-peak (MWp). As a result, the company's electricity consumption for production was significantly reduced from 863.26 kilowatt-hours per ton of production in 2023 to 771.32 kilowatt-hours per ton of production in 2024, a decrease of 5.8 percent. Electricity costs fell from 1,142 million baht in 2023 to 1,028 million baht in 2024, a reduction of 9.98 percent, while maintaining similar production volumes.

The company also expects to expand its solar energy capacity by an additional 5.572 MWp by 2026, bringing the total to 20.77 MWp, which will help reduce long-term production costs. In addition to reducing electricity use, the company is also developing plans to reduce gasoline and diesel consumption. In 2024 a trial was launched to replace diesel forklifts with automated equipment.



Total Energy Consumption	Unit	2021	2022	2023	2024
Electricity Consumption					
Company electricity consumption.	Kilowatt-hours	269,475,636	245,391,417	278,196,331	283,798,202
Company electricity expenditure.	Baht	804,384,106	876,507,979	1,141,702,571	1,028,474,473
Electricity consumption per unit of production.	Kilowatt-hours per Ton of production	818.86	805.08	863.26	771.32
Fuel and Oil Consumption					
Diesel fuel	Litres	2,192,984	2,125,629	2,267,691	2,346,181
Gasoline	Litres	3,438	4,422	5,223	4,882
Liquefied Petroleum Gas (LPG) (1 kilogram = 1.28 Litres)	Litres	4,977	5,222	5,652	6,249
Costs of oil, LPG, and fuel consumption	Baht	48,849,046	64,421,717	66,430,317	69,217,758
Average energy expenditure per Litre	Baht/Litres	22.19	30.17	29.15	29.36

Note: Details on solar power generation can be found in the section on greenhouse gas management.

PERFORMANCE RESULTS

▼ **5.80%**

Reduction in electricity consumption per unit of production compared to the 2021 base year

▲ **10.95%**

Increase in the share of renewable electricity and heat used in production compared to the 2021 base year

▲ **1.63%**

Rate of energy cost reduction per unit of production compared to the 2021 base year

Electricity and Energy Reduction Initiatives

In 2024, the wood-based panel industry, which aims to replace natural wood, is facing challenges around energy efficiency in order to reduce costs, minimize environmental impacts, and enhance competitiveness. The company recognizes the importance of sustainable energy use and has implemented various measures and technologies to continuously reduce energy consumption and improve production efficiency.

- 1. Production process improvement:** The company has introduced modern technologies into its production processes, such as automatic control systems, energy management systems, and preventive maintenance, to reduce energy losses and enhance production efficiency.
- 2. Renewable energy use:** The company has invested in installing solar panels to generate electricity from solar energy and is studying the feasibility of using biomass energy derived from agricultural residues. Every piece of wood that enters the factory is utilized to its highest value. Even wood residues, such as bark and sawdust, are repurposed as fuel instead of fuel oil in the energy production plant, generating heat energy for the wood panel manufacturing process.

- 3. Energy management:** The company has established a system to monitor and analyze energy use in detail, identifying areas for improvement and setting clear targets for reducing energy consumption. Training is also provided to employees to build knowledge and understanding of efficient energy use.

As a result of these measures, the company achieved significant reductions in energy consumption by 2024, leading to a noticeable decrease in production costs and helping to reduce greenhouse gas emissions, which are a key driver of climate change. The company remains committed to continually developing and implementing energy projects to become a leader in energy-efficient and environmentally friendly wood panel manufacturing. The company believes that sustainable energy use is a critical factor for long-term business success and a genuine expression of social and environmental responsibility.



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Table Showing the Company's Electricity and Energy Consumption

The company continuously monitors all energy consumption within the organization, covering non-renewable electricity, renewable electricity, and heat energy. This enables analysis

and assessment of energy intensity per unit of production, helping to identify areas with high energy consumption and establish improvement plans for more efficient energy use in the future.

Type of Energy	Unit	2021	2022	2023	2024
Total internal electricity consumption	Gigajoules	1,940,224	1,766,819	2,013,014	2,043,503
Non-renewable electricity consumption	Gigajoules	970,112	883,409	1,001,507	1,021,674
Indirect non-renewable electricity consumption	Gigajoules	879,614	661,940	756,287	762,039
Renewable electricity consumption	Gigajoules	90,498	221,470	255,220	259,790
Share of renewable electricity consumption	%	4.7%	12.5%	12.7%	12.7%
Total internal heat energy consumption	Gigajoules	1,894,021	1,705,685	1,901,981	2,154,254
Non-renewable fuel energy consumption	Gigajoules	87,507	81,348	118,971	109,353
Renewable fuel energy consumption	Gigajoules	1,806,514	1,624,337	1,783,010	2,044,901
Share of renewable energy consumption in heat energy	%	95.4%	95.2%	93.7%	94.9%
Total energy consumption (Electricity and Heat)	Gigajoules	3,834,245	3,472,504	3,914,995	4,197,757
Renewable electricity and heat energy consumption	Gigajoules	1,897,012	1,845,807	2,038,230	2,304,691
Share of renewable energy consumption in electricity and heat	%	49.48%	53.15%	52.06%	54.90%

Operations Utilizing Solar Power

In its production processes, Vanachai Group uses electricity from solar energy and self-produced biomass energy, emphasizing the use of machinery with heat recovery technology to minimize energy waste. The company also reduces the loss of raw materials used in production, thereby lowering overall greenhouse gas emissions.

The company has launched projects to reduce electricity consumption from the national grid by installing solar rooftop systems, which will reduce greenhouse gas emissions. There are a total of six projects under this initiative.

Location (Plant)	Electricity generation capacity (MWp)	Greenhouse gas emissions reduction
Projects already in operation		
1) Saraburi Plant (Phase 1)	3.538 MWp	2,200.9 tCO ₂ / Year
2) Saraburi Plant (Phase 2)	3.328 MWp	2,070.4 tCO ₂ / Year
3) Saraburi Plant (Phase 3)	1.801 MWp	1,120.4 tCO ₂ / Year
4) Chonburi Plant (Phase 1)	2.552 MWp	1,587.5 tCO ₂ / Year
5) Chonburi Plant (Phase 2)	0.739 MWp	459.8 tCO ₂ / Year
6) Surat Thani Plant (Phase 1)	3.242 MWp	2,016.8 tCO ₂ / Year
Total projects already in operation by 2024	15.200 MWp	9,455.8 tCO₂ / Year
Projects in progress		
1) Chonburi Plant (Phase 3 to be completed in 2025)	1.250 MWp	777.5 tCO ₂ / Year
2) Surat Thani Plant (Phase 2 to be completed in 2026)	4.472 MWp	2,781.7 tCO ₂ / Year
Total new projects to be launched	5.5722 MWp	3,559.2 tCO₂ / Year

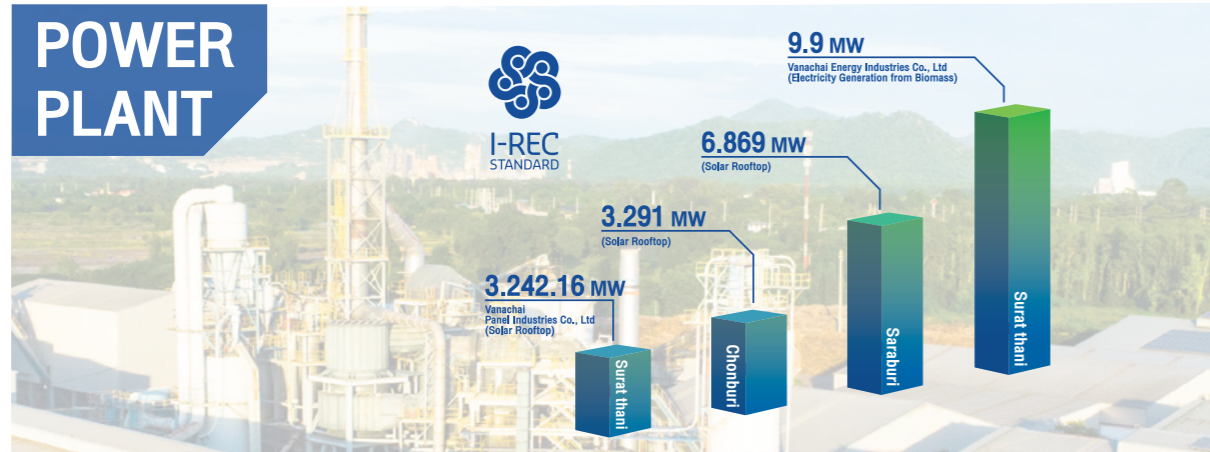
Biomass Power Generation

The company operates a biomass fuel-based electricity generation project with a production capacity of 9.9 megawatts at its Surat Thani plant. This project makes valuable use of waste resources from production processes and supports the Group's commitment to becoming a low-carbon organization.

The use of biomass energy within the organization helps reduce greenhouse gas emissions by approximately 38,852 tCO₂e per year compared to using electricity from the grid.



Vanachai Group Power Plant Projects

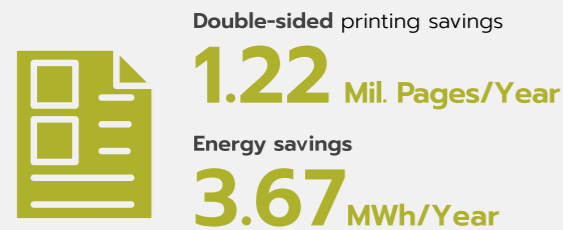


Activities: Training and Campaigns on Mindful Energy Use

Organize the “Change for The Better: Everyone Participates in Transforming for a Better Future” project
 Conduct employee training on energy-saving techniques in the workplace

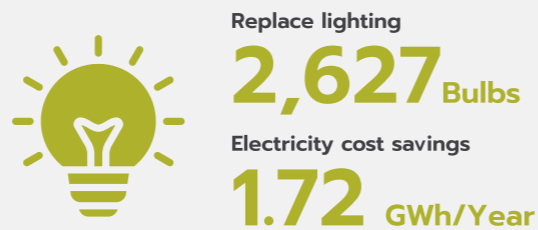
“Change for The Better” Activities

Target: Use double-sided printing to save energy and reduce paper production costs



Cost savings **48,958 Baht/Year**

Target: Switch to LED lighting to save energy and reduce electricity costs



Budget savings **5.91 Mil. Baht/Year**

Low-Efficiency Equipment Replacement Project

Vanachai Group is committed to operating its business sustainably with concrete actions to reduce environmental impacts. One of its key strategies is the Low-Efficiency Equipment Replacement Project, which targets old machines with high energy consumption, significant losses, and frequent maintenance costs. This project aims to transition from outdated equipment to new machines equipped with modern technology, automatic control systems, and designs that maximize energy efficiency and reduce greenhouse gas emissions from critical production processes.

The company also benefits from clean energy generated by rooftop solar power systems, which can supply the new equipment directly, helping reduce reliance on grid electricity and improving Scope 2 emissions performance. This project supports Vanachai’s long-term sustainability strategy, which targets achieving net zero greenhouse gas emissions by 2055 and carbon neutrality by 2050.

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Implementation	Electricity Reduction (kWh per year)	Monetary Savings (Mil. baht per year)	GHG Reduction tCO2e per year
Chonburi Plant			
• Installing economizers to recover residual heat	343,235	1.44	159.60
• Upgrading the main motor to increase temperature before entering the heat exchanger	168,985	0.66	78.58
Saraburi Plant			
• Improving the efficiency of air compressor systems	329,735	1.46	153.33
• Upgrading feed water pump drive motors	25,482	0.11	11.85
Total	867,437	3.67	403.36



Water Stewardship

Why this matters for Vanachai Group

Water management is a highly significant issue for Vanachai Group, as the production processes for various types of wood-based panels require an appropriate and consistent water supply. Efficient water management plays a vital role in both the operational effectiveness of the business and its social and environmental responsibilities. The company is committed to the continuous conservation of water resources, emphasizing improved water use efficiency, maximizing water reuse within production processes, and ensuring that all wastewater is properly treated before discharge.

No wastewater from production is discharged directly from the plant. All wastewater is sent through a standard treatment

system, with treated water meeting or exceeding the legal quality standards, ensuring no negative impacts on the surrounding environment or natural water sources in nearby communities. The company has also implemented a systematic rainwater harvesting system to reduce dependence on freshwater sources from nature.

Additionally, the company has established a policy for transparent and ongoing monitoring, inspection, and reporting of water use, while building shared awareness among employees about the importance of water conservation. It actively encourages the adoption of best practices in day-to-day operations, which aligns with global Sustainable Development Goals (SDGs).



“REDUCE, REUSE, AND RESTORE WATER RESOURCES FOR A RESILIENT FUTURE”

Target for 2024

▼ **20%**

Reduce raw water consumption per unit of production (cubic meters per ton of product) compared to the 2021 base year

ZERO

Achieve zero liquid discharge by retaining all process wastewater on site, compared to the 2021 base year

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Our Approach

Vanachai Group recognizes the importance of efficient and responsible water use, as water is a critical resource in manufacturing wood-based panels as alternatives to natural wood. The company is committed to reducing raw water consumption, increasing water recycling, and preventing the discharge of wastewater that could harm the environment. Through its “Zero Liquid Discharge” policy, all process water is treated and reused 100 percent, with no water discharged outside the factory.

The company’s wastewater treatment relies on an Aerated Lagoon (AL) system, which is well-suited to wastewater with low chemical contamination. This system offers high treatment efficiency, quick processing, effective odor control, and low investment costs.

Additionally, to reduce the energy impact of running the AL system, the company uses solar energy from rooftop installations to power continuous treatment. Vanachai also produces its own water at two of its four plants (Chonburi and Surat Thani) to reduce dependence on external water sources, which is a key strategy for sustainable water security.



Improve water use efficiency per production unit:

Optimize production processes to use water appropriately and install water-saving control devices on production lines, while regularly monitoring and benchmarking water use per product unit.



Treat and reuse 100% of water:

Operate a high-efficiency Aerated Lagoon (AL) system, tailored to Vanachai’s wastewater characteristics, to treat all process water for reuse, reducing the need for raw water.



Use renewable energy in wastewater treatment:

Address the energy demands of the AL system by using solar energy from rooftop systems, helping lower energy costs and supporting environmental sustainability.



Self-produce water to reduce water scarcity risks:

Produce water internally at two out of four plants, totaling 1,000 million liters per year, to lessen reliance on external water sources and increase long-term water resource resilience.



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Implementation

Vanachai Group has effectively managed its water resources in line with established guidelines. In 2024, the company successfully reduced raw water consumption per unit of production by 21.05 percent compared to the 2021 base year, demonstrating success in improving production process efficiency and using water responsibly and sustainably.

Additionally, the company achieved 100 percent recycling of all process water by treating and reusing it without discharging any wastewater outside the factory, fully aligning with its Zero Liquid Discharge target. This achievement is the result of applying

the Aerated Lagoon water treatment system, which is well suited to the plant's water quality, combined with using solar energy from rooftop installations to continuously power the treatment system.

Furthermore, the company produces its own water at its main facilities, which helps reduce resource costs and strengthens long-term water security. These results reinforce stakeholder confidence in Vanachai's serious commitment to responsible water resource management, consistent with global Sustainable Development Goals.

Water Resources	2021	2022	2023	2024
Volume of water used (by source) (Cubic Meters)				
• Self-produced water (Chonburi and Surat Thani)	637,687	616,853	758,117	669,413
• Municipal water from industrial estates (Saraburi and Rayong)	136,483	127,669	153,438	165,259
• Groundwater (Surat Thani)	29,929	40,786	35,175	21,649
Total volume of water used	804,099	785,308	946,730	856,321
Water use relative to production				
• Water use per unit of production (Cubic Meters per Ton of Production)	0.38	0.43	0.40	0.30
• Proportion of water use per unit of production reduced from the 2021 base year		▲ 13.16%	▼ -6.98%	▼ -21.05%
• Wastewater discharged outside the factory (Cubic Meters)	54,580	41,630	28,560	0
Percentage of wastewater discharged outside the factory (Compared to the 2021 base year)		▼ -23.73%	▼ -47.67%	▼ -100%
Percentage of wastewater recycled from production processes	100%	100%	100%	100%

PERFORMANCE RESULTS

21.05%

Reduction in raw water consumption per unit of production (Cubic Meters per Ton of Product)*

ZERO

Zero liquid discharge, with no wastewater from production processes released outside the factory area*

100%

Water recycling

*compared to the 2021 base year

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Vanachai Group's Water Management Measures and Guidelines

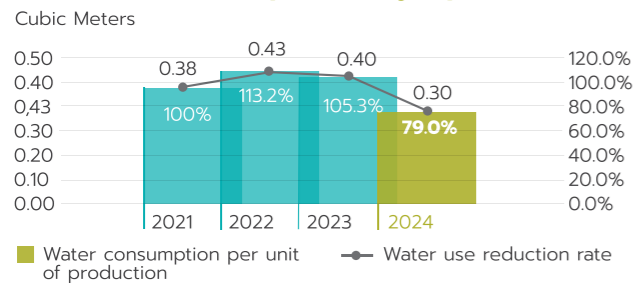
Measures and guidelines for water conservation and reducing water loss

Vanachai Group recognizes the importance of efficient water use, both to control production costs and to reduce impacts on communities and the environment. The company has implemented a range of measures, including:

- 1) Regularly monitoring water use in production processes to identify opportunities for reducing consumption and minimizing losses.
- 2) Providing water management training for employees at all levels to build awareness and encourage participation.
- 3) Studying and preparing for the installation of modern water-saving technologies, such as automatic valves or water flow control systems.
- 4) Improving production process efficiency to use less water per unit of production (reducing water intensity).
- 5) Establishing regular maintenance plans for equipment to prevent leaks in the system.
- 6) Monitoring and reporting annual progress toward water reduction targets.

Based on recent results, the company has reduced water consumption per unit of production by 21.05 percent compared to the base year, demonstrating the success of its ongoing measures.

Total water reduction (2021 base year)



Measures and guidelines for water recycling

Vanachai Group has implemented diverse methods to reuse water both within and beyond production processes. The key approaches include:

- 1) Recycling 100 percent of used water through the Aerated Lagoon (AL) wastewater treatment system, which is well suited to the plant's water quality and highly efficient.
- 2) Reusing treated water for activities outside the main production line, such as spraying logs to control moisture, dust suppression, or watering plants within the factory grounds.
- 3) Applying a Zero Liquid Discharge system, with no wastewater from production processes discharged outside the factory; in cases where water must be discharged, it is treated and verified to meet legal water quality standards before release.
- 4) Addressing the energy demands of the AL treatment system by using solar energy from rooftop systems, reducing energy costs and supporting long-term sustainability.



Measures to Reduce Wastewater Discharge Outside the Factory

Vanachai Group manages wastewater with a strong sense of environmental and community responsibility, with the goal of preventing any wastewater from production processes from being discharged into the external environment (Zero Liquid Discharge). The key approaches include:

- 1) Continuously implementing the "Zero Liquid Discharge" policy by sending all wastewater from production processes through treatment and reusing 100 percent of it within the organization, without discharging untreated water externally.
- 2) Improving the efficiency of the Aerated Lagoon (AL) wastewater treatment system, which is well suited to the plant's water characteristics, and offers advantages such as high shock-load tolerance, minimal odors, easy maintenance, and high performance at low cost.
- 3) Optimizing production processes to reduce wastewater generation at the source.
- 4) Promoting wastewater reuse and recycling throughout all stages of the system.
- 5) Monitoring the quality of treated water before any potential discharge outside the factory, for example, in cases of overflow during heavy rainfall, where any partial discharge is tested rigorously to ensure it meets governmental environmental standards to protect surrounding ecosystems and communities.

Reduction of wastewater discharge outside the factory (2021 base year)

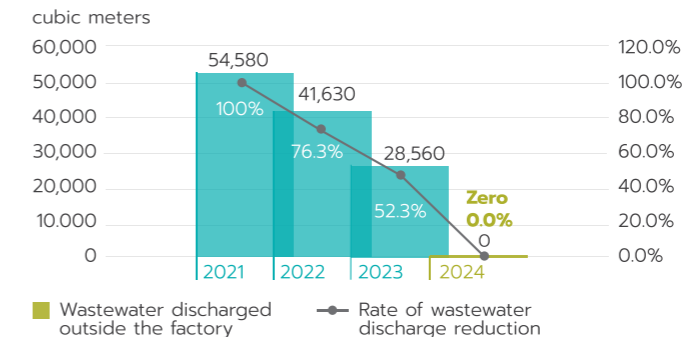


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Waste and Materials Management

Target for 2024

▼ **10%**

Reduce total non-hazardous waste generated from production processes and operations*

>95%

Increase the rate of reused or recycled materials*

ZERO

Achieve zero landfill disposal of total waste

*Compared to the 2021 base year

Why this matters for Vanachai Group

Sustainable waste management is a key component of Vanachai Group’s environmental strategy, focusing on maximizing resource efficiency, reducing environmental impacts, and increasing business value. The company has established waste management guidelines within its environmental policy and encourages the participation of all employees, such as through waste separation and improving production processes toward circular systems, following the 4Rs principles: Reduce, Reuse, Reject, and Repair.

At every stage of production, wood residues, bark, and sawdust are reused as raw materials or fuel in biomass power plants. Water from production processes is reused to add moisture to raw wood, while chemicals are managed efficiently.

This integrated waste management system helps reduce the use of virgin resources, lowers waste disposal costs, and mitigates the risks of non-compliance with environmental regulations. It also strengthens the organization’s socially and environmentally responsible image and supports the achievement of long-term sustainable operations. The company remains committed to continuously developing its approach toward fully environmentally friendly production systems, while fostering a corporate culture that values resource-efficient and responsible use.



*“TURNING WASTE INTO RESOURCES,
TRANSFORMING IMPACT INTO SUSTAINABILITY”*

Our Approach

Vanachai Group places strong emphasis on systematic and sustainable waste management, with a focus on reducing waste generation at the source while improving resource efficiency in production processes, particularly for non-hazardous waste generated from both production and internal operations.

This approach not only helps lower waste management costs but also reduces environmental impacts and supports the organization's image as committed to sustainable development goals. The company has set clear targets: reducing total non-hazardous waste by 15 percent, reducing waste per unit of production by 20 percent, and achieving zero waste to landfill. To support these targets, Vanachai has implemented circular production processes, efficient waste separation, and encouraged employee participation at all levels to ensure concrete and continuous waste management.



Control and optimize production processes for maximum efficiency:

Reduce raw material losses at every step by applying the 4Rs principles and circular production systems, minimizing waste and ensuring resources are used to their fullest potential.



100 percent reuse of waste within production processes:

Wood residues, bark, and sawdust are reintegrated into production or used as biomass fuel in the company's power plants.



Integrated and systematic waste management:

Classify waste at its source and transfer it to legally authorized waste handlers to avoid landfill disposal.



Promote employee engagement at all levels in waste reduction activities:

Provide training and awareness campaigns so employees can separate waste correctly and use office materials efficiently, for example reducing plastic use and reusing cardboard boxes.

Implementation

To reduce non-hazardous waste and move toward the zero waste to landfill target, Vanachai has proactively applied multiple measures, including developing and controlling production processes to minimize waste, reusing or recycling waste within production (such as wood residues, sawdust, and bark as raw materials or biomass fuel), and reusing treated wastewater to add moisture to raw wood.

Additionally, the company promotes participation among employees at all levels to separate waste correctly and shift behavior toward maximum material efficiency, such as reusing materials and reducing single-use plastics. Waste is consistently stored and delivered to licensed waste handlers to ensure the organization's waste management remains systematic, comprehensive, and sustainable.



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Waste and Material Management Items	Unit	2021	2022	2023	2024
Wood raw materials	Ton	1,918,616	1,785,198	2,140,663	2,208,486
Adhesives (non-recyclable material)	Ton	102,695	91,231	102,695	109,982
Chemicals (including moisture-resistance agents, antifungal agents, and wood preservatives, non-recyclable materials)	Ton	1,454	1,365	1,833	1,674
Total Key Raw Materials	Ton	2,022,765	1,877,794	2,245,191	2,320,142
Materials that can be recycled or reused	Ton	1,918,616	1,785,198	2,140,663	2,208,486
Rate of reused or recycled material use	%	94.85%	95.07%	95.34%	95.19%
Packaging materials reused	Ton	28,092	23,638	28,492	28,910
Rate of reused packaging	%	3.02%	3.04%	3.03%	3.05%
Rate of non-recyclable hazardous materials in production	%	5.15%	4.93%	4.66%	4.81%

PERFORMANCE RESULTS

-6.6%

Reduction in total non-hazardous waste generated from production processes and operations*

95.19%

Rate of material reuse or recycling*

ZERO

Total volume of waste sent to landfill

*Compared to the 2021 base year

Waste and Material Management Operations

Production Waste Volume	Unit	2021	2022	2023	2024
Total Waste Volume	Ton	262.77	174.71	304.38	340.16
Total Hazardous Waste sent for disposal	Ton	50.07	44.25	57.56	49.22
Recycling of Hazardous Waste	Ton	50.07	44.25	57.56	49.22
Total non-Hazardous waste sent for disposal	Ton	212.70	130.46	246.82	290.94
Recycling of non-Hazardous Waste	Ton	212.70	130.46	246.82	290.94
Landfilling of Waste	Ton	0	0	0	0

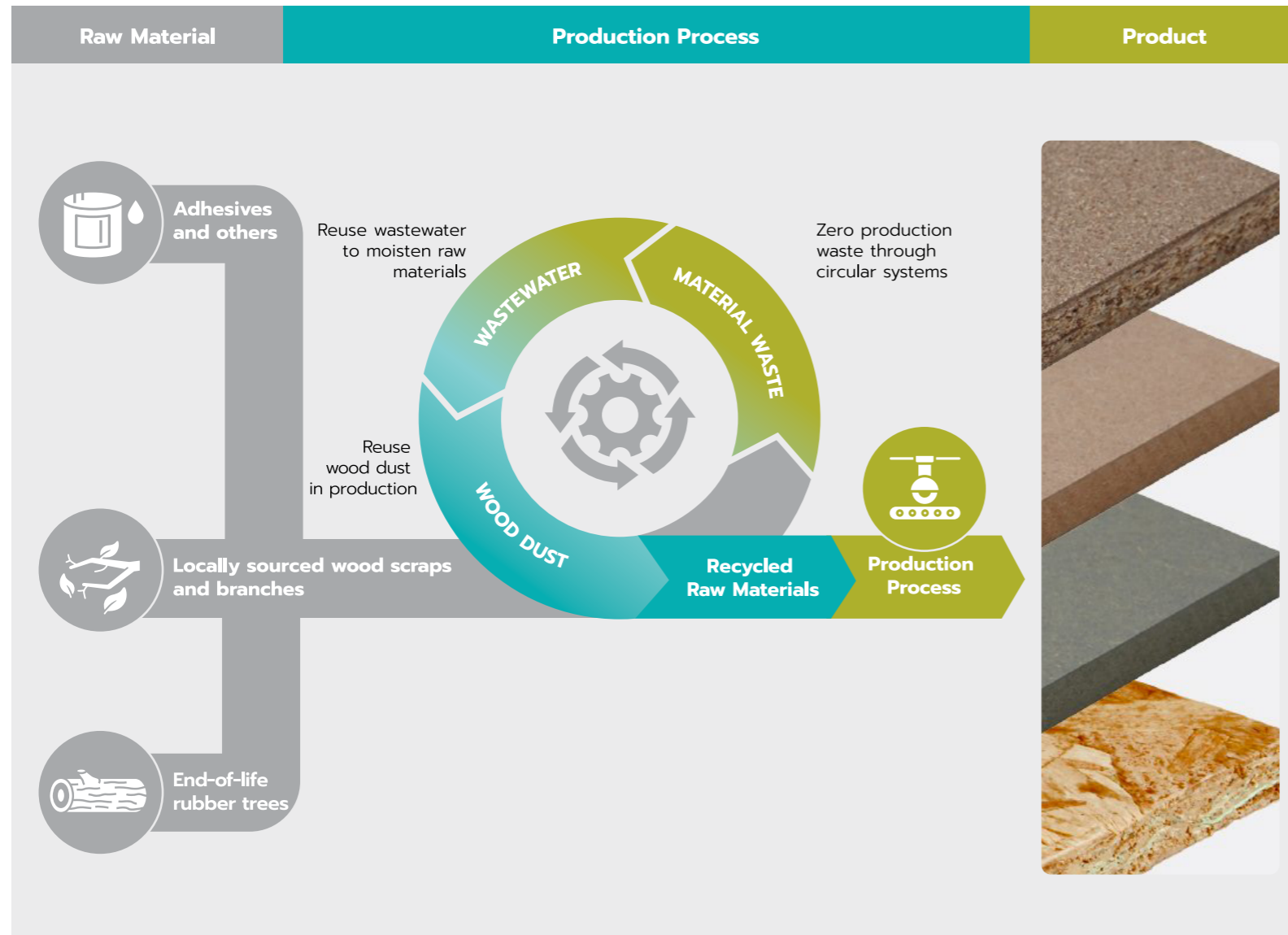
Zero Waste to Landfill Commitment

Vanachai Group is committed to the goal of zero waste to landfill, guided by sustainable development principles and a systematic waste management approach supported by a clear environmental policy. This policy is implemented across all levels of the organization, including production and support functions such as human resources, central administration, corporate communications, and accounting and finance. The company encourages employees to develop knowledge, understanding, and participation in waste separation in line with industrial waste control measures, following the 5R principles:

- **Recycle:** Wood residues, bark, and sawdust are reintegrated into production processes or used as biomass fuel.
- **Reduce:** Strive for efficient use of raw materials, minimize the use of disposable materials, and promote initiatives to reduce plastic use.
- **Reuse:** Promote the reuse of materials and equipment, such as cardboard boxes or office supplies, and repurpose off-specification products as pallets for transport or storage.
- **Reject:** Avoid chemicals or adhesives that may be harmful to health, and promote the use of environmentally friendly materials.
- **Repair:** Carry out regular maintenance and repair of machinery and equipment to reduce waste, reflecting a commitment to social responsibility, environmental protection, and sustainable economic value.



Reducing Waste from the Production Process



Zero Waste in the Production Process

- Vanachai applies a zero-waste production approach, maximizing resource use at every stage. Raw materials are sourced responsibly, including plantation-grown wood, community wood scraps (branches, roots), wood residues from furniture factories, and end-of-life rubber trees, all of which can be transformed into value-added products.
- Wood scraps, bark, and wood dust are reintegrated into the system as substitute raw materials or biomass fuel for energy production.
- Wastewater from production is reused to moisten raw materials and logs. Any off-specification material is systematically reintroduced into production. The company has designed its processes as a closed-loop system, allowing continuous reuse of wood, water, adhesives, and chemicals without generating waste requiring disposal.
- This approach not only reduces environmental impacts but also lowers raw material and waste disposal costs, aligns with environmental laws, and strengthens the company's image as a truly socially and environmentally responsible organization.

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Activities for Reducing Non-Hazardous Waste with Employee Participation

Vanachai Group employees carry out various activities both at work and in their daily lives, which not only reduce environmental impacts but also promote a sustainable organizational culture. These initiatives help reduce waste within the company while inspiring employees to engage with corporate sustainability goals and help build a better world in the long term. Activities include:

- 1) **Proper waste separation at the source**, using sorting bins (recyclables, general waste, food waste) and learning appropriate disposal methods, such as rinsing containers before discarding.
- 2) **Reusing materials before disposal**, such as cardboard boxes, document envelopes, paper clips, and other packaging in office tasks instead of new items.
- 3) **Reducing single-use items** by bringing personal cups, lunch boxes, and utensils to avoid plastic cups or plastic bags.
- 4) **Changing printing habits** by using double-sided printing, avoiding unnecessary printing, and switching to electronic documents.
- 5) **Promoting a "Repair & Share" mindset** by setting up maintenance or sharing corners for still-usable items like furniture or small tools within departments.
- 6) **Learning and advocating for environmental protection** by attending waste management trainings or workshops and sharing knowledge with colleagues or family.



Activities to Reduce Non-Hazardous Waste through Landfill Alternatives

Vanachai Group emphasizes alternative disposal methods such as reuse, recycling, waste sales, or conversion to energy. These activities not only help reduce the volume of non-hazardous waste sent to landfill but also promote resource efficiency, add value to waste, and build a circular and sustainable waste management system within the organization. Examples of activities already implemented include:

- 1) **Repurposing low-grade boards as materials** for supporting or packing standard boards, preventing waste and reducing production scrap.
- 2) **Waste-to-Value separation projects**, sorting saleable waste such as metal scraps, plastics, and glass bottles, and delivering them to licensed recycling buyers.
- 3) **Using wood waste, such as sawdust and bark, to generate biomass energy**, using production by-products as fuel in the company's biomass power plant, reducing reliance on external energy and minimizing waste disposal.
- 4) **Upcycling projects, encouraging the creation of new products** from leftover materials, for example designing furniture or decorative items from wood scraps to increase value and reduce waste.



Why this matters for Vanachai Group

At Vanachai, maintaining high construction material quality alongside waste reduction is at the heart of sustainable growth and environmentally friendly business operations. As a leading manufacturer of wood-based panels such as MDF and particle board, the company recognizes that poor production efficiency and quality not only create financial costs but also impact the environment through increased greenhouse gas emissions and waste disposal.

Vanachai implements comprehensive waste management measures, starting from material design and improving production processes to achieve efficient circular raw material flows. This is consistent

with circular economy principles, using wood residues and by-products instead of relying on natural forest resources. Additionally, enhancing material quality helps reduce waste at construction sites, improves customer efficiency, and increases satisfaction through product lifecycle assessment (LCA) initiatives, employee leadership on waste reduction in factories, and the development of products with low volatile organic compound (VOC) emissions.

The company is committed to being a leader in environmentally friendly construction material innovation, aligning with both national policies and its own ESG strategy.



"DESIGN WITH VISION, PREVENT WASTE AT THE SOURCE"



Construction Material Quality and Waste Reduction

Target for 2024

85%

Customer satisfaction through enhanced water and moisture resistance, extending the lifespan and performance of new products.

100%

Circular reuse of materials in the production process, achieving zero production waste.

ZERO

Reduced landfill disposal (landfill diversion).

Targets and Measures to Reduce Waste from Construction Material Production

Vanachai Group places high importance on reducing waste from the beginning of the production process through to the end of the product lifecycle. Currently, the company manages all material scraps from its factory production as zero waste by immediately reusing them or sending them to the biomass power plant, resulting in no landfill disposal.

However, the next target focuses on reducing waste generated outside the factory, such as at construction sites and furniture manufacturing facilities, where waste often comes from trimming or material use. Improving product quality, durability, and design for appropriate applications will help minimize end-of-life waste, aligning with circular economy principles.



Low-VOC, environmentally friendly products: Develop adhesives and resins with low volatile organic compound (VOC) emissions to reduce indoor air pollution and support green building standards.



Customer education and guidance: Promote efficient product use by providing technical advice to end-users such as builders and furniture manufacturers, helping reduce waste from improper handling.



Close-Loop Recovery within factories: All wood scraps, sawdust, and wood shavings are reused in new production or sent to the biomass power plant, achieving zero landfill waste.



Develop products to reduce end-of-life waste: Design MDF and particleboard with high dimensional accuracy and strength according to project specifications, reducing on-site trimming and material loss.



Develop products based on Life Cycle Assessment (LCA): Use LCA data to improve product formulations for longer durability and lower long-term environmental impacts.

Implementation

- 1. Conduct systematic waste audits at main production plants,** analyzing in detail where material losses or waste occur, such as trimming, adhesive mixing, or drying processes.
Result: Established a clear baseline with prioritized improvement areas.
- 2. Establish a “Zero Waste Champion” team at each plant,** creating cross-functional teams to manage and reduce on-site waste and material scraps.
Result: Identified owners to co-create, implement, and report on waste reduction with innovative approaches.
- 3. Implement a waste recovery system,** including end-of-line wood shredders, categorized dust extraction systems, and refeeding MDF scraps back into the mixer.
Result: Achieved a clear baseline with prioritized improvement areas.
- 4. Design products for waste minimization,** adjusting MDF panel sizes to match the actual use needs of key customers such as furniture or wall panel manufacturers.
Result: Reduced external trimming waste and improved ESG-related customer satisfaction.
- 5. Define waste reduction KPIs and report results continuously.** Measure the percentage of waste reduction against total production and the monthly volume of waste reused.
Result: Enables effective tracking and supports ESG/One Report communications.

PERFORMANCE RESULTS FOR 2024

75.5%

Reduced end-of-life waste, such as at construction sites and furniture factories, by improving product quality, precision, and durability

100%

Reused production waste across the entire production process

ZERO

Maintained a zero-waste production status by reintegrating all material scraps into the factory production process

2 Products

Developed new products that help minimize waste during construction use

- Hybrid Ultra Laminate Flooring
- Ultra Waterproof Melamine Doors

92.5%

Achieved higher customer satisfaction through improved water and moisture resistance, extending product life and performance

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Reducing Waste from Construction Material Production

Reducing waste from construction material production is no longer just a goal for Vanachai Group – it is a tangible achievement. As a leader in manufacturing wood-based panel products, the company has developed a 100 percent zero-waste production system, enabling all production scraps such as sawdust, wood residues, dust, and other by-products to be immediately reused within the production line or used as fuel in its own biomass power plants. As a result, there is no waste sent to landfill.

This success reflects the company’s leadership in sustainable manufacturing through the design and investment in technologies that maximize resource efficiency, reducing the need for natural forest resources and mitigating environmental impacts such as greenhouse gas emissions from waste disposal.

Vanachai also focuses on extending its waste management results to the product end-of-life stage by improving material quality and product design to help reduce waste at construction sites and furniture factories. By delivering high-quality, precisely dimensioned, and durable products, customers can minimize waste from trimming or unusable materials.

Additionally, the company develops products with low VOC emissions to enhance environmental quality throughout the product lifecycle. Vanachai’s waste management and quality control approaches align with the United Nations Sustainable Development Goal 12 on responsible consumption and production, while also supporting environmental and economic performance within ESG frameworks. This demonstrates the company’s genuine responsibility to society, the environment, and supply chain partners.

Measures for Managing Waste from Production Processes

- 1. Assess Processes that Generate Waste (Waste Mapping)**
Analyze waste hotspots in the material production line or at construction sites, using Life Cycle Assessment (LCA) tools.
- 2. Set design targets for waste management**
Integrate “Waste Reduction Thinking” into product design
 - Design MDF panel sizes to minimize off-cuts through coordination with project requirements.
 - Plan factory cutting operations for minimal scrap (optimization plan).
- 3. Apply circular economy principles**
Develop “waste as new raw material” concepts through new material-use cycles
 - Re-process MDF that fails quality checks by grinding it for packing use.
 - See also the topic on reducing non-hazardous waste through alternative landfill management.
- 4. Design efficient storage, sorting, and transportation of waste**
 - Make waste separation part of “Process Design” rather than just a post-production management step.
 - Design factory or site material flows to enable immediate scrap separation.
- 5. Measure and communicate waste reduction results**
 - Track the KPI: waste per unit of production (% yield loss).
 - Evaluate the environmental benefits of waste reduction, such as GHG reductions in tonnes of CO₂e.)
 - Use these results for carbon credit claims or environmental labeling.

Designing a Circular Waste Management System

Assess and Identify Waste Sources

- Analyze the sources and types of waste within the organization
- Calculate the volume of waste generated in the production process



Design Processes to Reduce Waste

- Minimize waste at the source, such as by using raw materials efficiently
- Develop in-factory waste sorting systems



Maximize the Value of Waste

- Develop recyclable products for reuse
- Convert waste into raw materials or energy



Continuous Monitoring and Improvement

- Track results to support ongoing development and enhance business efficiency

“Planning for Waste Reduction from the Design Stage”

Concept: **“DESIGN OUT WASTE”**

meaning reducing waste from the design stage of production processes, products, and construction projects

Product Life Cycle Assessment - LCA

Vanachai Group has conducted a Life Cycle Assessment (LCA) for high-volume wood-based panel products such as MDF, covering the stages from raw material sourcing, production, and transportation to product use. The assessment measures environmental impacts across multiple dimensions in accordance with ISO 14040 and ISO 14044 standards.

This assessment enables the analysis of key environmental impacts, including:

- Global Warming Potential
- Acidification
- Eutrophication
- Abiotic Depletion (use of non-renewable resources such as fuels and minerals)
- Photochemical Ozone Creation Potential (Volatile Organic Compounds or VOCs)
- Energy Consumption
- Water Use

The company has adopted GaBi software and environmental databases to analyze impacts, alongside building technical LCA knowledge and understanding among relevant personnel. These results are applied to develop products with lower environmental impacts, design products aligned with circular economy concepts, and support green building initiatives.

This approach forms part of the company’s ESG strategy to enhance production capabilities while protecting the environment, aiming for sustainable development in Thailand’s construction materials sector.

Life Cycle Assessment Results for MDF Products per 1 cubic meter (m ³) of Product			
Assessed Impacts	Quantity	Unit	Assessment Method
• Global Warming (GWP)	654.20	kg CO ₂ -eq per m ³	CML 2001/IPCC 2013 GWP
• Acidification (AP)	1.45	kg SO ₂ -eq per m ³	CML 2001
• Eutrophication (EP)	0.12	kg PO ₄ ³⁻ -eq per m ³	CML 2001
• Abiotic Depletion	3.75	Kg Sb-eq	CML 2001/ReCiPe
• Photochemical Ozone Creation Potential	0.07	kg C ₂ H ₄ -eq/ 1 m ³	CML 2001
• Energy Consumption	4,000	MJ	CED
• Water Use: Total	950.00	m ³ water eq per m ³	AWARE/ReCiPe/WFN
- Direct	332.50	m ³ water eq per m ³	
- Indirect	617.50	m ³ water eq per m ³	

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Applying the Results of the Product Life Cycle Assessment (LCA)

Analyze environmental risk points

Identify high-impact hotspots

Reduce costs + adjust formulations + minimize impacts

Develop new environmentally friendly products (Eco-design)

Create added value and differentiation

MDF Eco Series **Low-VOC Board**

Achieve a 20% reduction in GHG emissions

Low-POCP MDF suitable for green buildings and interior decoration

Develop Circular Products

Develop circular products to reduce landfill waste

Establish Recycling and Take-Back Systems

Communicate with the market and corporate customers

Share information with architects, property developers, and green building projects

Support sales into green building projects

Training project contractors to reduce material waste during construction and finishing

In the construction and interior finishing industry, material waste is a major challenge, both economically and environmentally. Therefore, providing project contractors with training on how to reduce waste during on-site construction and finishing processes is essential.

This initiative focuses on raising awareness and building skills among contractors to help them reduce waste more effectively. This approach aligns with Vanachai's "Design Out Waste" concept, which emphasizes designing to reduce waste at the source rather than relying solely on waste management after construction.

By promoting knowledge and providing guidance on installation and best practices for contractors, this program aims to drive more responsible, efficient, and environmentally friendly construction practices.



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TRANSITION TOWARDS A GREEN ECONOMY



Driving a Green Economy for a Sustainable Future

Vanachai Group views the transition to a green economy as essential for both environmental and long-term business sustainability. As global challenges such as pollution, climate change, and greenhouse gas emissions intensify, there is a growing recognition of the urgent need to act. By adopting pollution control measures and climate crisis mitigation strategies, we aim to reduce environmental impacts while improving operational efficiency.

Managing greenhouse gas emissions and resource use is at the heart of our strategy to ensure we can reduce our carbon footprint and align with global climate goals through innovation and responsible operations. We are committed to creating a cleaner, lower-carbon, and more sustainable future, while promoting the use of renewable energy and circular economy practices to enhance efficiency and reduce long-term environmental impacts.

Key Related Material Topics:



Air Pollution Management



Climate Action and Greenhouse Gas Emissions



Air Pollution Management

Target for 2024

≥5%

Reduction rate of PM10 concentration**

≥40%

Reduction rate of nitrogen oxide (NO_x) emissions**

≥10%

Reduction rate of carbon monoxide (CO) emissions**

* calculated from the 2021 base year

** all measured from biomass energy

Why this matters for Vanachai Group

Pollution management has always been one of Vanachai Group’s key environmental priorities, reflecting our commitment to responsible business practices for both the environment and society. As a producer of wood-substitute materials that require manufacturing processes with potential environmental impacts, the company has chosen to use clean energy from biomass and solar power, avoiding fossil fuels in its production processes. In addition, we conduct environmental quality monitoring, both inside our factories and in surrounding areas, at least once a year.

In 2024, monitoring results for air quality, odor, noise, and light were all within legal limits, and no chemical leak incidents were recorded. Vanachai operates a urea-formaldehyde resin plant with

tight controls on volatile organic compounds (VOCs) to keep emissions low, following environmental policies and practices in line with legal and international standards.

Furthermore, the company runs a 9.9-megawatt biomass power plant, optimizing resource use. We prioritize air pollution control by applying advanced technology and stringent measures to reduce gas emissions and particulate matter, protecting the health of employees, neighboring communities, and the broader environment. These efforts ensure that the Group’s clean energy use supports sustainable quality of life and minimizes long-term environmental impacts.



*“CLEAN PRODUCTION,
GREEN COMMITMENT”*

Our Approach

Vanachai Group places high importance on controlling air pollution from its wood-substitute material production processes. The company aims to reduce impacts on air quality, community health, and the surrounding environment by using clean energy from biomass and solar power, with no fossil fuels used. Operations strictly follow environmental laws and standards both domestically and internationally. The Group applies advanced pollution control technologies, conducts annual air quality monitoring, and builds stakeholder collaboration to enhance transparency and contribute to a sustainable environment.



Upgrade pollution reduction technology in production processes:

Adopt leading-edge technologies and practices to reduce fine particulate matter (PM) and nitrogen oxides (NO_x) emissions from biomass energy, targeting at least an 80% reduction in air emissions by 2030.



Achieve 100% compliance with air quality standards:

Operate fully in line with both national and international laws and standards, ensuring emissions remain within legal limits every time measurements are taken.



Reduce greenhouse gas emissions from biomass energy:

Improve energy efficiency and select sustainably sourced biomass to reduce carbon dioxide (CO₂) emissions by 30% by 2030.



Develop and apply real-time air quality monitoring systems:

Install continuous air quality monitoring systems within and around factory sites to detect pollution, issue risk alerts, and transparently disclose data to the public.



Strengthen cooperation with communities and stakeholders:

Work with government agencies, local communities, and environmental organizations to build transparency and raise awareness about air quality, aiming for zero pollution-related complaints.

Implementation

- 1) Install Electrostatic Precipitators (ESP):** Install ESP systems to capture fine particulates from biomass combustion, achieving over 99% dust removal and keeping emissions within legal limits.
- 2) Install bag filter systems:** Place bag filters at major emission points to boost PM2.5 and PM10 capture efficiency, especially during peak production periods.
- 3) Upgrade stack emission monitoring systems:** Enhance the Continuous Emissions Monitoring System (CEMS) at biomass boilers to measure real-time levels of particulates, NO_x, and CO, enabling prompt corrective actions.

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Data on pollutant emissions (NO_x, CO, PM)

Type of Pollutant	Unit	2021	2022	2023	2024
Nitrogen Oxide (NO _x)	Kilograms/Year	86,901.34	116,517.87	68,928.37	50,226
Carbon Monoxide (CO)	Kilograms/Year	236,146.47	593,261.28	423,065.51	521,175
Total Suspended Particulate (TSP)	Kilograms/Year	5,950.30	40,798.76	33,704.06	39,967
Particulate Matter (PM 2.5)	Kilograms/Year	N/A	N/A	N/A	N/A
Particulate Matter (PM 10)	Kilograms/Year	325.75	364.99	309.47	249.65
Nitrogen Oxide (NO _x)	Kilogram per Ton of Production	0.07	0.10	0.05	0.04
Carbon Monoxide (CO)	Kilogram per Ton of Production	0.18	0.53	0.31	0.38
Total Suspended Particulate (TSP)	Kilogram per Ton of Production	0.00	0.04	0.02	0.03
PM 2.5 Intensity	Kilograms per Cubic Meter	N/A	N/A	N/A	N/A
PM 10 Intensity	Kilograms per Cubic Meter	8.3*10 ⁻⁸	9.3*10 ⁻⁸	8.9*10 ⁻⁸	8.1*10⁻⁸

PERFORMANCE RESULTS

▼ **2.4%**
Reduction rate of PM10 concentration from biomass energy production

▼ **42.9%**
Reduction rate of nitrogen oxide (NO_x) emissions from biomass energy production

▲ **111.1%**
Reduction rate of carbon monoxide (CO) emissions from biomass energy production

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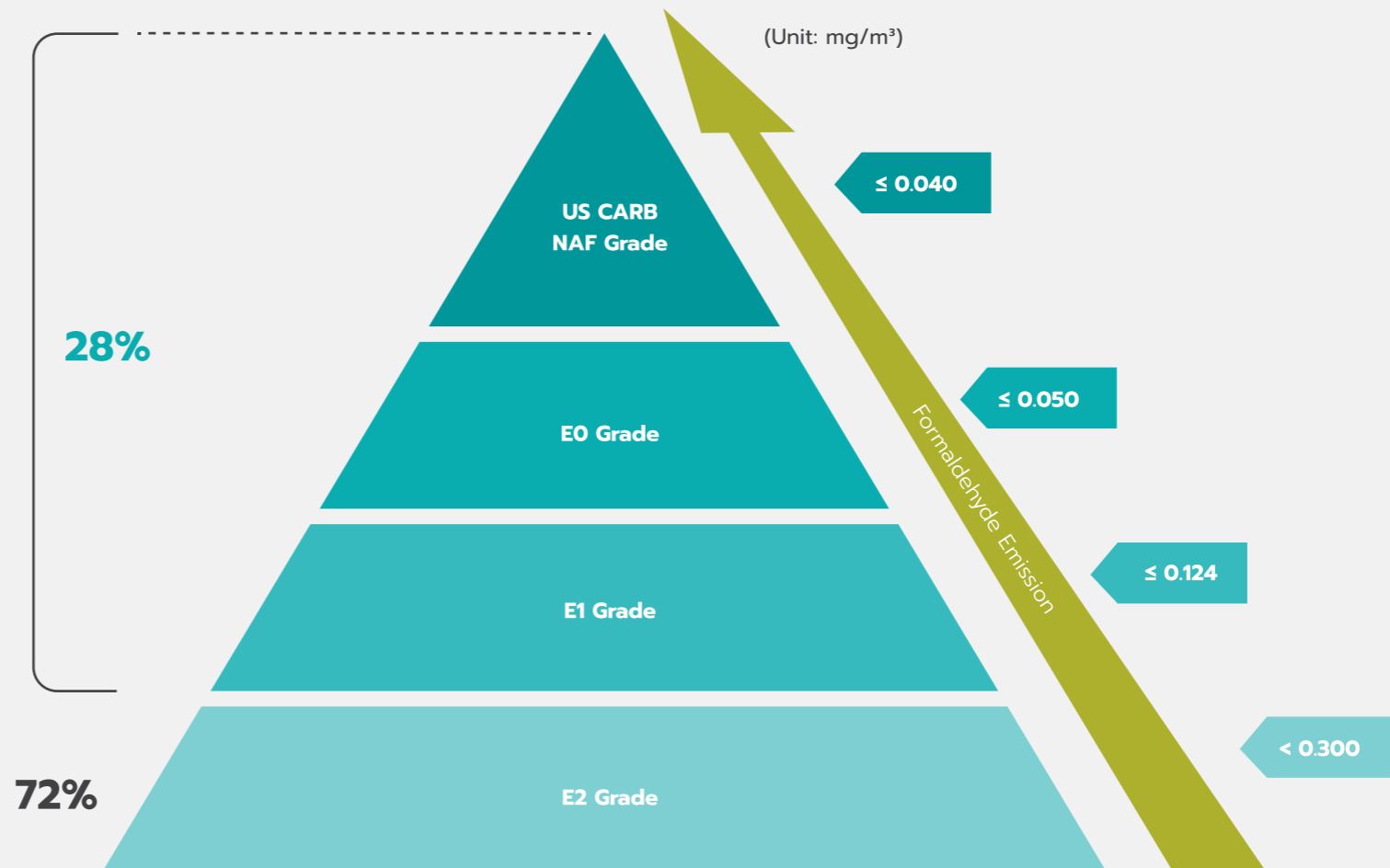
Urea-Formaldehyde Adhesive Production

Vanachai Group produces urea-formaldehyde adhesives, which serve as a wood fiber binder and contribute to the mechanical strength of wood-based panels according to international specifications. However, formaldehyde is classified as a carcinogenic substance and can be harmful if used in inappropriate amounts. Therefore, the company strictly controls its production to meet international standards.

The company places great importance on indoor air quality and consumer safety by maintaining formaldehyde emissions in its products in line with stringent international standards. Currently, the company produces finished wood panels at US CARB NAF Grade, E0, and E1 levels, which are considered high safety grades, accounting for 28% of total production capacity. The US CARB NAF Grade has formaldehyde emissions lower than 0.040 mg/m³, meeting high safety standards under both European and American regulations. The remaining 72% of production is at E2 Grade, which is still considered safe and widely accepted by global furniture manufacturers.

In 2024, the company increased production at E1 through US CARB NAF Grade levels by 4.02% compared to 2023, demonstrating its technological capability and genuine concern for environmental and user health. Vanachai has plans to further expand the proportion of high-safety-grade production to meet global market demands and support its long-term sustainability goals.

The Group's products meet 100% of internationally recognized safe formaldehyde emission standards.



* Classification of wood-based panel products by formaldehyde emission levels

Activities to Reduce Business-Related Air Pollution

Ongoing Electric Forklift Project

Vanachai Group began piloting electric forklifts in 2023 to reduce air pollution and move toward more environmentally friendly operations, starting at the Surat Thani plant. Two electric forklifts were introduced to replace diesel-powered forklifts.

- **Reducing GHG emissions from electric forklifts with solar energy.** The Group uses rooftop solar systems to charge electric forklifts at all plants, significantly reducing, or essentially eliminating, indirect greenhouse gas emissions from electricity consumption
- Lower noise levels
- Long-term cost savings

A diesel forklift typically emits around 25 tCO₂e per year, meaning that **replacing two diesel forklifts with electric models reduces greenhouse gas emissions by approximately 50 tCO₂e per year.**



Automatic Intermediate Storage System Project

To improve operational efficiency, employee safety, and reduce environmental impacts, the company has invested in installing six semi-automatic storage systems (Automatic Intermediate Storage Systems) at its MDF production facility in Surat Thani, which is the Group's largest production unit. This intelligent transport and storage system is designed to efficiently handle and store products between production processes and shipment, helping reduce warehouse bottlenecks and minimize human error.

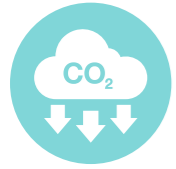
This project is supported by investment incentives from the Board of Investment (BOI) under the Green Technology category, reflecting the company's commitment to environmentally conscious and sustainable business operations. Additionally, the company plans to expand this system further in 2025 to support production growth and drive long-term high efficiency and environmental friendliness.

A key feature of the system is its compatibility with standard shipping containers, which helps reduce logistics costs.



Benefits of Using the Automatic Intermediate Storage System:

- Reduce greenhouse gas (GHG) emissions by approximately 243 tCO₂e per year.
- Reduce carbon monoxide (CO) emissions by around 4,050 kilograms of CO per year.
- Reduce workplace noise pollution by about 20 decibels (dB), improving safety and lowering work-related stress.
- Reduce manual labor by 18 workers per day (equivalent to forklift drivers), lowering accident risks.
- Reduce time and hazards in operations, achieving about 20% faster performance compared to traditional methods, which helps ensure smoother product handling and storage, shortens production line waiting times, and increases warehouse inventory turnover rates.



Climate Action and Greenhouse Gas Emissions

Target for 2024

100%

Climate risk assessment and integration into the enterprise risk management system

▼ 9.64%

GHG emissions reduction rate (Scope 1 and 2) compared to the 2021 baseline

▼ 17.65%

Reduction rate of GHG emission intensity (Scope 1 and 2) per unit of production compared to the 2021 baseline

Why this matters for Vanachai Group

Climate change is a severe threat to business, driven by greenhouse gas emissions as a critical sustainability challenge. It causes both physical risks, such as extreme weather events affecting tree growth, natural resource availability, and the stability of supply chains, as well as transition risks from tightening environmental regulations, carbon pricing schemes, and shifting market demand toward environmentally conscious products. As a business that depends directly on natural resources, especially wood and tree-derived materials, Vanachai faces challenges from climate variability. To enhance long-term resilience, Vanachai focuses on comprehensive climate risk management by maximizing resource

efficiency, reusing wood residues in production, investing in renewable energy, and aiming to become a Net Carbon Creditor.

Through these approaches, Vanachai can safeguard business continuity, strengthen sustainability performance, and reinforce its leadership in transitioning toward a circular and low-carbon economy, while maintaining its commitment to responsible business practices and future-proofing its operations against climate challenges.



"CUTTING GREENHOUSE GAS EMISSIONS FOR A SUSTAINABLE PLANET"

Our Approach

Climate Change and Greenhouse Gas Management

Vanachai Group is strongly committed to addressing climate change through comprehensive greenhouse gas (GHG) management across both its production processes and its entire value chain. Our approach aligns with global climate goals and supports our vision of being a leader in low-carbon, circular, and bio-based wood substitute materials.

The Group has set a target to achieve carbon neutrality in its operations by 2050, with a midterm goal to reduce Scope 1 and 2 GHG emissions intensity per unit of production by 41.18% by 2030 (compared to the 2021 base year). This will be achieved through the use of renewable energy, production process innovations, and circular economy practices.



Driven by Leadership:

Assign clear climate roles to the board and senior executives.



Integrate Climate Risk:

Use scenario analysis to incorporate climate-related risks into the enterprise risk management system.



Reduce Greenhouse Gases through Clean Energy:

Install solar rooftop systems and use renewable electricity for more than 26.7% of total consumption to achieve carbon neutrality by 2050.

Vanachai has adopted the Task Force on Climate-related Financial Disclosures (TCFD) framework to manage climate-related risks and opportunities. In 2024, the company assessed the impacts of both transition risks and physical risks, such as energy price volatility and raw material availability.

TCFD Recommendations



Clear and transparent governance



Resilient, scenario-informed strategy development



Integrated climate risk management



Disclosure of climate-related metrics, targets, and performance

As a sustainable wood-substitute resources company, Vanachai recognizes that climate change creates both physical risks and transition risks, which could affect the supply chain, production continuity, and business resilience. To address these challenges, the company conducted a climate risk assessment aligned with international frameworks like the TCFD to identify vulnerabilities and develop proactive risk management strategies.

The assessment revealed that transition risks, especially market risks driven by environmentally conscious consumer behaviors, and policy and regulatory risks, are key challenges within the value chain. However, technology-related risk was considered low because Vanachai continues to invest in low-carbon technologies. For physical risks, the company is preparing to monitor and mitigate impacts from severe weather events and resource shortages.

This assessment strengthens Vanachai's capacity for climate risk management and reinforces its leadership role in driving a circular and low-carbon economy for long-term sustainability.

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Climate Risk Assessment

Business Value Chain	Transition Risks				Physical Risks	
	Policy and Regulatory Risks	Market Risks	Technology Risks	Reputational Risks	Acute (sudden) events	Chronic (long-term) events
Business Development and Innovation Promotion	3	2	3	3	1	2
Ethical Raw Material Sourcing and Resource Conservation	3	3	2	3	3	3
Environmentally Friendly Manufacturing Excellence	2	3	1	2	2	2
Participation in Environmentally Conscious Markets	2	3	2	2	2	2
Low-impact Transport and Smart Distribution	2	2	1	2	3	3
Sustainable Customer Engagement and After-Sales Support	1	2	2	2	3	2
Circular Solutions and Restoration Actions	3	3	1	3	1	3

Climate Change Risk Levels High Medium Low

PERFORMANCE RESULTS

100%
Climate risk assessment and integration into enterprise risk management systems

▼ 22.84%
GHG emissions reduction rate (Scope 1 and 2) compared to the 2021 base year

▼ 16.47%
GHG emissions intensity reduction rate (Scope 1 and 2 per unit of production) compared to the 2021 base year

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Managing Critical Climate Change Impacts and GHG Management

Develop business strategies resilient to climate change.

Type of Risk	Relevance to Vanachai Group	Risk Mitigation Strategy
Policy and Regulatory Risks	<ul style="list-style-type: none"> • Stricter carbon regulations: including increased carbon pricing measures and ESG reporting requirements. • Market access restrictions: non-compliance with environmental laws may limit commercial opportunities. 	<p>Strict Regulatory Compliance: Achieve 100% compliance with laws by 2030 covering ESG disclosures, carbon tax requirements, and sustainable sourcing legislation, supported by monitoring systems and collaboration with government agencies.</p>
Market Risks	<ul style="list-style-type: none"> • Growing demand for environmentally friendly products: consumers increasingly prioritize low-carbon materials and wood not sourced from natural forest logging. • Regulatory-driven market shifts: new sustainability standards affecting sales volumes and market positioning. 	<p>Green Market Expansion: Increase the proportion of low-carbon product sales by 30% by 2027 to meet changing market demand.</p>
Technology Risks	<ul style="list-style-type: none"> • Rapid advancements in low-carbon materials, bio-based materials, and circular economy innovations. • Sustainable technologies and modern production processes: may lead to higher production costs, loss of competitiveness, and market share erosion to more advanced innovators. 	<p>Investment in Innovation: Allocate no less than 15% of the annual R&D budget by 2027 to support energy-efficient production, bio-based materials, and circular economy initiatives.</p>
Reputational Risks	<ul style="list-style-type: none"> • Stricter ESG scrutiny: investors expect a clear and transparent commitment to sustainability. • Brand credibility at risk: failure to achieve climate targets and sustainable sourcing could undermine stakeholder trust. 	<p>ESG Leadership: Publish an annual ESG report aligned with IFRS S1 & S2 standards and FTSE Russell criteria, and achieve a high sustainability ranking on international ESG indices by 2030.</p>
Acute Physical Risks	<ul style="list-style-type: none"> • Severe natural disasters affecting business: floods, storms, and wildfires could disrupt raw material supply chains and factory operations. • Transportation, distribution, and production risks: damage to infrastructure could cause delivery delays and increased costs. 	<p>Resilient Operations: Implement climate risk management plans and early warning systems across 100% of critical supply chain locations and factories by 2030 to mitigate impacts from natural disasters.</p>
Chronic Physical Risks	<ul style="list-style-type: none"> • Long-term resource decline: rising temperatures and drought could reduce the availability of usable wood. • Increased operating costs: climate change could drive up water and energy costs. 	<p>Commitment to Sustainable Forests: Ensure that 100% of wood raw materials come from sources verified for sustainability and climate resilience by 2050.</p>

Vanachai Group’s approach to reducing climate change risks, driving sustainability, and strengthening long-term business resilience includes the following action plans:

Strategy	Performance in 2024	Target		
		2024	2030	2050
1) Strict Regulatory Compliance	100%	Strengthen ESG governance and risk management to align with regulatory requirements and maintain competitiveness.	Commit to 100% regulatory compliance and integrate climate risk management into corporate governance.	Achieve full carbon neutrality compliance under international sustainability frameworks.
2) Green Market Expansion	-4.3%	Increase sales of environmentally friendly and low-carbon materials by 10%.	Increase sales of environmentally friendly and low-carbon materials by 20%.	Increase sales of environmentally friendly and low-carbon materials by 30%.
3) Investment in Innovation	15%	Allocate 10% of the R&D budget to low-carbon and energy-efficient production processes.	Invest no less than 25% of the R&D budget in bio-based materials, green adhesives, and circular economy solutions.	Achieve 100% carbon-free production through sustainable AI and automation systems.
4) ESG Leadership	22.84%	Increase Scope 1 and 2 greenhouse gas emissions reduction by 9.64%.	Achieve a sustainability ranking on an international ESG index.	Gain recognition as a global leading carbon-neutral wood-based materials company.
5) Resilient Operations	20% Began implementing the plan in 2024	Implement climate risk monitoring and mitigation plans across all critical supply chains.	Ensure 100% of key suppliers adopt climate resilience measures.	Establish climate-adaptive forestry projects to secure long-term raw material supply.
6) Commitment to Sustainable Forests	100%	Ensure that 100% of wood raw materials come from end-of-life rubber trees and community wood residues.	Achieve 100% sustainable wood sourcing with full traceability.	Transition to climate-positive forest management by exceeding carbon sequestration targets.

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Climate Change Governance

Oversight by the Risk Committee:

The Risk Committee, chaired by Mr. Somprasong Sahawat, has direct responsibility for managing climate-related risks and reports to the Board of Directors on strategic issues. Executive accountability is established through corporate KPIs set for all employees, and especially for senior executives, covering carbon reduction, the transition to renewable energy, and compliance with key environmental regulations, which carry significant weight in performance evaluations.

Climate Change Management Working Group:

This dedicated working group serves as the focal point for climate-related communications and operations with both management and employees. It is responsible for coordinating climate action, risk reduction initiatives, and the development of sustainability policies.

Cross-Functional Collaboration:

At the operational level, financial, operations, and sustainability departments jointly share roles in managing climate-related risks to ensure integrated and consistent decision-making.

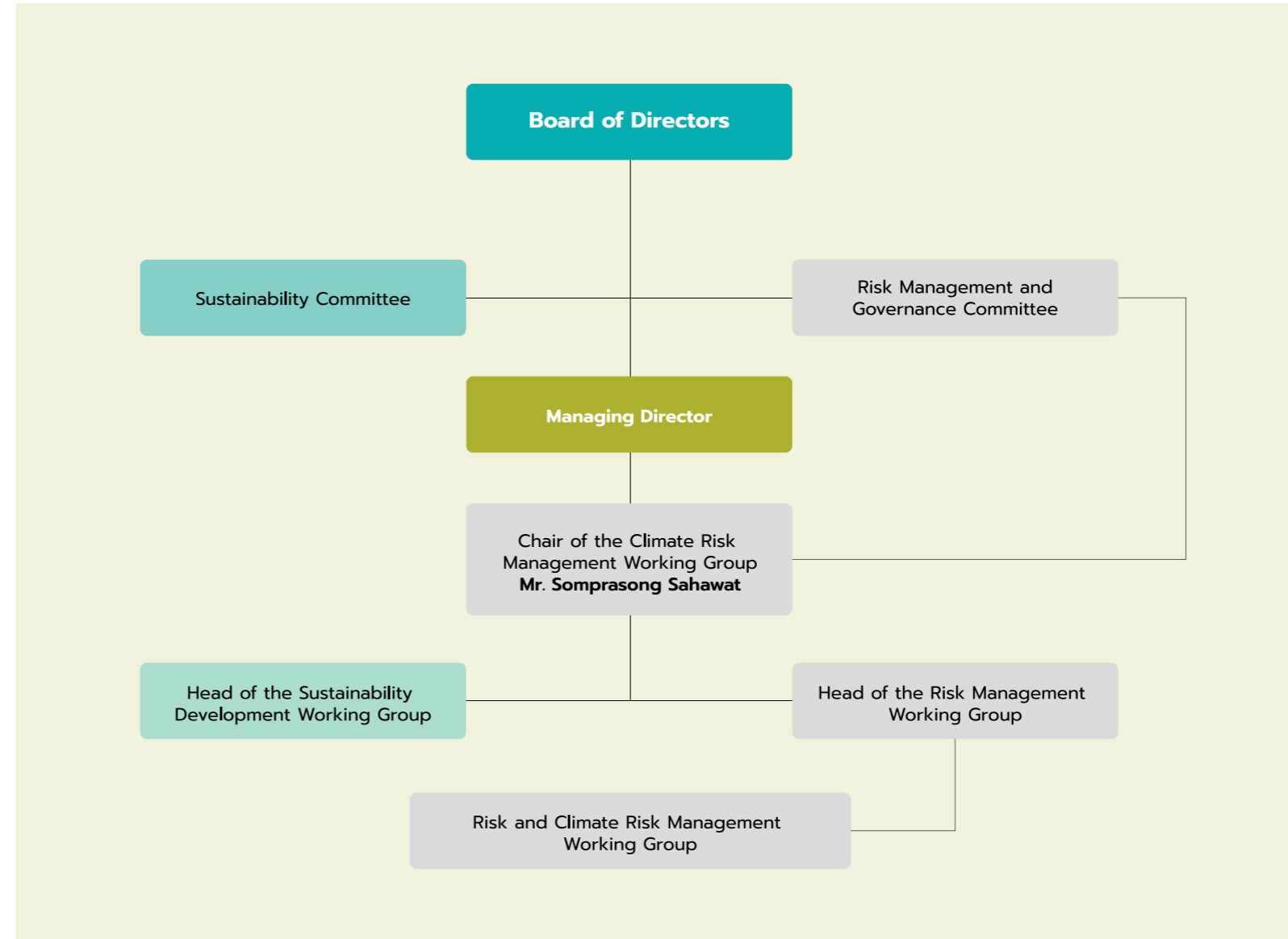


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Greenhouse Gas Emissions Reduction

Greenhouse gas emissions are a key driver of climate change. Vanachai Group is committed to reducing its emissions through expanding the efficient use of solar energy in production, exploring carbon capture technologies, and developing carbon

offset projects. The Group also promotes forest planting initiatives and sustainable raw materials to advance long-term sustainability and progress toward its Net Zero target.

GHG Management Operations	Unit	2021 base year	Performance results 2024	Target			
				2024	2030	2050	2055
Total greenhouse gas emissions	tCO ₂ e	124,840	96,329	112,800	91,500	10,800	0
Reduction in total greenhouse gas emissions	%		22.84%	9.64%	26.71%	91.35%*	100%
- Scope 1 direct greenhouse gas emissions	tCO ₂ e	6,165	6,146	5,640	4,480	1,480	0
- Reduction in Scope 1 greenhouse gas emissions	%		0.31%	8.52%	27.33%	75.99%	100%
- Scope 2 indirect greenhouse gas emissions	tCO ₂ e	118,675	90,184	108,490	86,300	28,500	0
- Reduction in Scope 2 greenhouse gas emissions	%		24.01%	8.58%	27.28%	75.98%	100%
GHG emissions intensity (Scope 1 and Scope 2) per unit of production	tCO ₂ e/M ³	0.085	0.071	0.070	0.050	0.012	0
Reduction rate of GHG emissions intensity (Scope 1 and Scope 2) per unit of production	%		16.47%	17.65%	41.18%	86%	100%

Climate Strategy and Greenhouse Gas Reduction Targets 2021–2055

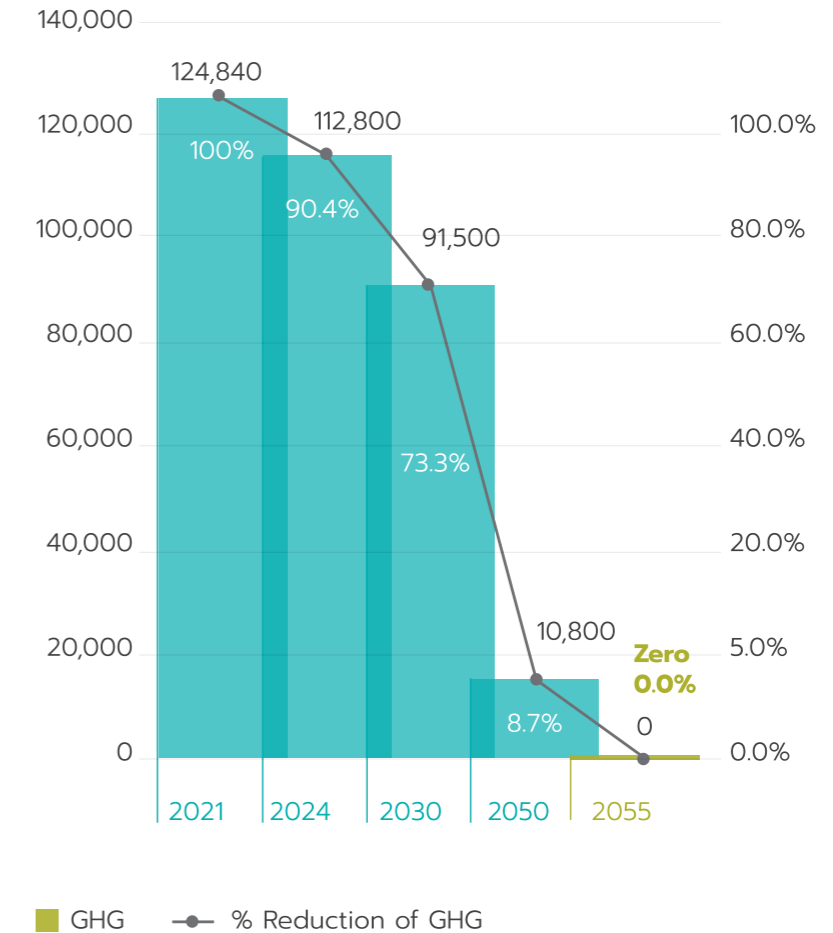


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FIRST YEAR OF DATA COLLECTION AND TARGET SETTING (BASE YEAR):

- Collected and compiled greenhouse gas (GHG) emissions data from all plants to establish the base year, covering Scope 1 (direct emissions) and Scope 2 (purchased electricity).
- Assessed energy use, fuel sources, and carbon-generating processes across all business units.
- Developed internal tools for tracking and reporting GHG emissions in alignment with international standards such as the GHG Protocol.
- Mapped out a long-term carbon reduction pathway aligned with national policies and global climate frameworks.
- Identified improvement areas, such as production efficiency, energy use, and logistics systems.
- Conducted training to build basic understanding among teams on the company’s carbon strategy and sustainability targets.

ACTIONS IMPLEMENTED TO ACHIEVE TARGETS:

- Invested in six semi-automatic storage systems (Automatic Intermediate Storage) to reduce reliance on diesel forklifts, cutting Scope 1 emissions, CO, and warehouse noise.
- Replaced approximately 27 forklifts, reducing CO₂e emissions by up to 243 tons per year and CO by more than 4,000 kilograms per year.
- Expanded the use of renewable energy such as solar rooftops (15.2–20.77 MWp) and biomass systems, delivering more than 50 GWh of clean energy per year.
- Implemented energy efficiency measures such as waste heat recovery and conversion to energy-saving machinery.
- Measured and reduced GHG intensity from 0.085 tCO₂e/m³ in 2021 to 0.071 tCO₂e/m³ in 2024, a reduction of over 16.5%.
- Set ongoing GHG intensity reduction targets for 2030, 2050, and 2055 in line with Net Zero goals.

CARBON NEUTRALITY



Reduce GHG emissions



Offset GHG emissions



GHG Removals



- Transition to 100% Renewable Energy Transition all production systems to clean energy such as solar, biomass, and future alternative energy sources to eliminate fossil fuel carbon emissions.
- Continuous Development of Low-Carbon Products Innovate environmentally friendly products and manufacturing processes to meet global sustainability standards and future market demands.

● 2021

● 2024

● 2050

● 2055

“PATHWAY TO NET ZERO: DECARBONIZING FOR A SUSTAINABLE PLANET”

Greenhouse Gas Emissions Reduction Project

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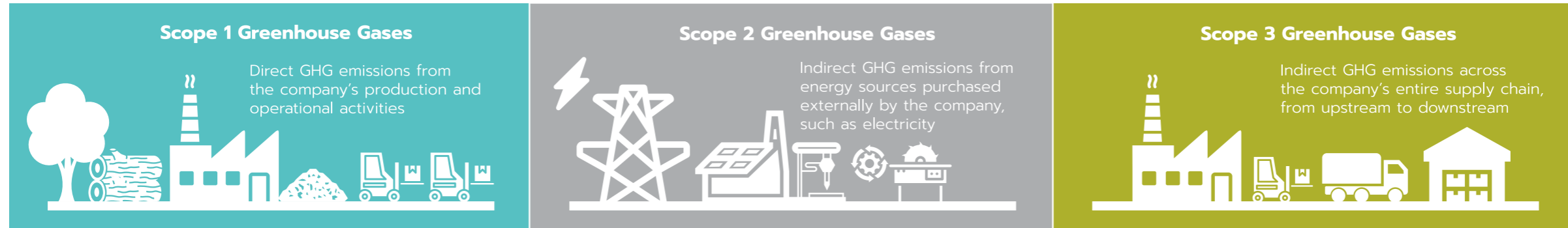
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Project	Relevant Scopes	Estimated GHG Reduction (tCO ₂ e/year)	Description	Additional Details
1. Project to replace diesel forklifts with electric forklifts and install an Automatic Intermediate Storage System, replacing 26 diesel vehicles	Scope 1	293	Cut direct vehicle emissions with two electric forklifts and six automated systems	Climate Action and Greenhouse Gas Emissions
2. Solar rooftop installation project across three plants, totaling 15,200 MWp	Scope 2	9,455.8	Reduce reliance on fossil-fuel grid electricity to lower GHG	Energy Management
3. Project to upgrade machinery and equipment at the Chonburi and Saraburi plants	Scope 1 and 2	403.36	Reduce electricity consumption and GHG emissions through 4 key projects	Energy Management
4. Biomass carbon capture and storage (Biomass CCS) project at the Surat Thani plant	Greenhouse Gas Removal (Beyond Scopes 1–3)	7,405	Reduce CO ₂ emissions from biomass power plant stacks	Air Pollution Management
5. Product life cycle assessment (LCA) project	Scope 3	N/A	Identify carbon reduction opportunities across the product life cycle	Construction Material Quality and Waste Reduction
6. Logistics optimization project to improve transportation efficiency	Scope 3	3,948.7	Reduce CO ₂ through more efficient fleet transportation management	2023 Sustainability Report: "Innovation" Section

FUTURE

BUILDING A SUSTAINABLE FUTURE

- Building a Future for Business Resilience
- Building a Future for Emerging Market Growth
- Building a Future Strengthening Business Partnerships

Vanachai Group upholds business ethics, transparency, and innovation while managing its supply chain sustainably and responsibly to ensure long-term success.

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CHAMPIONING ETHICS AND INNOVATION FOR A SUSTAINABLE FUTURE

The Group is committed to comprehensive social responsibility, prioritizing customer satisfaction and adapting to changing consumer behaviors. We support community development and long-term shared value, upholding equality, diversity, and respect for human rights. We foster a safe workplace, promote health, and continuously develop employee potential. We encourage a supportive culture that allows open expression and growth based on capability, ensuring everyone grows sustainably together with the organization. This reflects our belief that true growth begins with people.



Key Performance Indicators:

100%

Employees trained on Corporate Code of Conduct

98.0%

Overall customer satisfaction score

100%

Proportion of Suppliers assessed on ESG criteria



Future for Business Resilience

Promote business ethics and drive sustainable growth while responding to geopolitical challenges, ensuring long-term business stability and future readiness.



Future for Emerging Market Growth

Advance green innovation and deliver responsible products and services to meet evolving market needs, supporting a secure and sustainable future.



Future Strengthening Business Partnerships

Collaborate with partners and suppliers to strengthen sustainable supply chain management and build a responsible value chain ready for future change.

The company adopts a governance framework mindful of environmental, social, and economic aspects, enhancing transparency, engaging stakeholders, and fostering innovation. It embraces diversity, equity, and flexibility to adapt to future changes.



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FUTURE FOR BUSINESS RESILIENCE

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Building a resilient and ethical business for a sustainable future

Vanachai Group is building a stable business future as the foundation for long-term growth and sustainability, with a commitment to strong corporate governance, ethical leadership, and business integrity. The Group upholds transparency and accountability in every decision. Expanding its business through export markets is a key strategy for growth, adapting to geopolitical shifts while addressing emerging challenges and opportunities to maintain competitiveness and support responsible and sustainable trade. The company establishes a solid foundation through transparent operations, prudent risk management, and strategic adaptation, enabling robust growth under any market conditions. By integrating business ethics, market expansion, and geopolitical awareness into its governance strategy, the Group builds stakeholder trust, strengthens organizational resilience, and creates sustainable value through innovation and responsible management.

Key Related Material Topics:



Business Ethics and Integrity



Economic Growth and Value Creation



Geopolitical Factors and International Relations



Business Ethics and Integrity

Why this matters for Vanachai Group

Business ethics and corporate governance are vital pillars of good governance, enabling transparent, honest, and accountable business conduct. Upholding business ethics goes beyond legal compliance; it is a key factor in building trust and confidence among all stakeholders, including shareholders, employees, customers, and communities. This commitment covers two main areas:

- Good corporate governance, with a focus on a board structure that ensures responsible and transparent management
- Business ethics practices, with clear guidelines addressing crucial policies such as anti-corruption, conflict of interest

prevention, grievance mechanisms, non-discrimination, confidentiality, fair competition, insider trading, environmental health and safety, and information security

Embedding these ethical principles into daily operations helps Vanachai Group mitigate risks, promote a culture of accountability, and support sustainable long-term growth. Ethical business conduct is not only about doing what is right, but also serves as a strategic foundation that reinforces credibility and strengthens the company's reputation as a trusted leader in the industry.



Targets for 2024

0 Complaint

Complaints or reports concerning breaches of the code of ethics or business ethics violations



Declaration of intent to join the Thai Private Sector Collective Action against Corruption (CAC)

Good corporate governance

Why this matters for Vanachai Group

Good corporate governance and an effective board structure are fundamental to efficient and transparent organizational management. For Vanachai Group, having a clear corporate governance policy and an appropriate board structure supports prudent, accountable decision-making that considers all stakeholders. The company also promotes regular annual performance evaluations of the board and senior executives, such as the CEO, following international practices including the corporate governance principles of the Organization for Economic Cooperation and Development (OECD) and ESG frameworks. This strengthens management standards and builds long-term sustainability for the organization.

Our Approach

Vanachai Group is committed to conducting business with transparency and integrity, upholding ethics as the foundation for decision-making and operations. This approach builds stakeholder confidence and supports sustainable growth.



Clear policy setting:

Establish a code of ethics and behavioral guidelines for all employees to follow, including anti-corruption, business confidentiality, and non-discrimination.



Oversight, monitoring, and reporting:

Provide whistleblowing channels along with transparent systems for tracking, verification, and evaluation.



Communication and training:

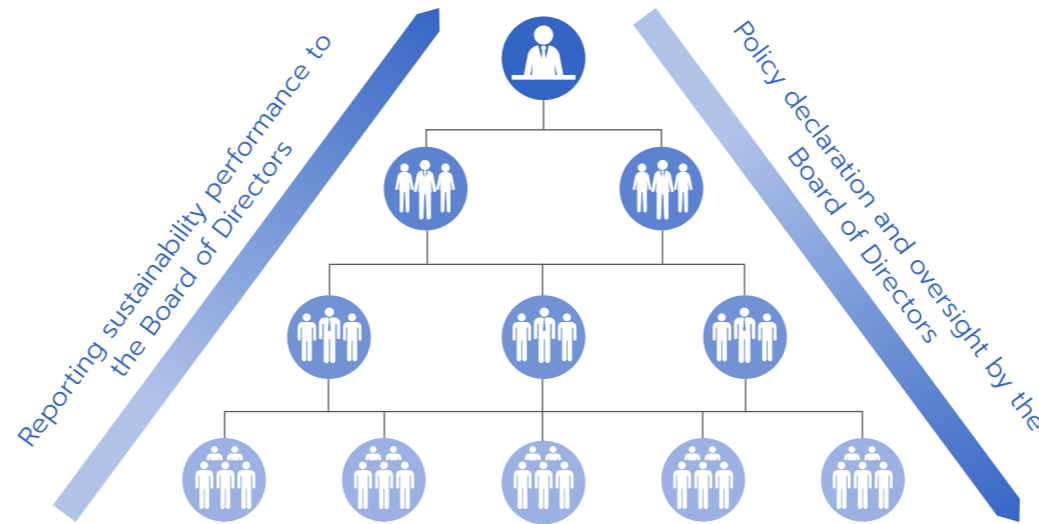
Communicate the code of ethics through various channels and provide regular training to ensure employees understand and can apply it effectively.



Sustainability Governance Structure

The board structure of Vanachai Group serves as a key mechanism for driving efficient, transparent, and sustainable business operations. It emphasizes the role of the board in setting direction, strategy, and overseeing operations in accordance with good corporate governance policies, while ensuring comprehensive risk management across economic, social, and environmental dimensions.

An appropriate structure enables Vanachai Group to make effective strategic decisions, promotes transparency and accountability, and builds stakeholder confidence. It also underpins the ongoing implementation of business ethics and anti-corruption policies. The board regularly reviews and assesses its Board Skill Matrix each year to ensure the necessary skills and expertise align with its responsibilities.



Position in the structure	Roles and responsibilities	Meeting
<ul style="list-style-type: none"> • Board of Directors 	<ul style="list-style-type: none"> • Sets the company's vision, direction, and core business policies in alignment with good governance principles. 	Quarterly (4 Times per Year)
<ul style="list-style-type: none"> • Risk Management and Governance Committee • Sustainability Committee 	<ul style="list-style-type: none"> • Oversees and advises on policies and approaches for risk management, internal controls, good governance, and sustainable development. • Monitors sustainability performance, provides recommendations for improvement, and creates shared value with stakeholders. 	Quarterly (4 Times per Year)
<ul style="list-style-type: none"> • Sustainability Working Group (from all key departments) 	<ul style="list-style-type: none"> • Serves as the central driving force for sustainability, with representatives from key departments collaborating on planning, implementation, and monitoring of ESG policy execution. • Screens performance reports. 	Monthly (12 Times per Year)
<ul style="list-style-type: none"> • All employees in every department 	<ul style="list-style-type: none"> • Play a vital role in applying ESG principles and the corporate code of ethics in daily work, performing their duties responsibly and transparently while considering environmental and social impacts. 	Semi-annual briefing meetings (with ongoing monitoring throughout the year)

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PERFORMANCE RESULTS

32
Policies and practices

Establish core policies and practices covering governance, environmental, social, and risk management dimensions

0
Complaint

No complaints or reports concerning breaches of the code of ethics or business ethics violations

100%

Employees trained on corporate ethics, with mandatory courses for all new employees

Composition of the Board of Directors

Board and subcommittee evaluations

- Evaluation tools developed by the Stock Exchange of Thailand.
- Evaluations conducted once per year for the Board and all subcommittees.
- Assessments performed both by committee and by individual average.
- Evaluation results are considered as part of determining remuneration for the Board and all subcommittees.

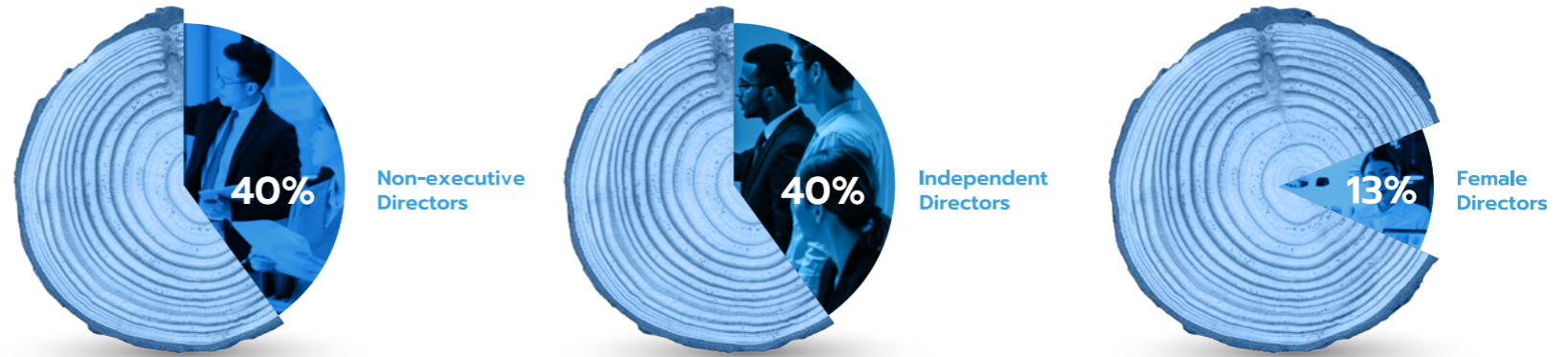


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Evaluation topics	Key evaluation criteria	Average score (%)	Performance rating level
Board of Directors (as a whole)	Policies, structure and qualifications, duties, meetings, and director self-development.	97.6	Excellent
Individual self-evaluation of directors	Responsibility, training and development, and adherence to good corporate governance principles.	98.5	Excellent
Cross-group evaluation (anonymous)	Responsibility and independence of directors (anonymous evaluation with 3 participants per group).	97.5	Excellent

Management Structure of Wanchai Group Company Limited (Public Company) and Subsidiaries

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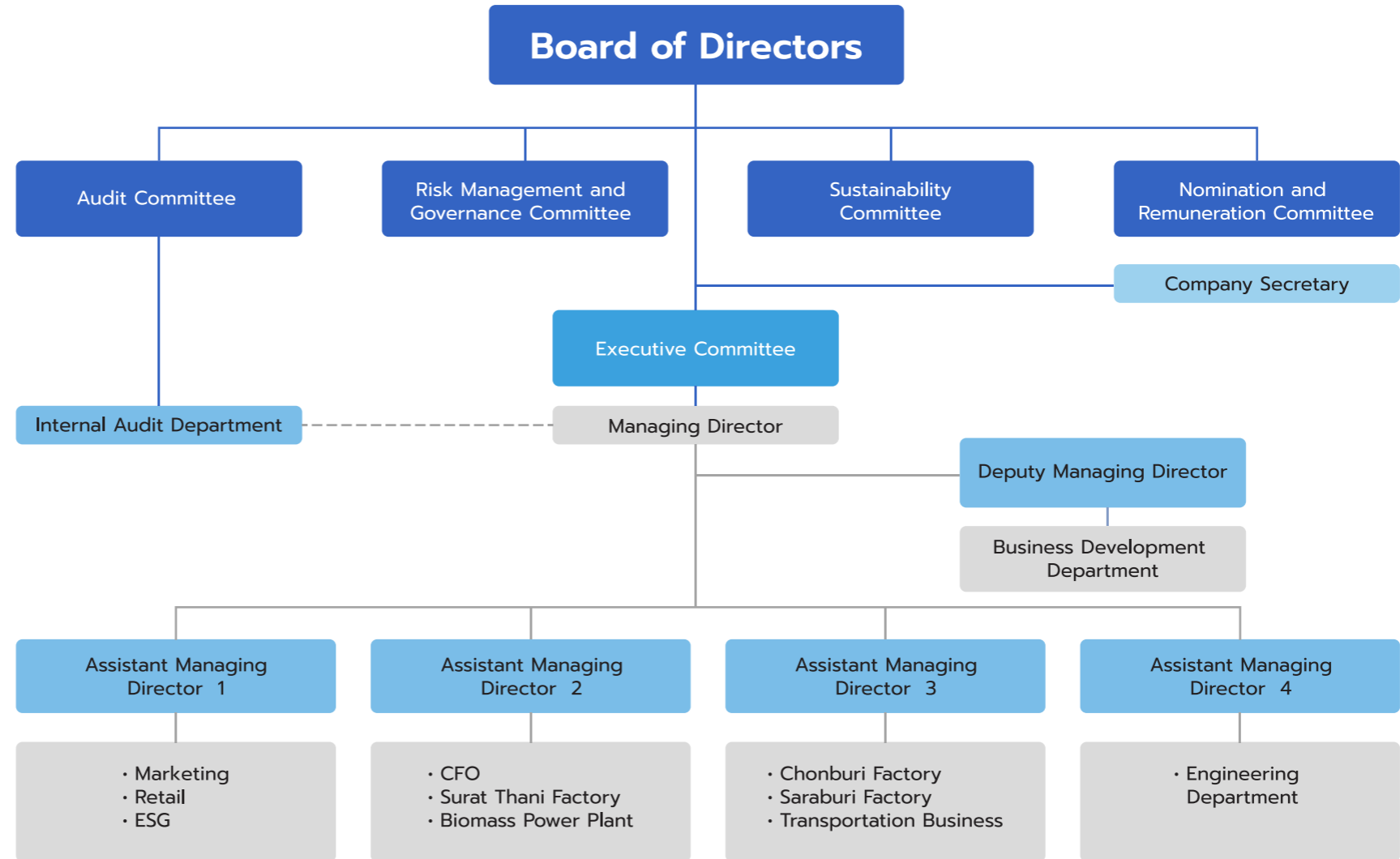
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Knowledge, experience, and expertise of the Board of Directors

In 2024, Vanachai Group had a total of 15 board members. Mr. Wichai Niwetpathomwat resigned from his position on August 1, 2024, and M.L. Dispanadda Diskul was appointed as a director effective August 8, 2024.

The company's board comprises individuals with diverse qualifications, experience, and expertise in good corporate governance. They play a vital role in setting the company's direction, providing oversight, balancing interests, and advising management appropriately.

The board's knowledge and experience are critical drivers supporting Vanachai Group's sustainable, transparent, and resilient growth. In the long term, proactive management of cybersecurity and data protection will be reinforced by integrating security measures at every level of operations. The company uses a risk-based strategy to identify vulnerabilities and strengthens systems through secure technologies, employee awareness, and clear practices.



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Board Skills Matrix

No.	Board member list/ Specialized Knowledge and Expertise	Position	Wood- Based Industry	Rubber- wood Plantation	Corporate Management	Engineering and Plant Operations	International Trade	Legal Affairs	Accounting and Finance	Risk and Crisis Management	Organiza- tional Develop- ment and Innovation	Social, Environmental and Safety	IT and Digital Technology
1	Mr. Sompop Sahawat	Chairman	●		●	●			●	●	●	●	
2	Mr. Suebtrakul Soonthornthum	Vice Chairman/ Independent Director/Chairman of Nomination and Remuneration Committee			●		●	●	●	●	●	●	
3	Ms. Yupaporn Boongate	Vice Chairman		●						●	●	●	
4	Pol. Gen. Soontorn Saikwan	Independent Director			●			●		●	●	●	
5	Mr. Kraithip Krairiksh	Independent Director/Chairman of The Audit Committee			●			●	●	●	●	●	●
6	Pol. Gen. Visanu Prasattongosoth	Independent Director			●		●	●	●	●	●	●	●
7	Mr. Praphan Anaman	Independent Director/Chairman of Risk Management and Governance Committee			●			●	●	●	●	●	
8	M.L. Dispanadda Diskul (Starting on August 8, 2024)	Independent Director			●		●	●	●	●	●	●	●
9	Mr. Wanthana Jaroennawat	Managing Director	●		●	●	●		●	●	●	●	
10	Mr. Suthep Chaipattanavanich	Director	●		●	●			●	●	●	●	●
11	Mr. Patta Sahawat	Deputy Managing Director	●		●	●	●			●	●	●	●
12	Ms. Phattra Sahawat	Director/Chairman of Sustainability Committee	●		●		●	●		●	●	●	●
13	Mr. Somprasong Sahavat	Director	●		●	●			●	●	●	●	●
14	Mr. Sittiwat Sahawat	Director	●		●	●	●			●	●	●	●
15	Mr. Surapong Dumrisilp	Director	●		●	●		●	●	●	●	●	
16	Mr. Vichai Nivaspathomwat (resigned August 1, 2024)	Director											
Total			8	1	14	7	7	8	10	15	15	15	8

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Business Code of Conduct

Why this matters for Vanachai Group

The Business Code of Conduct serves as a vital guideline to ensure business operations are efficient, transparent, and fair. It defines behavioral standards that all employees must uphold, including integrity, accountability, respect for human rights, and anti-corruption practices. This helps foster a moral and unified corporate culture while building stakeholder confidence. Consistent understanding and adherence to the Code of Ethics by employees enables the organization to manage risks effectively, reduce internal conflicts, and support Vanachai Group's stable growth under good corporate governance principles.

Our Approach

Vanachai Group places great importance on communicating its Business Code of Ethics to all stakeholder groups. A whistleblowing channel is provided as an essential tool, enabling employees and relevant parties to make inquiries, raise concerns, or report any conduct potentially contrary to the company's code in a convenient, safe, and confidential manner. This supports a transparent and accountable corporate culture.

In 2024, there were no complaints or reports of unethical conduct. Additionally, Vanachai Group achieved 100 percent employee awareness of the Code of Ethics and requires all new employees to thoroughly study the code before starting work. This strengthens understanding of proper practices and continuously promotes ethical and responsible business conduct across the organization in a sustainable manner, while fostering ethical awareness and a long-term culture of integrity.



Communicate and build ongoing understanding:

Disseminate the Code of Ethics through training, manuals, and internal activities, with emphasis at all levels, especially for new employees.



Promote an open and transparent corporate culture:

Provide accessible, safe, and anonymous whistleblowing channels, encouraging employees to report inappropriate behavior without fear of retaliation.



Consistent monitoring, review, and evaluation:

Conduct regular assessments and maintain complaint data to improve systems and support sustainable corporate governance practices.

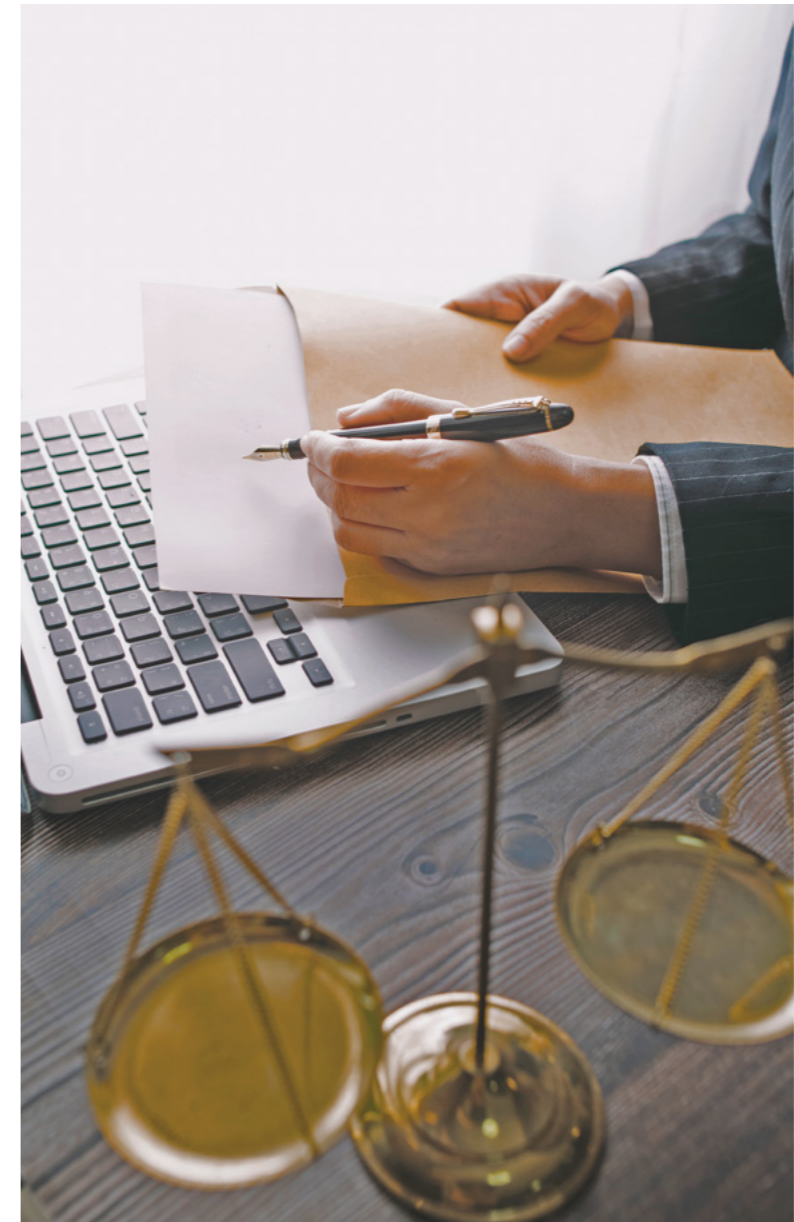


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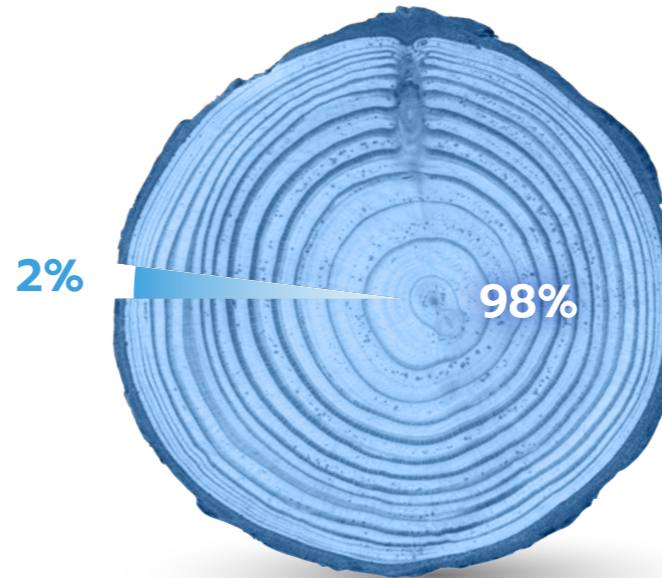
Employee training on business ethics and knowledge testing

To instill a culture of transparency and ethical business conduct, the company has implemented a systematic and continuous business ethics training program. Its objective is to ensure that all employees understand and can properly follow the company's business code of ethics. In 2024, the company achieved 100 percent training coverage of all employees, with the following operational guidelines:

- Existing employees must complete business ethics training every three years, with pre- and post-training tests requiring a minimum passing score of 75 percent to confirm their understanding.
- New employees receive business ethics training as part of the onboarding program before beginning work, establishing an ethical foundation from day one.

The training content covers key topics such as conflict of interest, anti-corruption, confidentiality, fair practices, reporting misconduct, and employee responsibilities toward the company's code of ethics. Human Resources and the ethics compliance team jointly oversee the training and evaluation process to ensure all departments consistently uphold ethical standards. The company's commitment to promoting and continuously developing business ethics aligns with good corporate governance principles, fosters a transparent and accountable corporate culture, and supports Vanachai Group's long-term sustainability goals.

Proportion of Business Ethics Training



● Existing Employees ● New Employees

แบบทดสอบก่อนการอบรม (Pre-Test)
 Total points 20/20
 หัวข้อหลักสุด: จรรยาบรรณพนักงานและจรรยาบรรณธุรกิจ

PERFORMANCE RESULTS

100%

Employee training on business ethics, including pre- and post-training knowledge tests.

0 Complaint

No complaints or reports of unethical business conduct by executives or employees.

0 Complaint

No complaints or reports regarding company ownership structure, with no pyramid or cross-shareholding within the group.

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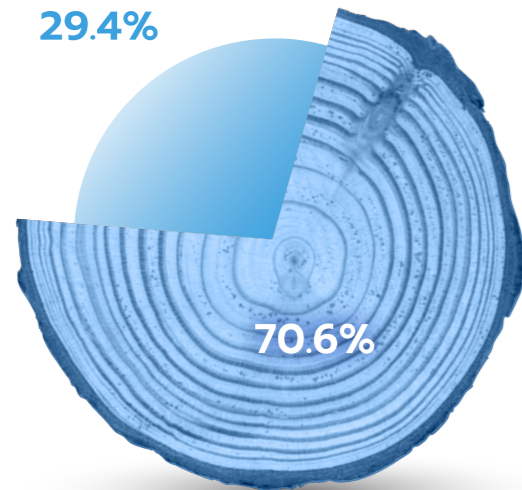
Anti-corruption

Vanachai Group is firmly committed to conducting business with transparency and rejects all forms of corruption. In 2024, the company held a kick-off training session for 34 executives and employees, and developed an online training module to ensure access for employees at all levels. A total of 554 employees, representing 29.4 percent of the workforce, have completed the training so far, with the goal of reaching 100 percent by 2025. The training curriculum covers definitions of corruption, penalties, situational examples, and whistleblowing channels, while also promoting a corporate culture rooted in integrity to build stakeholder trust and support sustainable ESG practices.

In addition, the company has strengthened communication and awareness through internal channels, such as promotional media, warning messages on internal systems, and leadership communications, to firmly embed a culture of “Zero Tolerance for All Forms of Corruption” across every process. This is fully aligned with the company’s Business Code of Ethics and corporate values.



Notification to all departments regarding anti-corruption training, with online training provided.



● Employees not yet trained ● Employees trained

PERFORMANCE RESULTS



Declared its intention to join the Thai Private Sector Collective Action against Corruption (CAC)

0 Complaint
No complaints or reports of corruption or bribery

0 Complaint
No complaints or reports of conflicts of interest

0 Complaint
No complaints or reports of unfair business competition.

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Whistleblowing

Why this matters for Vanachai Group

The whistleblowing system is a key mechanism for promoting good governance and a transparent corporate culture. Vanachai Group encourages employees and stakeholders to actively monitor, report, and raise concerns about inappropriate behavior or breaches of the code of ethics. Reports or questions can be submitted through the Company Secretary, or the Human Resources and General Administration Division, via email, phone, or letter.

The company will carry out an investigation within 14 days and report the results to the Managing Director or the Board of

Directors. The Human Resources and General Administration Division will systematically record information and communicate outcomes to the complainant and relevant parties.

This system not only helps prevent ethical risks and organizational misconduct but also allows personnel at all levels to share opinions or express concerns without fear of retaliation. The company prioritizes the confidentiality of whistleblowers and protects the rights of all parties involved to ensure that investigations are fair, transparent, and lead to continuous organizational improvement.

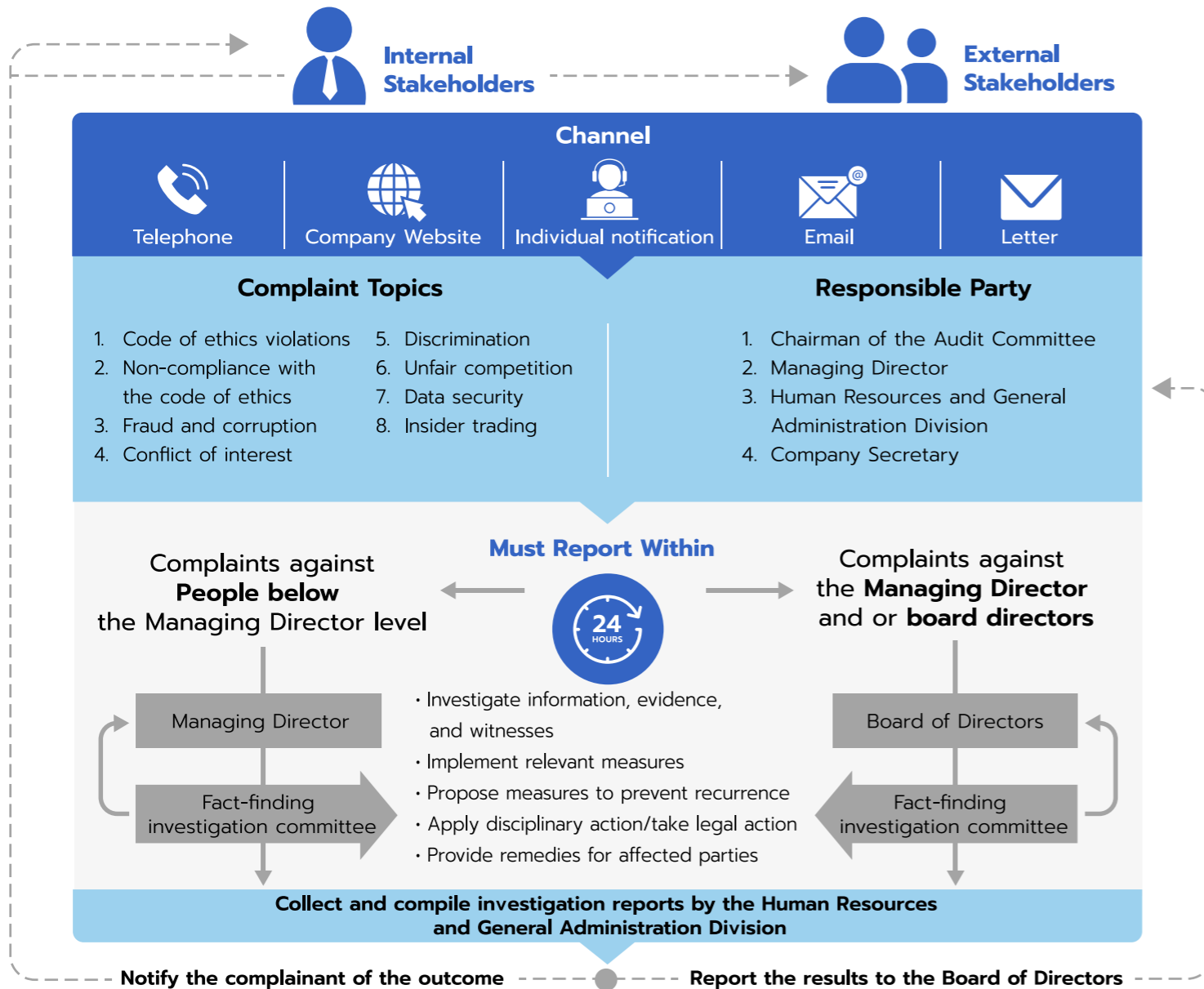
Performance Results

Number of Complaints and Whistleblowing Reports

Number of complaints	2022	2023	2024
Number of complaints with information for investigation	1	0	0
Number of complaints related to fraud or corruption	0	0	0
Number of complaints concerning other ethics issues	0	0	0
Number of complaints under investigation			
Number of complaints where the investigation has been concluded	1	0	0
Number of complaints currently under investigation	0	0	0



Complaint and Whistleblowing Handling Procedures



Whistleblowing report:

Address:

- Chairman of the Audit Committee
- Managing Director
- Company Secretary

Vanachai Group Public Company Limited

2/1 Wongsawang Road,
Bangsue, Bangkok 10800
Thailand

Tel:

+662 913 2180-9, +662 585 4900-3

Fax:

+662 587 9556, +662 587 0516

Email:

auditcommittee@vanachai.com

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Cybersecurity and Data Privacy

Why this matters for Vanachai Group

As Vanachai Group expands its B2C business through the nationwide Woodsmith retail network, the volume and sensitivity of distributor and end-consumer data have increased significantly. Protecting personal data and strengthening cybersecurity are therefore essential to maintaining customer trust and ensuring business continuity.

The company has invested in secure control systems, including migrating its legacy ERP system to SAP, with cybersecurity as a primary consideration. This approach aligns with the company's Business Code of Ethics and principles of good corporate governance. Furthermore, cyber insecurity has been identified as a top-tier risk by the World Economic Forum (WEF) for several consecutive years, and it is expected to remain a critical long-term risk.

Our Approach

Vanachai Group takes a proactive approach to managing cybersecurity and data protection, integrating security measures at every level of operations in accordance with its website privacy policy. The company uses a risk-based strategy to identify vulnerabilities and strengthens systems with secure technologies, employee awareness, and clear practices.

The transition to the System Applications and Products in Data Processing: SAP system enables the company to leverage security tools more effectively and continuously improve data access controls. Responsible employees receive training to address risks and strictly follow data usage procedures. The company also maintains an ongoing monitoring and improvement process to comply with laws and international standards while fostering a culture of accountability in the digital era across the organization.



Develop a secure digital infrastructure

by implementing an ERP system such as SAP, with internal controls prioritizing.



Strengthen organizational data management

with clear procedures for access, use, and data auditing to ensure transparency and accountability.



Enhance the capabilities of responsible personnel

through training on data protection policies, IT risk, and cybersecurity incident response.





As Vanachai Group expanded its B2C business through the nationwide Woodsmith retail network, the company continued to develop cybersecurity and data protection management practices. Mandatory training courses were provided for all new employees to establish a strong understanding of data protection from their first day of work, along with specialized training for IT teams and employees in other functions. This has led to a more comprehensive understanding and reduced the risk of data mismanagement in practical terms.

These measures resulted in 2024 with no data leakage incidents and no cybersecurity-related damages, effectively preventing system-level risks while significantly enhancing the confidence of customers, partners, and stakeholders. The company has also successfully built a sustainable data-focused corporate culture.

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PERFORMANCE RESULTS

0 Case

Complaints or reports related to cybersecurity incidents or data breaches

100%

All IT team members responsible for this area have been trained, with clear procedures established for data control and management

25%

Employees trained on data privacy awareness (not only the IT team but also staff in marketing and sales)

Tax Management

Why this matters for Vanachai Group

Vanachai Group places great importance on tax management as a fundamental foundation of sustainable and transparent business operations. Careful tax planning, strict legal compliance, and effective risk management help strengthen financial stability, enhance competitiveness, and support long-term business growth while building stakeholder trust.

Taxation also serves as a key mechanism for driving economic development and improving quality of life in society. The company is committed to operating transparently, fairly, and in full compliance with the law, thereby contributing to genuine economic, social, and environmental development in the communities where it operates. Vanachai believes that responsible tax management not only reflects its role as a good corporate citizen but also helps promote sustainable growth for the country and the world in the future.

Our Approach

Vanachai Group implements systematic and forward-looking tax management based on transparency, fairness, and accountability. The tax policy is overseen by senior management and regularly reviewed to align with evolving laws and practices, ensuring tax operations are accurate and compliant in every area where the company operates, while effectively managing both direct and indirect tax risks.

The company has developed clear internal guidelines covering planning, auditing, and tax reporting processes, based on accuracy, traceability, and maintaining credibility throughout all stages of tax management. Both the Finance and Risk Management departments share responsibility for these processes.



Legal compliance and risk-based oversight:

The company closely monitors changes in tax laws and requirements throughout its value chain, covering both the company and its subsidiaries, as well as new businesses, with regular tax risk assessments.



Strategic tax planning and utilization of tax benefits:

The company continuously analyzes business strategies to identify opportunities for appropriately utilizing tax incentives under the law, in alignment with its long-term growth and sustainability goals.

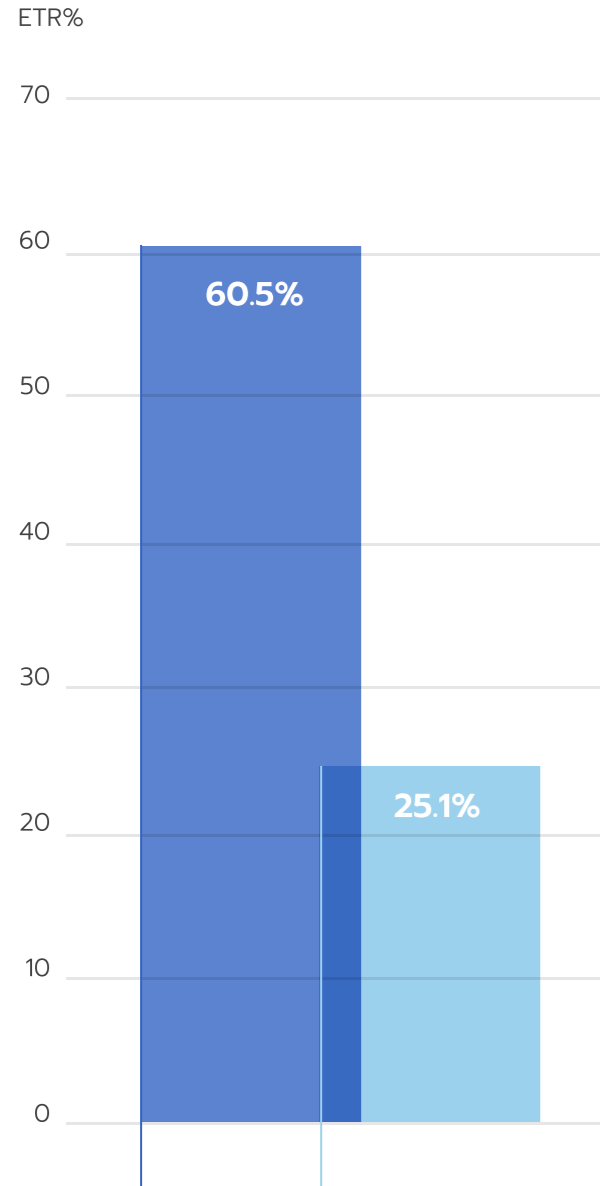


Developing capabilities and strengthening tax knowledge:

The company provides tax training and knowledge-building for employees in accounting, tax, and related functions, as well as those involved in innovation and various projects, to ensure correct and optimal use of tax benefits for the organization.

In addition, the company prioritizes raising tax awareness among all personnel levels, as well as coordinating across departments to ensure responsible and consistent tax practices throughout the organization. The company engages transparently and constructively with government agencies and tax authorities to foster mutual understanding and is ready to listen to and manage tax-related concerns from stakeholders appropriately.

**Comparison of Effective Tax Rate (ETR):
2024 versus 2023**



Tax Efficiency Management

In 2024, Vanachai Group reported an effective tax rate (ETR) of 25.1 percent, down from 60.5 percent in 2023. This reflects a return to a more normal tax level after one-off tax items and non-deductible expenses impacted the previous year. The slightly higher-than-statutory rate in 2024 was due to adjustments in certain deferred tax items and timing differences in revenue recognition.

The company continues to emphasize transparent and responsible tax practices, with strict tax risk management, legal compliance, strategic planning, and ongoing development of tax efficiency to support sustainable value creation in line with good governance principles.



**PERFORMANCE
RESULTS**

25.1%

Tax planning and legal compliance:

Managing the effective tax rate appropriately, reflecting the proportion of actual taxes paid relative to accounting profit

5 People

Knowledge enhancement:

Number of employees trained in tax matters, enabling staff to correctly utilize available tax benefits

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Economic Growth and Value Creation

Why this matters for Vanachai Group

Economic growth is a key factor that directly impacts Vanachai Group’s business capabilities, since the company’s products such as MDF panels, particleboard, and laminated wood are closely tied to the real estate, construction, and furniture industries, which generally follow the overall economic climate. When the economy grows, there is greater investment in housing, commercial buildings, and interior decoration projects, driving up demand for wood-based materials.

During the COVID-19 outbreak, many consumers renovated their homes, creating a temporary opportunity for the furniture and

home decoration sectors. However, after the crisis, the overall economy has yet to fully recover, particularly in the real estate and construction sectors, which remain affected by inflation, high interest rates, and slower investment.

For Vanachai Group, monitoring and analyzing economic growth trends is essential for production planning, investing in innovation, and making strategic adjustments to maintain competitiveness, promote the use of sustainable wood materials, support the circular economy, and create long-term value for the organization.

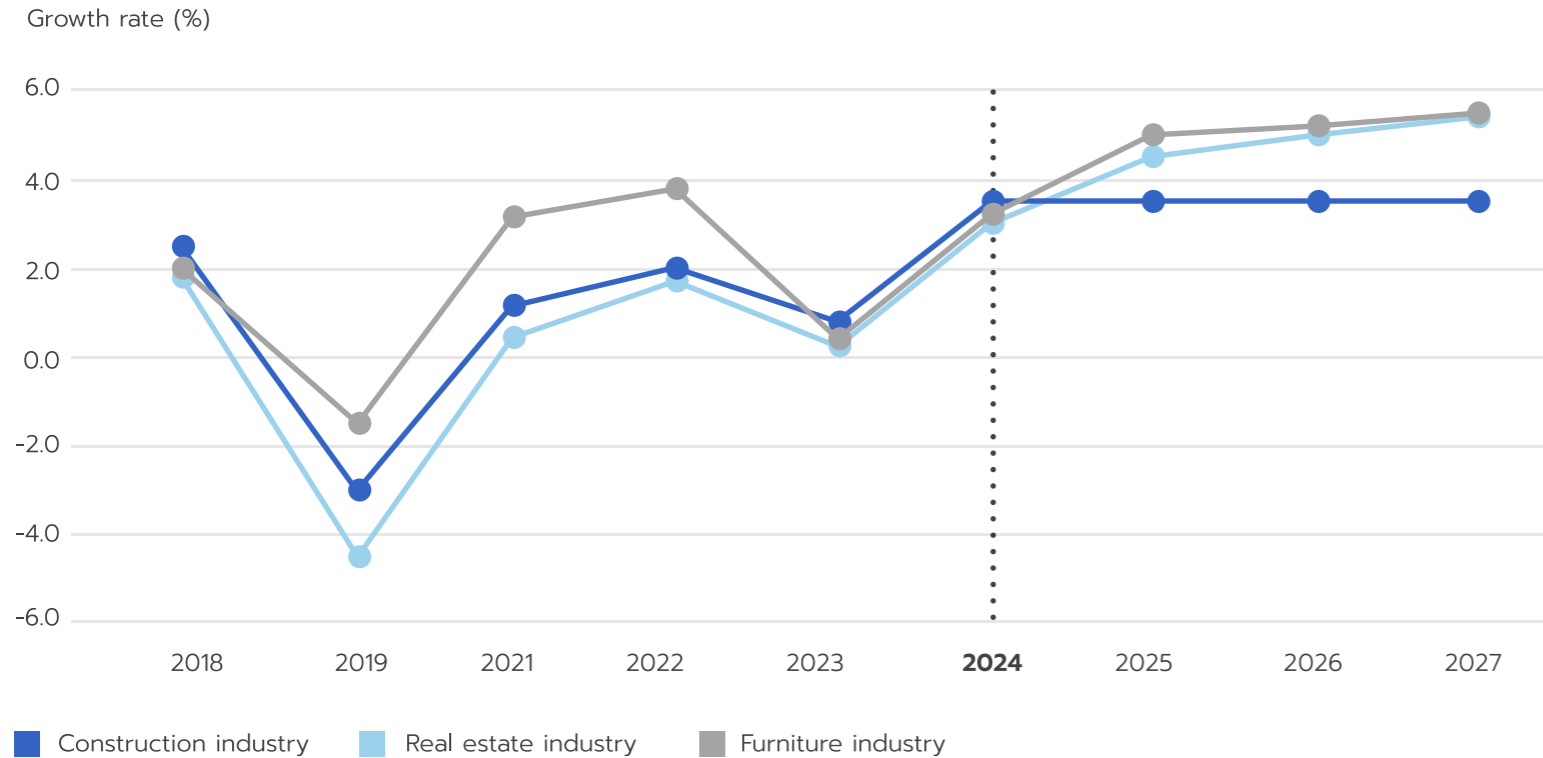
Targets for 2024

15%

Domestic sales growth rate



Business Growth Trends in related industries (2019 to 2026)



Source: Real Estate Information Center (REIC), Krungsri Research

Industry Growth

Construction industry is expected to grow steadily at an average rate of 3.5 percent per year during 2025 to 2027, driven by large-scale infrastructure projects.

Real estate industry is projected to accelerate with an average growth rate of 4.5 to 5.4 percent per year during the same period.

Furniture industry is likely to continue growing at 5.0 to 5.5 percent, supported by the recovery of purchasing power and changing consumer lifestyles.

The company uses this information to support Vanachai Group’s strategic planning, particularly in production, marketing, and the development of wood-based products to meet the needs of a growing market.

Our Approach



Promoting environmental value and health for the new generation of urban consumers

through the healthy home trend and materials that reduce volatile organic compounds (VOC). The company highlights its sustainable wood-based products as a key selling point, which are not only environmentally friendly but also safe for residents, particularly urban dwellers living in condominiums or small homes with enclosed spaces. This approach helps sustainably expand sales opportunities in the mid to premium market segments.

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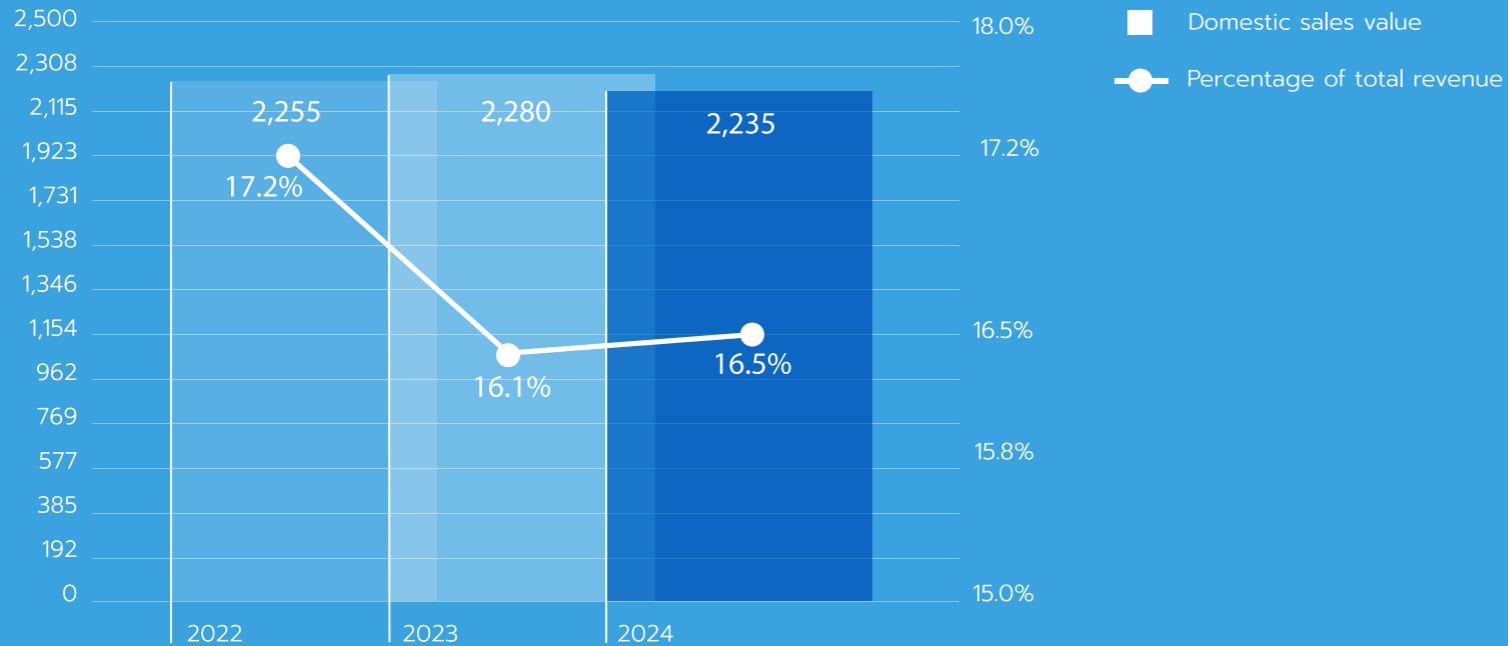
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PERFORMANCE RESULTS

Domestic Sales (million baht)



Although domestic sales revenue in 2024 declined from 2023 by 44.7 million baht, or approximately 1.96 percent, the main reason was a decrease of around 9 percent in MDF sales volume despite an average selling price increase of about 3 percent. Meanwhile, particleboard sales volume rose by approximately 5 percent, but its average selling price decreased by about 4 percent, which impacted overall revenue.

However, the company has maintained its competitiveness in cost and product quality, while accelerating the development of innovative wood-based materials that meet market needs. With the recovery signals from the construction, real estate, and furniture industries expected during 2025 to 2026, the company is confident it can restore sales growth to align with industry expansion and broaden its customer base among those who value health and the environment.

The company believes the coming year will be an important opportunity to drive growth and sustainably increase its domestic market share.



Geopolitical Factors and International Relations

Why this matters for Vanachai Group

Vanachai Group has extensive experience and a strong commitment to export operations, with international markets contributing as much as 63.5 percent of total sales in 2024. These markets include key countries in the Middle East and Asia such as the UAE, Saudi Arabia, Singapore, Vietnam, South Korea, Egypt, and Kuwait, as well as secondary markets including Turkey, Israel, India, Taiwan, Hong Kong, Oman, Bahrain, Malaysia, and Qatar. This demonstrates the company’s direct linkage to global economic and political systems.

Current geopolitical situations, such as the prolonged Israel-Palestine conflict since the fourth quarter of 2023 through 2024, have increased transportation costs and insurance premiums. At the same time, the Russia-Ukraine war continues to drive volatility in energy and raw material prices. In addition, the United States dollar, which is the main trading currency, has experienced significant fluctuations, affecting pricing and revenue certainty.

Targets for 2024

1.6%

Growth rate of export sales volume

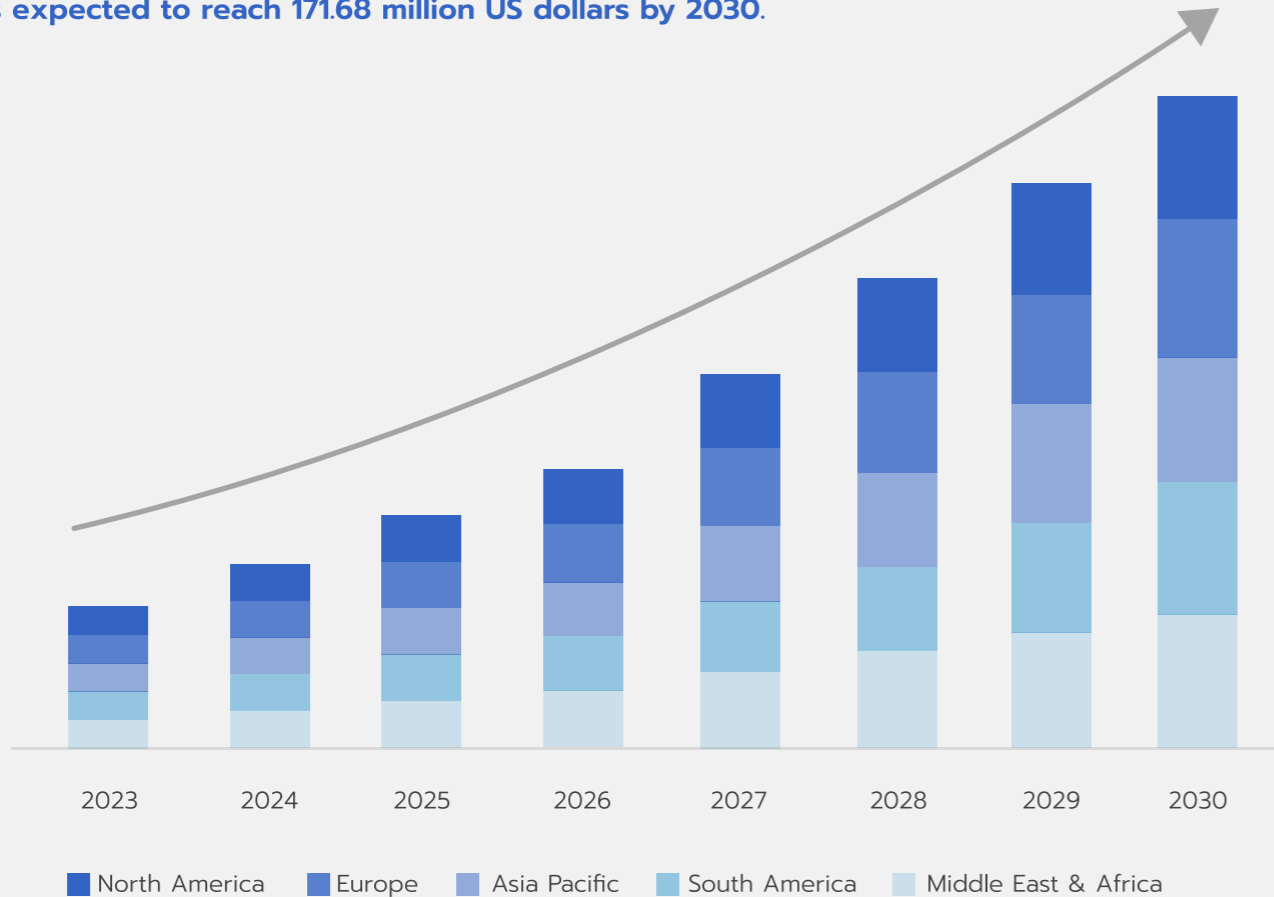
1 Country

Number of new trading partner countries or newly expanded international markets



Global market trends for wood-based alternative materials

The global market for wood-based alternatives is expected to reach 171.68 million US dollars by 2030.



Source: Data Bridge Market Research Market Analysis Study 2023

Global market trends for natural wood substitute materials

Market size and growth forecast

- **Alternative building materials** with a global market value of approximately 217.3 billion US dollars in 2023, expected to grow to 361.4 billion US dollars by 2032, with an average growth rate (CAGR) of 6.2 percent.
- **Modified Wood Market** is projected to reach around 2.99 billion US dollars in 2024 and increase to 4.64 billion US dollars by 2033, with an average growth rate of 5.0 percent.
- **Wood-Plastic Composites – WPC** saw North America’s market generate revenues of 2.4 billion US dollars in 2023, driven by the demand for sustainable construction materials.
- **Transparent Wood** has started to gain popularity, with a market value of 115 million US dollars in 2023, and is expected to grow at a rate of 7.3 percent annually through 2032.

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Key factors driving growth

- **Sustainability Focus:** Increasing demand for environmentally friendly construction materials has made wood-based natural substitutes, such as engineered wood or HDF, an important choice.
- **Urbanization and Infrastructure Development:** Infrastructure growth, especially in Asia Pacific, is a major driver of demand for alternative building materials.
- **Technological Advancements:** The development of technologies such as cross-laminated timber (CLT) or oriented strand board (OSB) has expanded the versatility of alternative wood materials.
- **Regulatory Support:** Many countries have introduced policies to encourage sustainable construction materials and offer incentives for businesses that adapt to these practices.

Our Approach

In the context of a global economy characterized by high uncertainty due to geopolitical factors, Vanachai Group recognizes the importance of monitoring and assessing risks that could impact its supply chain, production costs, and international business capabilities. This is particularly crucial as the company generates more than 60 percent of its total revenue from exports and relies on markets in regions that are politically and economically sensitive, with prolonged conflicts in several areas of the world, along with exchange rate and energy price volatility.

Proactive risk management is therefore essential to maintain operational stability and build long-term confidence among partners and stakeholders. The company has established a systematic management framework to prepare for and adapt to potential changes.



Closely monitor geopolitical situations:

By analyzing in-depth data from multiple domestic and international sources to assess risks and opportunities that could impact exports.



Diversify market and customer risks:

Reduce reliance on any single market and expand into new, more stable regions to spread external risk.



Manage exchange rate and transportation cost risks:

Through financial hedging and proactive logistics planning to reduce the impact of volatility.



Strengthen relationships with international partners and customers:

By visiting customers and developing a deep understanding of conditions in each country to maintain long-term business continuity.

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PERFORMANCE RESULTS

▼ -4.8%

Growth rate of export sales volume.

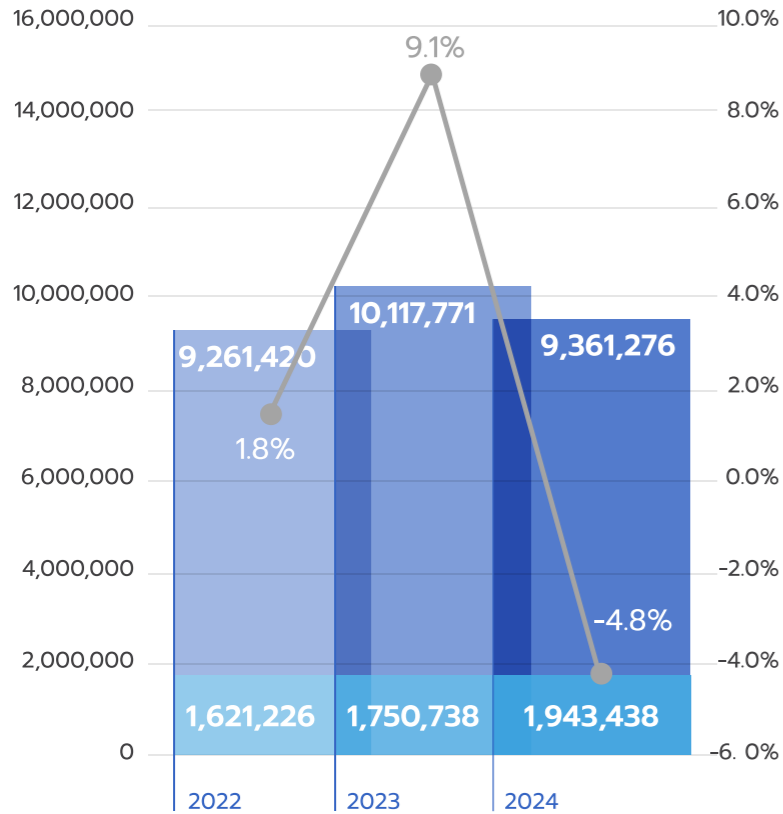
0
Complaint

No complaints from international customers regarding products, services, or transportation

▲ 3 Countries

The group expanded internationally into China, Guatemala, and Chile as new markets in 2024

International sales 2022 to 2024



■ CLMV ■ Others ● Growth YoY

The group has developed plans for products and services and seeks opportunities to build long-term business advantages

Capacity Building

- Expand the **“Green Product Positioning”** concept more prominently in branding and marketing.
- Strengthen relationships with international customers through a CRM system and customer behavior data analysis to offer products or services tailored to their needs.
- Enhance supply chain and logistics agility.

Create Business Opportunities

- Accelerate continuous development and launch of innovative products.
- Build collaborations with technology and environmental partners.
- Invest in branding and marketing to communicate key selling points.
- Leverage in-depth market and customer data (customer intelligence).



The group analyzes issues that negatively affect the business and manages risks within operational processes

Reduce or Prevent Weaknesses

- Monitor situations through local partners and develop a **Geopolitical Risk Map** for planning.
- Establish long-term contracts with logistics service providers to control pricing and risk, and optimize packaging and transportation routes for maximum efficiency.
- Communicate brand strengths in environmental friendliness and consumer safety.
- Enhance after-sales services such as warranties and technical consulting.

Manage risks

- Manage exchange rate risk.
- Diversify the international portfolio.
- Control production and logistics costs.
- Develop a flexible pricing structure.
- Clearly communicate the differentiation of environmentally friendly products (green products).



FUTURE FOR EMERGING MARKET GROWTH



Expanding Future Markets for Sustainable Growth

Vanachai Group has explored and expanded into future markets that increasingly emphasize environmental and social awareness, which are key to building business stability and long-term success. As global dynamics shift, the company must adapt to new market trends, changing consumer behaviors, and evolving trade landscapes. Continuous development is necessary to maintain competitiveness and drive responsible growth, with a focus on market diversification, geopolitical awareness, and strategic global market expansion, ensuring that the business remains agile and future ready.

Green innovation is therefore at the heart of this expansion, helping to develop advanced and environmentally friendly products that meet global sustainability goals. The company is committed to delivering responsible products and services that not only meet market needs but also reduce environmental impacts through innovation, ethical leadership, and sustainable practices. It is dedicated to creating new opportunities and delivering sustainable value to stakeholders and our world.

Key Related Material Topics:



Product and Service Responsibility



Green and Inclusive Innovation



Product and Service Responsibility

Why this matters for Vanachai Group

Vanachai Group places great importance on conducting its business responsibly toward consumers, partners, and society, with a strong focus on product quality control and comprehensive product management across the entire value chain from upstream to downstream, especially in the context of wood-based natural substitute products, which are the heart of the business.

The company recognizes that designing, developing, producing, and distributing products must be based on safety, transparency, and user and environmental friendliness. This key principle reflects operations under corporate governance in terms of policy, regulation, quality control, ethical procurement, and providing accurate

information to consumers. It is also linked to the vision of “Victory that Saves the Forest,” which aims to balance economic growth with sustainable conservation of natural resources.

Responsible product management helps build stakeholder confidence, reduces reputational and legal risks, and enables the company to meet the expectations of modern consumers who prioritize transparency and sustainability. Therefore, this approach is not only about maintaining standards but also serves as a crucial strategy for creating shared economic, social, and environmental value, strengthening Vanachai Group’s long-term competitiveness.

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Targets for 2024

100%

Proportion of products certified to international quality and safety standards (ISO 9001:2015)

97.4%

Customer satisfaction score for products

97.0%

Customer satisfaction score for services



“SUSTAINABLE QUALITY AND TRUSTED RESPONSIBILITY”

Our Approach

Vanachai Group is committed to developing responsible products and services under good governance practices to ensure that its products are high quality, safe, and friendly to consumers and the environment. This management approach covers the entire process from design, development, production, and sourcing to transparent and verifiable communication with consumers. The company operates within a framework of legal compliance, international standards, and its corporate values to build stakeholder trust and promote long-term sustainable growth.



Integrate responsible product design principles: Develop products with consideration for user safety, durability, and the use of materials that minimize environmental impact, with quality criteria established from the research and development stage.



Control and transparently disclose product information: Conduct thorough reviews of product labels, user manuals, and marketing materials to ensure they are accurate, complete, and compliant with legal and industry standards.



Oversee the supply chain with ethics and risk assessments: Apply the "Supplier Code of Conduct" together with monitoring and evaluation systems to ensure partners operate ethically and consider human rights and environmental impacts.



Establish systems to listen to and handle customer complaints: Promote two-way communication with customers to gather feedback, improve products, and reduce reputational or negative impacts from product use.

PERFORMANCE RESULTS

Key Focus Areas	Key Performance Indicator: KPIs	Measurement units	Performance results for 2024	Standards		
				GRI Disclosure	TCFD Theme	FTSE Russell Theme
1) Product quality and consumer safety	<ul style="list-style-type: none"> Proportion of products meeting quality standards (such as ISO 9001:2015). Compliance with product and service information requirements through complete labeling and information disclosure. 	Percentage of Products	100%	GRI 416-2 GRI 417-2	Operational risk	Product responsibility: safety, quality, and product recall management
	<ul style="list-style-type: none"> Number of product safety complaints. 	Number of Cases	0			
2) After-sales service and customer satisfaction	<ul style="list-style-type: none"> Customer satisfaction score for products. 	Percentage of Product Satisfaction	98.1%	GRI 102-43 GRI 418-1	Related to reputational risk	Product responsibility: customer engagement and retention
	<ul style="list-style-type: none"> Customer satisfaction score for services. 	Percentage of Service Satisfaction	97.9%			
	<ul style="list-style-type: none"> Complaint response rate within the specified time. 	Percentage within SLA	100%			
	<ul style="list-style-type: none"> Percentage of customer suggestions implemented. 	Percentage of All Suggestions	27%			
3) Ongoing monitoring and evaluation	<ul style="list-style-type: none"> Frequency of production and service process evaluations. 	Times per Year	1	GRI 103-2 GRI 103-3	Governance: risk oversight, strategy monitoring, indicators	Governance: ESG oversight, implementation mechanisms
	<ul style="list-style-type: none"> Number of internal audit activities conducted. 	Number of Times	1			
	<ul style="list-style-type: none"> Level of alignment with defined ESG targets. 	Percentage of Alignment	100%			

*SLA = Service Level Agreement (refer to the criteria in the product and service complaint handling procedures)

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Product Quality Control

Vanachai Group places the highest priority on excellence in product quality by integrating modern manufacturing technology with strict quality control at every stage, from raw material selection and process control to continuous product quality testing, to ensure production meets defined standards. The company's production processes use high-efficiency machinery and are continuously developed and improved to reduce costs, increase energy efficiency, and support eco-friendly manufacturing practices. Random inspections are conducted to verify physical properties such as density, strength, and durability in line with international standards including Japan's JIS, Germany's DIN, the United States' ASTM, and the United Kingdom's BSI.

In addition, the company promotes training and skills development at all employee levels to build understanding of quality control processes and new technologies, as well as to instill a mindset of sustainable operations throughout the production line. This supports growth in both economic and environmental dimensions. The company also encourages continuous internal knowledge sharing to enhance competitiveness and apply innovation effectively. Recognizing the importance of systematic and transparent management, the company has implemented the ISO 9001:2015 quality management system to control all production processes, allowing for systematic monitoring, analysis, and correction of defects, which helps reduce waste, improve efficiency, and lower production costs in the long term.

Through these measures, the company can raise product quality to internationally accepted levels, continuously meet customer demands, and drive the organization toward becoming a leader in sustainable wood-based material manufacturing across economic, social, and environmental dimensions, reinforcing its mission to balance business growth with responsible care for the planet.

Product Quality Standards

Vanachai Group is committed to its mission of delivering products of the highest quality, with a focus on refining every production process meticulously and in accordance with international standards. The company believes that "Quality beyond expectations: Superior Quality" is the key to building trust and long-term relationships with all stakeholders, both domestic and international. Over the years, the company has achieved international certifications, reflecting its commitment to responsible, transparent, and continuously excellent business practices.

The company provides product labeling and complete service information, supported by a strong quality control system at every stage, from raw materials and production processes to final delivery, to ensure every product meets global customer expectations. Vanachai Group sincerely thanks all stakeholders who have been part of this success and looks forward to moving forward together on an endless path of quality, innovation, and sustainability.

	MDF PARTICLEBOARD HDF DOOR SKIN
	PARTICLEBOARD OSB MELAMINE LAMINATED ON PB Type : F****
	MDF
	MDF PARTICLEBOARD HDF DOOR SKIN
	MDF PARTICLEBOARD MELAMINE LAMINATED ON PB
	PARTICLEBOARD
	

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Vanachai Group's Product Quality Control Process



Research and Development (R&D) Activities

Vanachai Group is committed to continuously advancing research and development to enhance excellence in product quality and strengthen its competitiveness in the global market. The R&D team plays a crucial role in developing innovations that meet international standards and respond to rapidly changing customer needs under the principles of "Lowest Cost, Minimal Waste, and Maximum Eeuse". In-depth research is carried out to improve production efficiency, reduce resource consumption, and elevate product quality to be environmentally friendly and safe for human health, aligning with the key topic of "Responsibility for Products and Services."

The company conducts daily formaldehyde emission testing using the Small Chamber Test method to control volatile compound emissions in line with environmental and health requirements. Additionally, it applies the GP-DMC method, following ASTM D6007-14 standards, to strengthen measurement accuracy. The company ensures that formaldehyde emissions comply with the standards set by the United States Environmental Protection Agency (EPA), which specify that MDF products must not exceed 0.11 ppm and particleboard products must not exceed 0.09 ppm.

Consistent investment in R&D enables Vanachai Group to develop products with quality beyond expectations, strong in functionality, usability, safety, and responsibility toward society and the environment, creating value for customers and supporting sustainable long-term growth.

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Product and Service Complaint Handling Process

Vanachai Group places great importance on systematically managing customer complaints based on principles of transparency, fairness, and prioritizing customer benefit. In every case, the company clearly explains the problem-solving approach to customers to ensure maximum satisfaction and has opened a complaint channel via email at Planning@vanachaipanel.com.

Staff specialists from the production planning department are primarily responsible for monitoring all received complaints, which are then forwarded to the relevant departments to analyze issues, summarize management approaches, and implement corrective and preventive actions in line with the procedures defined in the quality manual.

The company also categorizes complaints into five areas: quality, quantity, service, packaging, delivery, and others, to support targeted analysis and process improvement. In 2024, the company received two domestic customer complaints regarding product quality, while there were no complaints from international customers. All cases were resolved and reported back to the customers within the specified timeframe, reflecting the company's sincerity and commitment to continuously improving products and services and building long-term trust.

Number of Complaints in 2024

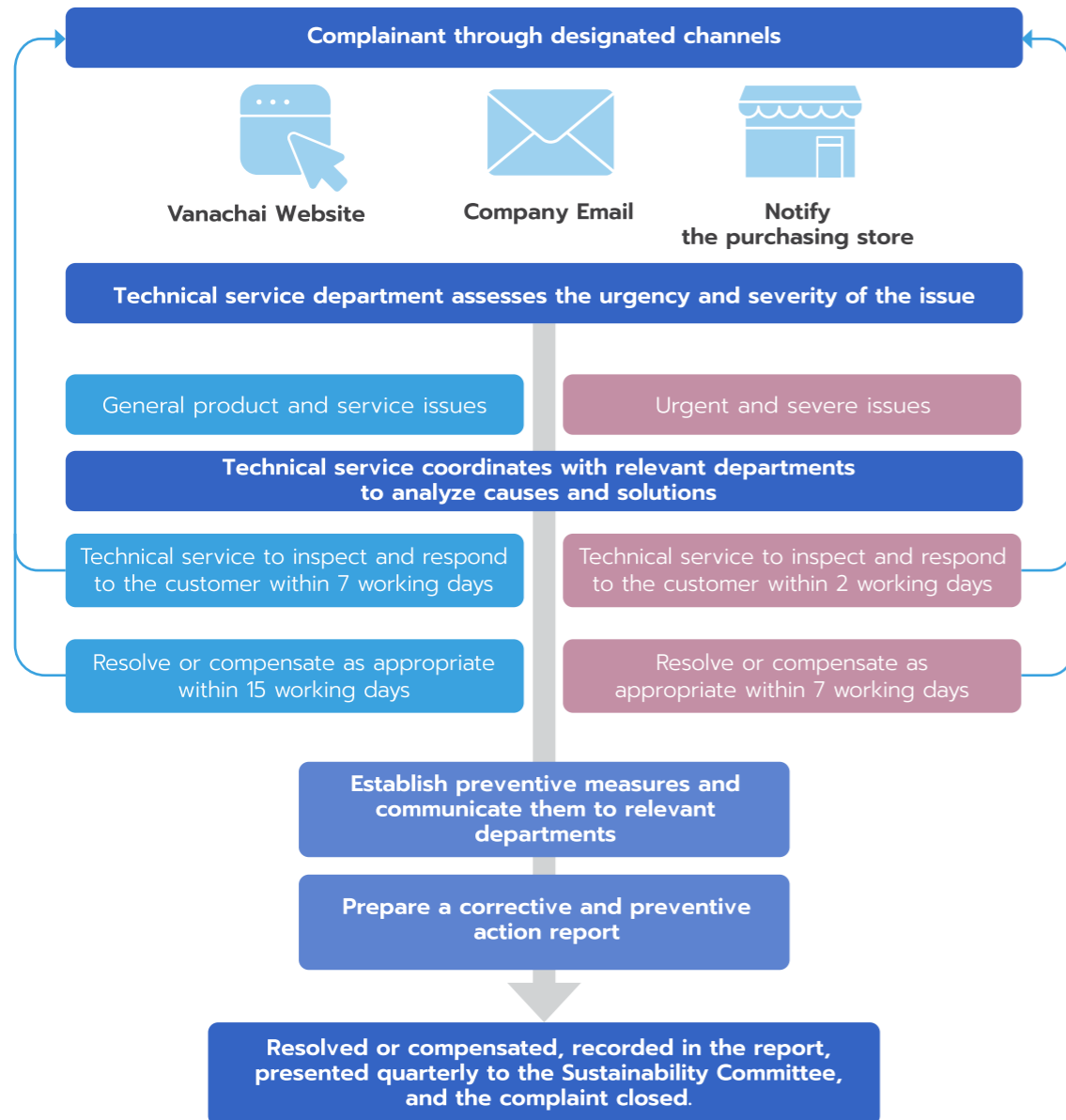
(Unit: Cases)

Complaint Management in Customer Service	2021		2022		2023		2024		Timely resolution
	Domestic	Export	Domestic	Export	Domestic	Export	Domestic	Export	
Total number of customer complaints	1	1	1	1	2	0	2	0	100%
• Product	1	1	1	1	1	0	2	0	100%
• Quantity (Completion)	0	0	0	0	1	0	0	0	
• Services	0	0	0	0	0	0	0	0	
• Packaging	0	0	0	0	0	0	0	0	
• Delivery	0	0	0	0	0	0	0	0	

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Product and Service Complaint Handling Procedures





Green and Inclusive Innovation

Why this matters for Vanachai Group

In the highly competitive wood-based substitute materials industry, both domestically and internationally, the development of innovation that can meet market demands while considering impacts on consumers and the environment is a critical factor for differentiation and enhancing the company’s competitiveness. The domestic market faces intense price competition and also experiences pressure from low-cost products imported from China, which forces market players to adapt rapidly.

Vanachai Group has chosen not to compete on low prices but instead focuses on developing green products using environmentally friendly technologies, such as reducing

the use of adhesives or toxic components, and aims to create added value instead. Vanachai’s innovative products are also designed to maintain moisture resistance for up to 720 continuous hours, a feature that meets the real needs of users in the construction and building decoration sectors.

Product innovations that respond to modern consumer trends not only help increase sales and gross margin but also demonstrate long-term social and environmental responsibility. This approach builds trust among consumers, partners, and stakeholders, and sustainably strengthens the company’s image on the international stage.

Targets for 2024

14 Million Baht/Year

Proportion of revenue from significantly improved environmentally friendly innovative products

1 Project

Number of innovation projects related to the circular economy, such as adding value to production waste materials



Company Innovation Goals

For Vanachai Group, sustainability is not merely a business approach but a core philosophy embedded across every dimension of the organization. In a global context facing environmental crises, especially climate change driven by deforestation and greenhouse gas emissions, the company recognizes its vital role in advancing sustainable innovation. This involves transforming the ways products are designed, manufactured, and delivered while considering environmental, social, and long-term economic values.

Innovation is therefore a central element in improving product performance, enhancing competitiveness, reducing reliance on natural wood resources, and helping preserve natural forests for the future, thereby mitigating the impacts of climate change.



Reduce environmental impacts:

Focus on designing and producing products that help reduce deforestation, lower greenhouse gas emissions, and promote biodiversity conservation through environmentally friendly wood-based alternatives.



Enhance product quality and safety:

Develop products that are safer for consumers and the environment by reducing the release of chemicals into indoor air, increasing durability, and extending product lifespan.



Drive the circular economy and efficient resource use:

Apply innovation to increase the use of recycled materials, reduce production waste, and design recyclable products to ensure resources are used efficiently across the value chain.



Create innovation for the future:

Invest continuously in research and development to design high-performance products that meet international quality and safety standards while addressing market demands with environmentally friendly solutions.



Short-term Goals for 2024 to 2025

- Strengthen a systematic innovation culture within the organization through clearly structured internal innovation projects to encourage employee participation, develop creativity, and accelerate the creation of practical innovations. This will help improve work efficiency, enhance organizational capabilities, and create long-term business value.

Long-term Goals for 2026 to 2031

- Expand innovation promotion through collaboration with external stakeholders.
- Strive to become a knowledge hub and a leader in innovations that support natural forest conservation.



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The company places importance on the planet, society, and communities by aiming to build a sustainable future together through innovation in products, services, and business processes. These innovations play a significant role in concretely supporting the United Nations Sustainable Development Goals (SDGs) as follows:

- **SDG 3: Good health and well-being**
 - Reduce pollution from production processes and raw materials.
 - Promote healthy and safe living and working environments.
- **SDG 4: Quality and equitable education**
 - Support open innovation collaboration with educational institutions.
 - Share sustainability practices with youth and communities.
- **SDG 8: Decent work and economic growth**
 - Create jobs for communities with an emphasis on environmental friendliness.
 - Promote a sustainable grassroots economy.
- **SDG 9: Industry, innovation, and infrastructure**
 - Develop technology and innovation for the wood-based substitute industry.
 - Support the transition to sustainable production systems.
- **SDG 12: Responsible consumption and production**
 - Reduce waste in production processes.
 - Design products that can be reused or recycled.
- **SDG 13: Climate action**
 - Reduce carbon dioxide emissions at every stage of production.
 - Use renewable energy sources such as solar and biomass.



- **SDG 15: Life on land**
 - Manufacture wood-based substitute panels to help reduce deforestation.
 - Support long-term conservation of natural resources.
- **SDG 17: Partnerships for the goals**
 - Build collaborative networks with partners in business, education, and communities.
 - Co-develop innovative products and services to advance sustainability.

Our Approach

Vanachai Group fully recognizes that sustainable growth in the modern industrial era depends not only on product quality and efficiency but also on integrating innovations that address social and environmental needs across every aspect of the business.

Vanachai Group is therefore committed to continuous investment in research and development (R&D) to create natural wood substitute products with superior performance compared to traditional wood, helping to reduce the use of natural timber. These improvements include long-lasting moisture resistance, diverse design possibilities, and environmentally friendly features across raw materials, production processes, and customer service. All of these efforts align with the organization's mission to improve products, services, and operations under the principle of "Make Today Better".

The "Green and Inclusive Innovation - environmental and social innovations" implemented by the company are not only about meeting today's market demands but also form part of a long-term strategy to achieve the company's clear environmental goals, particularly the targets of achieving carbon neutrality by 2050 and net zero emissions by 2055.



Build an innovation culture and encourage employee participation:

Establish the "Make Today Better: Innovation Challenge" project and hold annual innovation competitions to give employees opportunities to present new ideas and develop them into real projects.



Strengthen the innovation ecosystem and industry collaboration:

Develop partnerships with external agencies such as the National Innovation Agency (NIA), universities, and technology institutes to access new knowledge and technologies.



Develop sustainable innovation products:

Advance high-quality wood panels such as moisture-resistant MDF using environmentally friendly adhesives, supporting diverse applications that are safe for the environment.



Measure and expand the impact of innovation on business and sustainability:

Track the impact of innovation on business growth, targeting over 50 percent of new projects to use advanced energy technology by 2030 to enhance cost efficiency.



Customer-friendly and digitally driven services:

The impact of innovation on business growth, with a target for at least 50 percent of the group's new projects to adopt advanced energy technologies by 2078 to improve cost efficiency through innovation.



Innovation for supporting Carbon Neutral and Net Zero goals:

Aim to use renewable energy in all processes and design products with long lifespans and recyclability to support the targets of carbon neutrality by 2050 and net zero emissions by 2055.



Green production processes and circular economy approaches:

Install solar rooftops and use wood scraps to produce biomass energy to reduce carbon and optimize resource use.



Smart technology-based work process innovation:

Use an ERP system for real-time management to reduce redundancy and improve decision-making efficiency and accuracy.



Expand circular economy concepts to the supply chain:

Commit to developing partnerships with suppliers and raw material producers to jointly reduce production waste and promote the use of recycled materials, creating an environmentally friendly supply chain from upstream to downstream.

VANACHAI GROUP'S GREEN AND INCLUSIVE INNOVATION VISION

"Drive sustainable innovation to develop an environmentally friendly wood-based substitute industry, creating economic, social, and environmental value that meets the needs of people and communities in a balanced way."



Embed innovation as part of the organizational culture and employees' work mindset.



Strengthen collaboration and build an open innovation ecosystem through strategic partnerships.



Measure the impact of innovation on business growth as well as social and environmental sustainability.

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Process for promoting the development of business, social, and environmental innovation

Vanachai Group recognizes the importance of innovation as a key driver of organizational growth in the modern era, covering business, social, and environmental dimensions, especially in a world undergoing rapid change. The company aims to embed an innovation mindset at every level of the organization and provide opportunities for all employees to participate in developing future-focused ideas. A dedicated department is responsible for promoting and managing organizational innovation efforts.

The company believes that innovation does not always have to start with something large; it can emerge from “small ideas that lead to

big changes” over time, whether in products, services, or work processes. The emphasis is on fostering participation from employees across all functions.

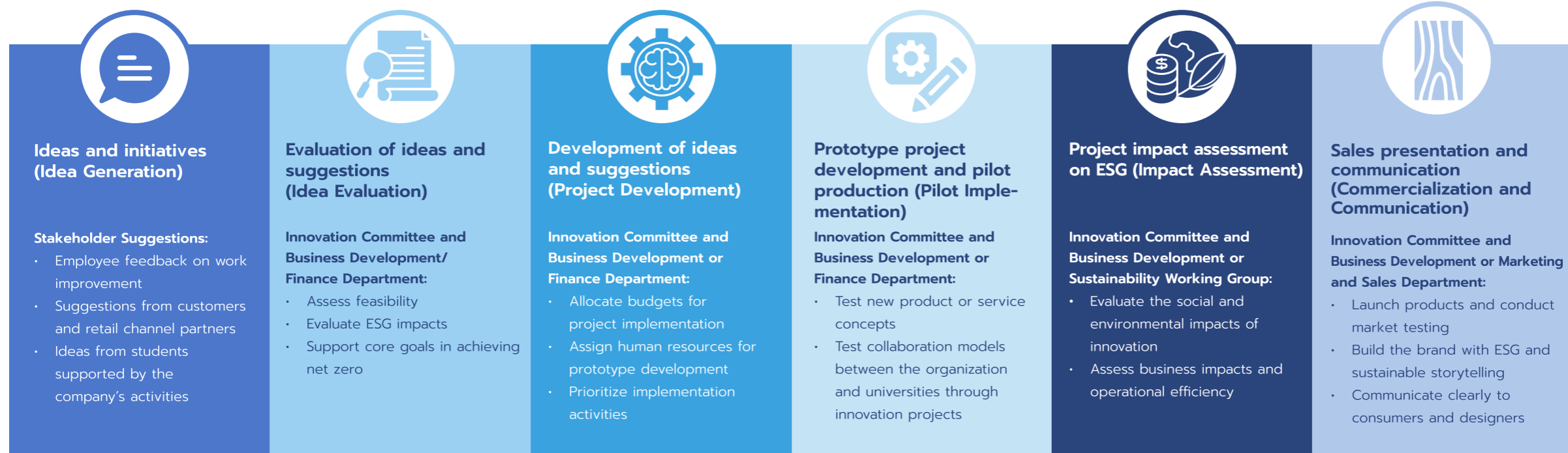
For this reason, the company has initiated the “Make Today Better: Innovation Challenge” project as an open platform for employees to propose new ideas that can be developed into real operations. The goal is to build a sustainable innovation culture and inspire personnel to collaboratively create new value for the organization.

In addition, the company places importance on developing innovation in collaboration with external parties. It has begun planning partnerships with educational institutions and research

organizations to welcome ideas and knowledge from youth and researchers through an open innovation approach. This will serve as another important driver to advance social and environmental innovation, enabling these innovations to develop and be implemented in a systematic way.

The company has designed an innovation process that covers idea generation, development, testing, evaluation, and scaling up to commercial applications. This will be a key tool to drive the organization’s growth in parallel with sustainability.

“MAKE TODAY BETTER: INNOVATION CHALLENGE”



Incorporating Stakeholder Feedback into Development

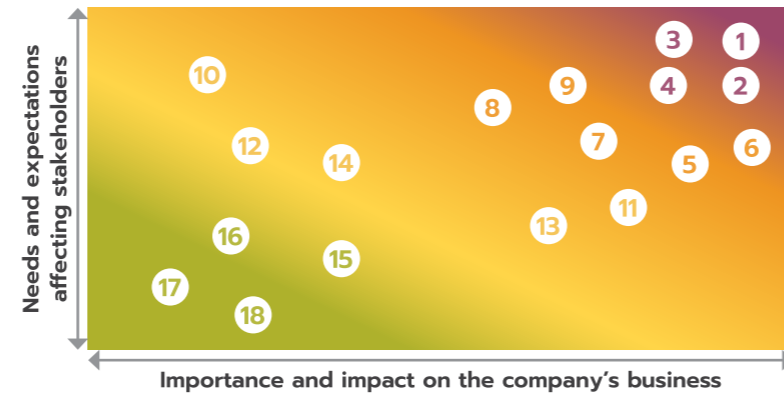
Vanachai Group places strong emphasis on consistently listening to and addressing feedback from external stakeholders and employees. The company has established a structured and transparent process to collect input, assess expectations, and prioritize issues aligned with its sustainability goals and business direction. Feedback is evaluated based on the significance, urgency, and feasibility of each issue, considering factors such as workforce readiness, budget availability, and implementation timeline.

Vanachai uses a two-axis matrix as follows:

The horizontal axis reflects the level of importance and business impact for long-term success.

The vertical axis represents stakeholder expectations and needs, including those of customers, communities, partners, and employees.

The company also assesses potential benefits from both organizational and stakeholder perspectives, using development data to support effective decision-making. This helps ensure focus on truly critical matters while creating sustainable shared value for all.



Symbols:

- **Act immediately:** High impact on the business and high stakeholder expectations.
- **Necessary:** Should be planned and resourced for further development.
- **Worth exploring:** Suitable for piloting or collaboration with partners.
- **Interesting:** Valuable for long-term consideration or enhancing corporate image.

- 1 Water-resistant flooring with long-lasting durability:** Suitable for high-humidity areas with extended water resistance.
- 2 Interior doors durable against moisture and paintable:** Strong doors that withstand high humidity and can be repainted as desired.
- 3 Termite- and mold-resistant MDF panels for high-humidity areas:** MDF panels resistant to termites and mold, ideal for humid climates.
- 4 Products with low VOC emissions to promote indoor air quality:** Reduce the release of volatile chemicals to support healthier living environments.

- 10 Digital platform for B2B customers and after-sales service tracking:** A digital platform enabling corporate customers to track orders and services.
- 11 Use of solar energy in production plants (solar rooftop):** Harnessing solar power to reduce electricity costs and lower carbon emissions.
- 12 Online interior design simulation system for end users:** A design simulation system to help customers more easily select products.
- 13 Use of recycled raw materials in wood panel production:** Recycling leftover materials as raw materials to reduce waste and natural resource consumption.
- 14 Soundproof wood panels for offices or residential buildings:** Wood panels with soundproofing properties suitable for interior applications.

- 5 Lightweight particleboard for easier transport and installation:** A lightweight wood panel that reduces transportation costs and is easier to install.
- 6 Reduce fossil energy use in the production process:** Transition energy systems in the factory to decrease fossil fuel consumption.
- 7 Freight tracking system:** Real-time shipment tracking to reduce delays.
- 8 Fire-resistant laminate panels:** Laminate panels that resist fire for greater safety.
- 9 Environmentally friendly packaging with brand communication:** Packaging that reduces plastic use and is easily biodegradable.

- 15 Adding a QR code on packaging to display sustainability information:** Customers can scan to instantly view the product's environmental data.
- 16 Online training system for distributors or installers with AR-enabled manuals:** Digital AR manuals for installers or partners.
- 17 Custom laminate color options with fast delivery system:** Special laminate colors produced quickly to meet niche customer needs.
- 18 Games or activities promoting sustainability education in schools or communities supported by Vanachai:** Games or activities to build sustainability awareness in the community.

Key information from primary stakeholders in 2024

External Stakeholders		Internal Stakeholders	
Method: Satisfaction and feedback surveys		Method: Results from monthly follow-up meetings	
Consumer 20%	Contractor 10%	Finance 10%	Sales 10%
Retail Store 10%	B2B 15%	Technician 15%	Logistic 10%

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**Product Innovation Project:
“Hybrid Ultra Laminate Flooring”**

In 2024, Vanachai Group introduced its latest innovation, Hybrid Ultra Laminate Flooring, developed in response to customer feedback and complaints gathered through various contact channels. These insights reflected a clear need for flooring that is durable, safe, and user-friendly across all age groups.

Guided by its mission to “Listen to Improve,” the company created a product that meets health, installation ease, long-term safety, and environmental standards. The result is a new generation laminate floor designed for everyday lifestyles.

Manufactured from eco-friendly wood-based materials, the floorboards combine premium wood fibers with waterproof adhesive and meet European E1 low formaldehyde standards for user safety. They resist warping, brittleness, and shrinkage.



The glue-free Arch Lock system allows easy installation and smooth, trip-free walking. The joints prevent seepage, and the surface features antibacterial coating, ideal for wet cleaning, households with children prone to spills, and homes with pets.

The material resists damage from moisture and pet urine. This innovation reflects Vanachai Group’s commitment to developing products that are safe, durable, and sustainable, meeting both environmental goals and real customer needs.

ESG dimensions	Key impact topics	Features	Benefits Received
Environment	<ul style="list-style-type: none"> Reduce the use of materials that emit chemicals or create pollution Substitute for natural wood with greater durability 	<ul style="list-style-type: none"> Asbestos-Free VOC-Free Emissions Eco Wood-Based Material 	<ul style="list-style-type: none"> Better Indoor Air Quality Save 900 Tons of Wood/Year Cut GHG by 5.59 tCO₂e/Year
Social	<ul style="list-style-type: none"> Promote health, safety, and well-being for users, families, and pets Create local jobs through installation services 	<ul style="list-style-type: none"> Mold-resistant finish Safe for kids and pets Comfortable, full-foot support without pain 	<ul style="list-style-type: none"> Lower risk of respiratory illness Support better household health Fit for all ages and genders
Governance	<ul style="list-style-type: none"> Create products from consumer input Design eco-friendly products Ensure clear product communicatio 	<ul style="list-style-type: none"> Developed from customer feedback Clear communication of product features and sustainability Aligned with SDG 12 and 13 	<ul style="list-style-type: none"> Strengthen credibility and sustainable brand image Model customer-focused innovation, reflecting values of satisfaction and ongoing product support
Economic	<ul style="list-style-type: none"> Create new markets Increase competitiveness Generate revenue from premium products 	<ul style="list-style-type: none"> Boosts competitiveness with greener products Quick installation via Click-Lock system Diverse designs for various lifestyles Extended product lifespan 	<ul style="list-style-type: none"> Lower after-sales service costs and flooring replacement frequency Broaden customer reach in modern trade and real estate sectors First 3-month sales in 2024: 3,466,251.24 Baht

**Product Innovation Project:
“Hybrid Ultra Laminate Flooring”**

Vanachai Group’s business innovation for society and the environment, to help external stakeholders learn

- The company has shared this innovation through various channels such as trade fairs, its website, digital media, the One Report, and the sustainability report.
- Plans to establish the VNG Innovation Showcase: “Make Today Better”, allowing students, customers, and communities to visit the factory and learn about environmentally friendly innovation development processes.
- Collaborates with educational institutions to create open innovation projects in building materials to address climate risk.
- Demonstrates a product development approach based on consumer voices (customer-driven R&D), resulting in products that address social and environmental needs, VNG Innovation Showcase: “Make Today Better”.

Environmental Friendly

Innovative Product Features (Environmentally Friendly)

- **ESG features:**
 - Reduce GHG emissions by approximately 5.59 tCO₂e per Square Meter *(note that certified calculation figures will be updated in September 2025)
 - Low formaldehyde emissions in accordance with Grade E1 standards
 - Free from asbestos and plastic components
 - Life Cycle Assessment results available in the product’s MDF life cycle assessment per one Cubic Meter, highlighting material quality and waste reduction in construction
- **Core:** Water-resistant MDF panel
- **Thickness:** 8 mm, 12 mm
- **Water resistance:** Up to 72 Hours
- **Swelling rate:** Less than 5 percent
- **Mold resistance:** Surface resists mold up to 99.99 per cent and is antibacterial
- **Termite resistance:** High termite resistance, with a one-year termite warranty
- **Warp resistance:** Stable against heat-induced warping
- High compression strength: Can withstand up to 700 N
- **Scratch resistance:** Anti-scratch surface
- **Installation:** Arch-Lock system without glue, ready for immediate use, with effective seepage protection at the joints

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FUTURE STRENGTHENING BUSINESS PARTNERSHIPS

Building Strong Partnerships for a Sustainable Future

Vanachai Group fully recognizes that a sustainable supply chain, a responsible value chain, and environmental stewardship are critical to long-term business success. Through collaboration with reliable partners and suppliers, the company is able to operate with ethics, improve efficiency, and achieve shared sustainability goals across the entire value chain.

The company manages its supply chain with transparency, efficient resource use, and responsible sourcing practices, helping to reduce environmental impacts while adding long-term value. Collaboration with partners supports shared growth, creating strong alliances that drive innovation, resilience, and sustainability through joint efforts. This shared value strengthens business competitiveness and ensures supply chain stability through strategic partnerships and responsible operations.

Vanachai is committed to building a strong, ethical, and sustainable business ecosystem for the benefit of stakeholders and our planet.

Key Related Material Topics:



Sustainable Supply Chain Management



Sustainable Value Chain



Sustainable Supply Chain Management

Why this matters for Vanachai Group

Sustainable supply chain practices are considered a key material topic for Vanachai Group, receiving the highest priority. The supply chain directly affects the company’s ability to operate efficiently and sustainably. The company recognizes that if suppliers do not follow ethical principles, good governance, or disregard human rights, environmental, and social concerns, this can create risks to the business in terms of reputation, production disruptions, and legal damages.

For this reason, the company has established guidelines for sustainable supply chain management, focusing on transparency,

fairness, respect for human rights, and promoting joint growth with suppliers through responsible procurement processes that consider environmental and social impacts. Vanachai drives sustainability across the entire supply chain, from sourcing raw materials from sustainably managed sources, to using clean technologies, to delivering quality products to customers and consumers.

These practices not only reduce risks but also strengthen competitiveness, meet stakeholder expectations, and create business opportunities in markets that value ESG principles.

Targets for 2024

100%

Proportion of suppliers evaluated on ESG criteria

100%

Raw materials sourced from renewable or sustainability-certified sources



Our Approach

Vanachai Group manages its supply chain based on principles of sustainability, transparency, and ethics at every stage. The company has established a sustainable procurement policy and a supplier code of conduct that covers key topics such as business ethics, human rights principles, occupational health and safety, social and environmental responsibility, along with communication and compliance systems to ensure suppliers strictly follow these requirements. This helps reduce the risk of unfair competition or corruption.

Supplier selection is carried out in a systematic, transparent, and equitable manner, with emphasis on the quality of raw materials, punctual delivery, and ethical business practices. The company maintains an evaluation and registration process for suppliers who meet criteria (approved supplier list: ASL) and conducts rigorous checks for new suppliers, considering their business capabilities, social standards, environmental standards, safety, and relevant chemical safety documentation (MSDS). All of this operates under the ISO 9001:2015 quality management system, which is regularly audited to ensure that suppliers not only meet business requirements but also align with the company's mission of driving sustainable business together.



Environmental practices and impacts on both living and non-living natural systems, including ecosystems and natural resources:

Under this framework, Vanachai expects all suppliers to strictly comply with relevant environmental laws, regulations, and standards, and to consistently maintain appropriate environmental management practices.



Social practices affecting employees, customers, and communities:

Vanachai emphasizes that suppliers should operate fairly and honestly, comply with competition laws, avoid corruption and money-laundering activities, respect labor rights, and appropriately promote quality of life, health, education, and community participation.



Economic practices focused on ethical business operations, in compliance with laws, and considering impacts on stakeholders:

Vanachai maintains a flexible management system to strengthen the supply chain, reduce risks, and promote sustainability. The supplier code of conduct sets out clear guidelines to support cost reduction, quality improvement, continuity, and innovation.

To expand Vanachai Group's sustainability strategy through the supply chain, the company not only plans all activities but also aims to support local partners and local development while managing business cooperation and procurement across the supply chain.

When deciding whether to work with a particular partner, the company applies a set of criteria to select suppliers based on various characteristics. As a manufacturer, the company emphasizes a combination of quality, resource use, relevance to objectives, timeliness, and convenience. It also expects service providers to have employees trained for specific tasks, such as environmental and safety training. For smaller partners, the company carries out appropriate activities to maintain relationships and encourage long-term business cooperation.

As Vanachai Group, the company operates a rigorous supplier selection system, applying established criteria. The company currently has more than 1,500 approved partners, with 90 percent of these being local suppliers. During fiscal year 2024, the company added 257 new partners to its approved supplier list and hopes to increase this further as production capacity continues to grow.

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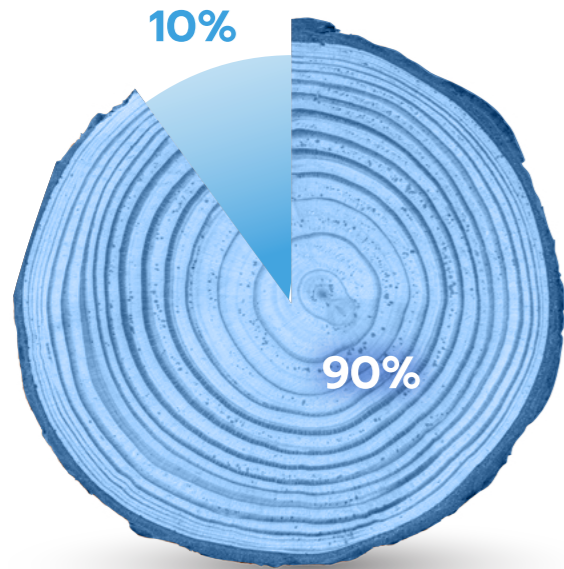
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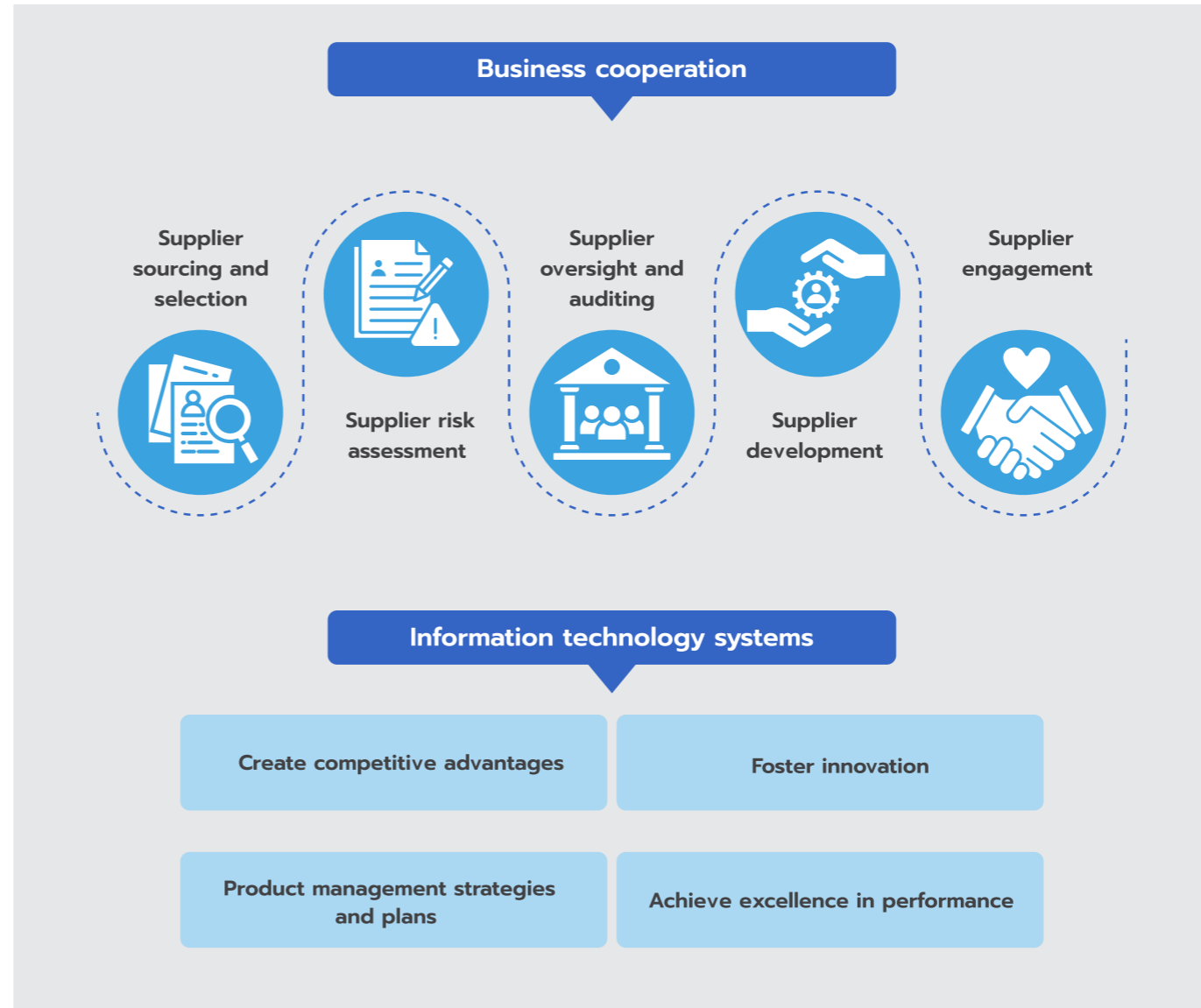
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Local and General Supplier Distribution in 2024

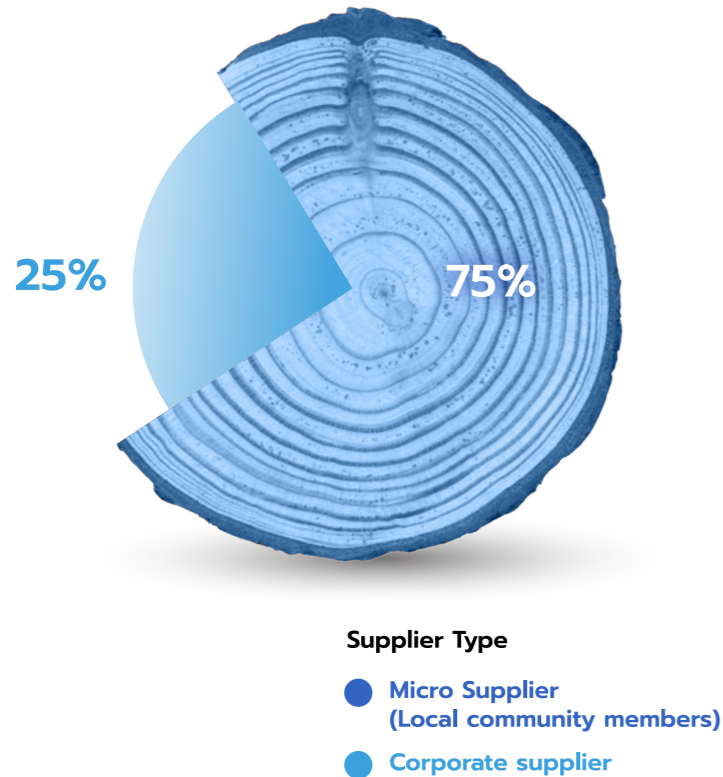


- Local Suppliers
- Other Suppliers

The company aims to ensure that all suppliers fully comply with established standards. Therefore, it operates a system of inspection and control using a Supplier Audit Checklist to verify supplier certifications and training, check for any legal violations, and ensure that suppliers do not cause or create threats to the environment and that they conduct proper forest management practices. Under this inspection and control system, the company is committed to investing in quality suppliers and never compromises on product and service standards.



Supplier Classification



Vanachai Group has assessed the importance of its suppliers and the potential risk impacts in order to manage them appropriately. Suppliers are classified as follows:

1. General suppliers (Corporate Supplier): These include suppliers who provide and deliver goods and services, or contractors, both domestically and internationally, classified as:

- Tier 1 Supplier: A supplier that manufactures or provides services directly to the company.
- Critical Tier 1 Supplier: A key supplier that manufactures or provides services directly to the company.
- Critical Non-Tier 1 Supplier: A key supplier that manufactures or provides services to the company's direct suppliers.

For critical Tier 1 suppliers, the evaluation criteria focus on suppliers that deliver goods and services critical to the production process and the quality system, which present a risk that could significantly impact business operations. Suppliers in this group are required to undergo regular monitoring and evaluation.

From analysis of current supplier data, the company found that there are no critical non-tier 1 suppliers at this time.

2. Raw material suppliers who are small-scale farmers (Micro Supplier): This group consists of local villagers and farmers near the factory who supply wood as raw materials for the company's products. These typically include rubberwood that is no longer viable for latex tapping, as well as branches and logs from trees planted by villagers. Wood sourced from these farmers accounts for up to 75 percent of the total volume of wood purchased by the company.

This approach helps stimulate the local economy, increasing income for villagers and farmers in nearby communities, thereby distributing income, supporting better living conditions, and ensuring efficient use of every part of this natural resource.

Based on a risk assessment regarding potential shortages of wood, the company's primary raw material, it was found that there is still a large volume of wood that villagers and farmers wish to sell, with no current signs of shortages. Additionally, wood slabs from sawmills account for 25 percent of the total wood volume used in production, which the company can continue to purchase. Nevertheless, the company has put in place a risk prevention measure by maintaining eucalyptus plantations as an alternative reserve for raw material supply.

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PERFORMANCE RESULTS

100%

Major suppliers have signed the Supplier Code of Conduct to build a shared understanding of ethics, human rights, and environmental responsibility throughout the supply chain

1,400 Suppliers

The company maintains an Approved Supplier List (ASL), which includes Tier 1 suppliers with ongoing business relationships.

339 Suppliers (24%)

Critical Tier 1 Suppliers are those Tier 1 suppliers of strategic importance, providing essential raw materials for production, possessing unique innovations, holding relevant certifications, and maintaining long-term partnerships, with few alternatives available or no substitutes.

33 Suppliers

Registration of new suppliers in 2024, selecting appropriate suppliers from the outset, to increase choices, reduce supply chain risks, promote transparency and good governance, and support business growth.

90%

The proportion of suppliers from local communities or SMEs helps reduce transportation costs and time, increases flexibility and supply chain stability, supports shared growth with communities, and ensures fair economic opportunity distribution.

100%

Suppliers related to critical raw materials have no record of human rights or environmental violations, reducing legal and reputational risks for the company.

100%

All Critical Tier 1 Suppliers are evaluated, considering product and service quality, delivery capabilities, business stability, financial capacity, and compliance with ESG requirements.

Supplier Evaluation

Vanachai Group requires regular monitoring and evaluation of Critical Tier 1 Suppliers. In 2024, the evaluation schedule is as follows:

- Domestic suppliers: every 4 months
- International suppliers: once per year

The company has the following Critical Tier 1 Suppliers:

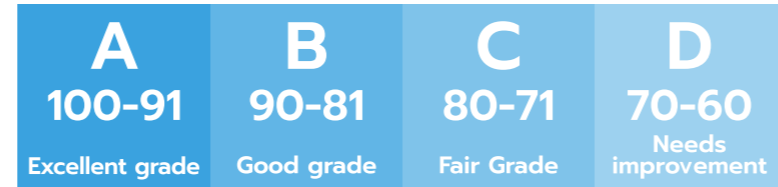
- 297 domestic suppliers
- 42 international suppliers
- Total of 339 suppliers

All of these suppliers, representing 100 percent, have been evaluated according to the schedule and have been informed of the evaluation results. The company has used the evaluation findings to analyze and improve service efficiency and product delivery, supporting joint development between the company and its suppliers.

The evaluation criteria for Critical Tier 1 Suppliers include the following topics:

- 30%** The importance of raw materials or services as a core element of the business; shortages would directly affect production
- 20%** High purchase volume or value, referring to major suppliers whose scale impacts the company's cost structure
- 20%** Impact of potential disruptions, assessing risks from delivery interruptions that could affect core operations
- 15%** Compliance with requirements or standards, reflecting risks related to legal issues, reputation, and sustainable operations
- 15%** Strategic relationships and long-term partnerships with suppliers that help add value and promote innovation within the organization

Each criterion is scored, and the evaluation results are classified into grades based on the total score as follows:



Suppliers scoring below 60 are considered to have failed the evaluation and will be removed from the Approved Supplier List (ASL)

Foreign supplier evaluation results

All 42 foreign suppliers classified as Critical Tier 1 Suppliers were evaluated with the following results:

- **Grade A:** 38 suppliers
- **Grade B:** 4 suppliers

The purchasing standard stipulates that selection should always prioritize Grade A suppliers. If it is necessary to choose a lower-graded supplier, extra emphasis must be placed on quality and delivery time, with close monitoring to ensure products are received as scheduled.

For domestic Critical Tier 1 Suppliers, a total of 297 were evaluated using the same grading system as for foreign suppliers, with the addition of service assessment, including good after-sales service, follow-up, and, in the case of contractors, compliance with Thai labor standards.

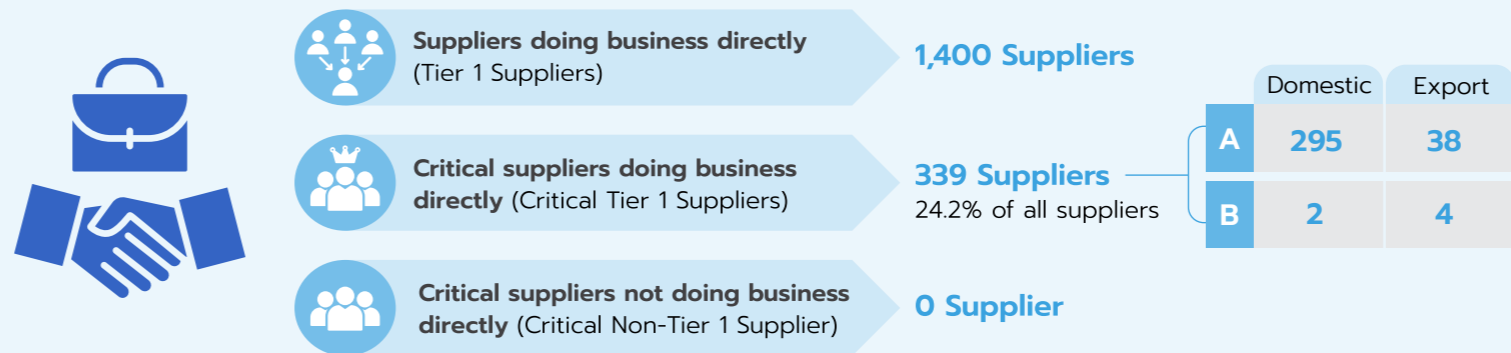
Results of domestic supplier evaluation

Grade A: 295 Suppliers

Grade B: 2 Suppliers

The evaluation results for Critical Tier 1 Suppliers, both domestic and international, showed scores within the acceptable range, classified as grades A and B. There were no suppliers who failed to meet the standards requiring removal from the Approved Supplier List (ASL).

Overview of Vanachai Group's suppliers in 2024



Note: The company has no critical non-tier 1 suppliers (Critical Non-Tier 1 Supplier) in the 2024 evaluation period.

Sustainable Supply Chain Management

Vanachai Group’s sustainable supply chain management follows international reporting standards, including the Global Reporting Initiative (GRI) GRI 308 (Supplier Environmental Assessment) and GRI 414 (Supplier Social Assessment), as well as the FTSE Russell ESG Scores indicators under the topics of Supply Chain: Environment and Supply Chain: Social.

Supply Chain Risk Assessment and ESG Supplier Audits

Vanachai Group recognizes the importance of risk assessment within its supply chain. Although the company already conducts risk assessments of suppliers that may impact the quality system under ISO 9001:2015 considering both the severity and likelihood of occurrence, supported by a manual to guide prevention and corrective actions the company has also developed a plan to evaluate supplier sustainability risks.

This plan prioritizes Critical Tier 1 Suppliers, totaling 339, as the first group for assessment. The company has set a target for 2024 to assess 113 key direct suppliers for both economic and operational sustainability risks, covering environmental, social, governance, and economic topics. The intention is to rotate through all suppliers within three years, since most suppliers are small-scale and on-site evaluations by staff are needed, making online assessments impractical.

If the evaluation identifies suppliers with critical or high sustainability risks (Critical and High ESG Risk Suppliers), the company will provide recommendations for improvements, develop preventive plans, and follow up to address problems immediately, while also establishing long-term sustainability development plans. This approach will strengthen supply chain management and systematically encourage suppliers to implement ESG practices.

Since the majority of the company’s suppliers are farmers and SMEs, this effort is intended to build their capacity and resilience, thereby ensuring long-term supply chain stability, given the large number of small suppliers the company relies on.



Environmental Risk Assessment

Environmental risk assessment in the supply chain involves evaluating the behaviors and practices of business partners that could negatively impact the environment, such as logging in conservation areas, greenhouse gas emissions, inefficient resource use, pollution, improper waste or wastewater management, and impacts on biodiversity. These risks require collaboration between the company and its suppliers to take responsibility, make improvements, and develop more sustainable operating practices.

For Vanachai, whose suppliers are predominantly small-scale operators such as farmers, villagers, and SMEs who supply wood scraps that make up approximately 95 percent of the company’s total raw materials, these suppliers play a crucial role in the company’s sustainable production processes. However, they often face limitations in systematic operations or formal compliance with environmental requirements.

Therefore, Vanachai prioritizes supporting and enhancing the capabilities of community suppliers through education, awareness-building, and practical guidance suited to local contexts. This helps reduce environmental risks in the supply chain while also strengthening sustainable economic stability at the local level.



Social Risk Assessment

Social risk assessment in the supply chain refers to evaluating risks that may arise from violations of labor laws, human rights standards, or social norms, such as child labor, forced labor, unsafe working conditions, or discrimination. These issues could result in legal liabilities, reputational damage, or serious accidents.

For Vanachai Group, where most suppliers are farmers, villagers, and SMEs particularly suppliers of wood scraps whose work tends to be informal and intermittent, there is a heightened risk of unintentional improper labor practices. Therefore, the company is committed to enhancing the capacity of community suppliers through education on labor rights, proper employment practices, workplace safety, and financial management, in order to promote long-term supply chain sustainability.



Governance and Economic Risk Assessment

This assessment focuses on identifying and managing risks arising from the practices of business partners that could negatively impact the company’s operations or reputation. These risks include corruption, bribery, conflicts of interest, unfair competition, breaches of procurement agreements, late deliveries, substandard product quality, and unfair pricing.

Vanachai Group places high importance on suppliers who interact with government agencies or play a key role in the supply chain. Governance risks are assessed through reviews of supplier anti-corruption policies and practices, as well as compliance with procurement standards. At the same time, economic risks – such as delays or service failures – are evaluated based on the potential monetary damage to the business for each day of disruption.

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Measuring the Severity of Supplier Impacts

The assessment of supplier business risks is based on four levels of impact severity: low, medium, high, and critical, excluding issues that carry no reportable risk. The evaluation covers environmental, social, governance, and economic dimensions, and considers the likelihood of occurrence based on the frequency of purchasing or using services from each supplier.

Suppliers with high or critical risk levels are prioritized for monitoring and improvement to prevent negative impacts on the business and maintain overall supply chain sustainability.

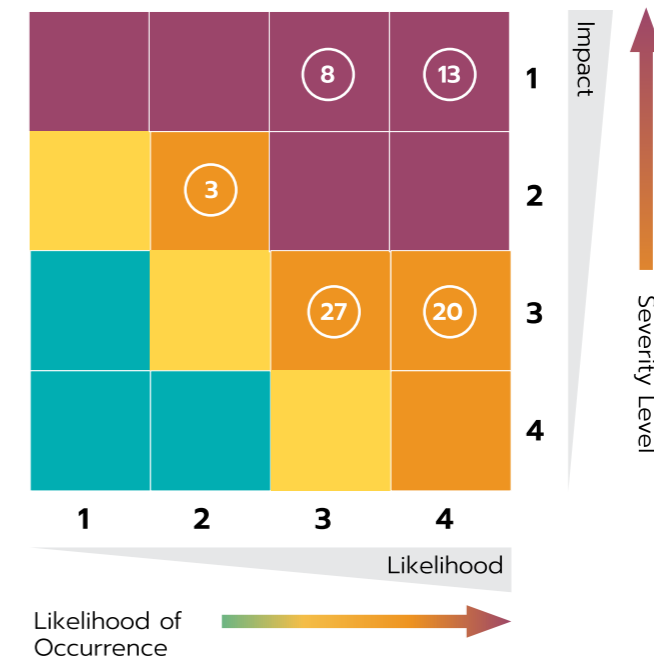


ESG Risk Issues	Risk Mitigation Plan	Target	Performance Outcomes
Environmental Risk (GRI 308-2 and FTSE Russell)			
<p>13 Sourcing raw materials from restricted areas or conservation forests.</p>	<ul style="list-style-type: none"> Provide training for partners on legal wood sourcing and register community-based suppliers. Develop an easy-to-understand ESG guideline for communities. Conduct on-site inspections with high-risk partners at least once a year. 	<ul style="list-style-type: none"> To prevent sourcing from illegal origins. Promote a responsible procurement system. 	Reduce the Risk of Procuring Illegal Wood.
<p>20 SME and community partners lacking knowledge of environmental impacts.</p>	<ul style="list-style-type: none"> Develop a "Community Environmental Handbook". "Provide basic environmental training" for partners and communities. Conduct post-training evaluations and monitor progress. 	<ul style="list-style-type: none"> Enhance the Knowledge and Understanding of Partners, Especially SMEs and Local Communities. 	Environmental Impact.
Social Risk (GRI 414-2 and FTSE Russell)			
<p>3 Labor law violations or unsafe working conditions.</p>	<ul style="list-style-type: none"> Develop a Labor and Safety Checklist. Provide basic occupational safety training. Establish an anonymous labor grievance channel. 	<ul style="list-style-type: none"> Reduce Labor Rights Violations and Enhance Safety. 	Reduce Labor Law Violations.
Governance Risk			
<p>8 Lack of cybersecurity or data protection management.</p>	<ul style="list-style-type: none"> Develop "Supplier Cybersecurity & Data Privacy Requirements" to be enforced as part of business agreements or contracts. Provide Cyber Hygiene awareness training for partners. 	<ul style="list-style-type: none"> Prevent Risks from Data Breaches or Cyberattacks. 	Reduce the Risk of Data Breach Incidents.
Economic Risk			
<p>27 Disruption of deliveries due to financial problems.</p>	<ul style="list-style-type: none"> Periodically assess the financial status of partners. Establish appropriate payment terms. Develop alternative suppliers within the system (Supplier Diversification & Readiness). 	<ul style="list-style-type: none"> Prevent Delays or Disruptions in Raw Material Delivery Due to Financial Liquidity Issues. 	Reduce the Risk of Data Breach Incidents.

Risk Level = Severity Level * Likelihood of Occurrence

(Risks/Impacts in Environmental, Social, Governance, and Economic Dimensions)

Risk Assessment Matrix



Measuring the Severity of Customer Impact

- Critical Risk
- High Risk
- Moderate Risk
- Low Risk

Results of the ESG risk assessment

Results of the ESG risk assessment for critical Tier 1 suppliers	Number of suppliers Assessed for ESG Risk (number of suppliers)	Critical risk level (no. of suppliers)	High risk level (no. of suppliers)	Gaps closed (no. of suppliers or % of risk addressed)
All 113 critical Tier 1 suppliers were assessed for ESG risk at 100 percent coverage				
• Environmental Risk (GRI 308-2)	113	2 suppliers (1.8%)	3 suppliers (2.7%)	5 suppliers (100%)
• Social Risk (GRI 414-2)	113	1 supplier (0.9%)	5 suppliers (4.4%)	6 suppliers (100%)
• Governance and Economic Risk	113	7 suppliers (6.2%)	13 suppliers (11.5%)	20 suppliers (100%)

Note: A total of 113 suppliers were assessed this year out of 339, with the expectation to complete 100 percent coverage within three years. However, in cases where suppliers receive complaints about their qualifications or delivery performance, they must undergo reassessment and reclassification immediately.

Monitoring Compliance with the Supplier Code of Conduct

Vanachai Group has required its suppliers to conduct self-assessments through the supplier code of conduct evaluation system, with the goal of encouraging all critical Tier 1 suppliers to participate in the Supplier Self-Assessment Questionnaire (SAQ). Suppliers are required to complete this assessment every three years. Afterward, the company will develop a plan to close any gaps and reduce potential risks by providing improvement recommendations so that suppliers comply with the supplier code of conduct.

In 2024, a new round of critical supplier evaluations was scheduled, with assessments now required annually. As a result, all 113 of the company's critical Tier 1 suppliers participated in the SAQ. The sustainability management department, together with the procurement department, provided training and guidance on completing the SAQ as well as on ESG risk assessment for these critical suppliers. The intention is for suppliers to apply this knowledge to reduce both direct and indirect ESG risks that could affect business operations in the future.

The company has also conducted on-site ESG audits of all critical Tier 1 suppliers, achieving 100 percent coverage, according to a rotation cycle that requires every critical supplier to undergo an on-site ESG audit within a three-year inspection period. For important foreign suppliers, the company will conduct site inspections as appropriate, but they are still required to complete the SAQ online and attach supporting documents such as permits, environmental policies, or ISO standards.

Supplier Screening Results	Data for 2024
Tier 1 suppliers	
• Number of suppliers doing business directly with Vanachai Group (Tier 1 Suppliers).	1,400 suppliers
• Number of critical suppliers doing business directly with Vanachai Group (Critical Tier 1 Suppliers).	339 suppliers
• Number of critical Tier 1 suppliers with ESG sustainability risk at critical or high levels.	31 suppliers
• Number of significant Tier 1 suppliers doing business directly with Vanachai Group (Significant Tier 1 Suppliers).	99 suppliers
• Proportion of purchasing volume accounted for by significant Tier 1 suppliers relative to total purchasing volume.	42.8 %

Note: "Significant Tier 1 Suppliers" refers to business partners that are critical to the organization's operations or carry significant ESG risk, as defined by three criteria: 1. Suppliers critical to strategic operations or production processes. 2. Suppliers with ESG risk assessed as critical or high. 3. Suppliers falling under both business-critical and high ESG risk categories. Vanachai applies these criteria to identify Tier 1 suppliers in the "significant" group for close risk assessment, monitoring, auditing, or development to prevent impacts on operations, corporate reputation, and long-term sustainability objectives.



Vanachai Group achieved 100% supplier coverage for its Code of Conduct

On-site Inspections of Supplier Facilities

A framework has been established to conduct site visits and on-site ESG audits for suppliers whose self-assessment results fall within the medium to high-risk categories. In addition, suppliers identified with high risk levels will be required to prepare corrective and preventive action plans to address deficiencies and improve their ability to conduct sustainable business together with the company.

Furthermore, the company has set a continuing objective that once its critical direct suppliers have passed the initial economic and sustainability risk assessment through the Self-Assessment Questionnaire (SAQ), they will then proceed to on-site ESG audits covering economic, social, environmental, and governance aspects in the next stage.

The details and frequency of these on-site audits will follow the supplier's risk classification, as follows:

- Every three years for suppliers with medium to low ESG risk.
- Every one year for suppliers with high or critical ESG risk.

The assessment framework for on-site inspections covers five topic areas, starting with a Self-Assessment Questionnaire (SAQ). If the score is below 60 percent, an on-site assessment at the supplier's facility will be required, with details as outlined below.



Selection Criteria for Suppliers Required to Undergo On-site Audits in 2024		Details	%
• Strategic Criticality.	Partners supplying raw materials or services with a direct impact on production processes or product quality, such as wood residues accounting for more than 50 percent of input.		25%
• High ESG Risk Exposure.	Partners with environmental risks, such as waste discharge, illegal wood sourcing, or labor risks including child labor.		30%
• Past Compliance Issue.	Partners with a history of complaints or who failed previous SAQ (Self-Assessment Questionnaire) evaluations.		15%
• Transaction Frequency & Spend Level.	Partners with high transaction volumes or frequent purchases, representing cumulative risk and requiring ongoing monitoring.		15%
• High-Risk Local Partners.	Partners operating in controlled or remote areas (such as forests or restricted zones), or SMEs/communities lacking internal controls, proper data recording systems, or standard policies.		15%



In 2024, 16 suppliers were audited on site, all of whom passed the assessment (100%)



Participation in Supporting and Raising Awareness of Sustainable Business Practices Among Suppliers

Why this matters for Vanachai Group

The approach to supporting and raising sustainability awareness among suppliers is at the heart of Vanachai’s commitment to fostering responsible and shared growth. The company focuses on transferring knowledge about environmental, social, and governance (ESG) principles to help suppliers adapt to global market contexts and operate efficiently with ethics and social responsibility. It is also committed to enhancing the capabilities of suppliers to grow alongside the company over the long term.

In addition, the company demonstrates sincerity and fairness by establishing appropriate payment terms to ensure suppliers have sufficient financial liquidity to maintain stable business operations. This approach helps build strong supply chain relationships, reduces risks, and creates shared value, aligning with Vanachai’s mission to be a leader in sustainable, socially and environmentally friendly wood product manufacturing over the long term.

Fair Payment Terms for Suppliers

Vanachai Group prioritizes managing supplier relationships fairly and transparently, particularly in setting payment policies that support supplier stability within the supply chain. The company has established a credit term policy that differs by supplier type. For micro suppliers, such as farmers, communities, or small traders, payment is made on the same day as product delivery. Corporate suppliers receive payment within 30 to 60 days after delivery, or according to contractual terms, upon receipt of an invoice.

Payments are processed through an e-payment system, which builds trust among suppliers that payments will be made on time and helps them manage their cash flow effectively. Although

there is a clear policy in place, the company may adjust payment terms to fit product characteristics, contract conditions, and service quality. In 2024, the company’s average trade payable period was reduced to just 9 days, down from 10 days the previous year, demonstrating tangible responsibility and continuity in supporting suppliers.

Furthermore, over 95 percent of the company’s raw materials come from wood scraps, forming part of the circular economy. These are sourced from surrounding communities, furniture factories, and middlemen who collect waste wood, which not only helps reduce industrial waste but also generates income for local communities, supports grassroots economies, and builds strong relationships with stakeholders across the supply chain. All of this reflects the company’s commitment to growing sustainably alongside its suppliers.



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Activities to Promote Savings and Investment for Sustainable Supplier Communities “From Waste to Wealth” Project

“From Waste to Wealth” is a program to develop the capacity of suppliers and communities by focusing on providing knowledge about savings, basic financial management, and introductory investment skills for villagers or small traders who sell wood scraps to Vanachai. The aim is to help them use the income from wood scrap sales effectively, build up savings, maintain household working capital, and motivate them to “Actively Collect Wood Scraps” on a regular basis. This creates both financial stability for the community and continuity in raw material supply for the company.

Activity: Workshop “Save Easily, Get Rich with Wood Scraps”:

- Simple financial knowledge, such as saving 10% of income, using a goal-based savings account.
- Inviting guest speakers from community banks or village funds to share experiences.

Benefits for the community: On average, families achieve savings of around 10% per month:

- Gain knowledge of personal finance and daily life planning.
- Income from wood scraps is not wasted, but becomes a foundation for financial security.
- Promotes diligent behavior, discipline, and household inspiration.
- Builds stronger communities with revolving funds and better appreciation of local resources.

Benefits for Vanachai:

- Secures a continuous supply of wood scraps from motivated small-scale sellers.

- Reduces supply chain interruption risk due to wood shortages.
- Strengthens a sustainability leadership image through hands-on community involvement.
- Develops long-term relationships with local supplier networks.



9 Days
Average fair payment
period for suppliers.



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Participation in Supplier Development

Vanachai Group places importance on developing suppliers and contractors within the supply chain, particularly contractors who may pose risks related to social, environmental, and safety impacts in their operations, as well as risks of violating relevant laws and regulations. This effort also supports suppliers and contractors who provide core services to the company in improving their work efficiency to achieve higher standards.



0
Number of lost-time accidents among contractors working on company premises in 2024.

The company requires all contractors working on its premises to undergo training and briefing on rules and practices related to safety, occupational health, the environment, and other relevant procedures. This is conducted by the company's safety officers. Contractors must also acknowledge the procedures for obtaining work permits and working methods in high-risk areas, such as confined spaces or other hazardous zones.

As a result, in 2024, the number of lost-time accidents among contractors working on company premises was zero.

Annual supplier seminar



12 February 2024:
Safety training for contractors of Mr. Thaworn.



20 May 2024:
Safety training for contractors of Mr. Adisorn.



15 July 2024:
Safety training for contractors of Kasnapat 65 Partnership Ltd.



18 December 2024:
Safety training for contractors of Contrologic Co., LTD.



Sustainable Value Chain

Why this matters for Vanachai Group

In 2024, Vanachai Group elevated its value chain, which previously consisted of four main activities including procurement, production, transportation and distribution, marketing, and sales, into a more comprehensive and systematic “sustainable value chain” to support its sustainable business objectives and reinforce a customer-centric approach.

This transformation began with business development driven by customer insights, applying innovation and technology to meet needs precisely, followed by sustainable procurement, green production with pollution control, environmentally friendly marketing and sales, sustainable transportation and distribution, after-sales services, and finally recycling and reuse of products at the end of their life cycle.

The company has also analyzed the stakeholders involved in each activity, identifying material topics with both positive and negative impacts at each step to continuously improve processes. This aims to reduce negative impacts, enhance positive outcomes, and create value for the economy, society, and the environment simultaneously. This sustainable value chain development not only helps strengthen the company’s competitiveness but also reaffirms its mission to conduct responsible business, respond to global sustainability trends, and build a better future together with all stakeholders.

Targets for 2024

100%

Activities in the value chain assessed for sustainability risks and opportunities.

2 Projects

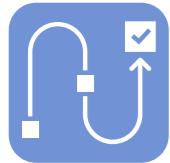
Collaborative projects with stakeholders to enhance environmental performance or promote the circular economy.



Our Approach

Vanachai Group recognizes that defining clear and comprehensive activities across the business value chain enables stakeholders to better understand their roles within the company’s ecosystem. By identifying key processes and communicating effectively with internal and external stakeholders, the organization can foster shared clarity around goals, direction, and expectations.

This foundation supports improvements across all activities under the concept of “Make Today Better,” driving process enhancements and innovations that strengthen competitiveness. Over time, this approach becomes embedded in the company’s culture and forms part of the DNA that drives sustainable growth.



Define systematic work processes:

To ensure each activity in the value chain is clear, goal-oriented, and efficiently interconnected.



Communicate goals and expectations clearly:

Ensure all stakeholders understand their roles, responsibilities, and shared objectives to minimize inconsistencies.



Assess impacts and drive improvement:

Use real data to evaluate impacts and refine processes to better achieve sustainability goals.



Embed sustainability in company culture:

Instill sustainable thinking and behavior across all employee levels..

Implementing Activities Across the Business Value Chain with Relevant stakeholders

	Activities in the value chain	Stakeholder	Impact	Management Approach
1	Business Development.	<ul style="list-style-type: none"> Customers, Consumers. Business Development Team 	<ul style="list-style-type: none"> Meet customer needs Increase market understanding 	<ul style="list-style-type: none"> Use insights to define strategy Communicate goals clearly
2	Sustainable Procurement.	<ul style="list-style-type: none"> Suppliers Procurement Team 	<ul style="list-style-type: none"> Reduce supply chain risk. Increase transparency 	<ul style="list-style-type: none"> Evaluate suppliers using ESG criteria Jointly develop standards
3	Green Production.	<ul style="list-style-type: none"> Board of Directors Production Team Environmental Executives 	<ul style="list-style-type: none"> Reduce waste and increase recycling Improve efficiency Reduce carbon and GHG emissions 	<ul style="list-style-type: none"> Promote continuous development Use innovation to reduce waste generation and improve raw material efficiency
4	Environmentally Friendly Marketing and Sales.	<ul style="list-style-type: none"> Customers, Consumers Marketing & Sales Team 	<ul style="list-style-type: none"> Increase sales Enhance corporate image 	<ul style="list-style-type: none"> Train the sales team Communicate environmental values to customers
5	Sustainable Transportation and Distribution.	<ul style="list-style-type: none"> Logistics Service Providers Transport Partner Delivery Staff 	<ul style="list-style-type: none"> Reduce greenhouse gas emissions Increase speed, accuracy, completeness, and correctness 	<ul style="list-style-type: none"> Use clean energy Enhance transportation safety Plan sustainable routes
6	After-sales Service (Technical Services).	<ul style="list-style-type: none"> Customers, Consumers Customer service or technical department 	<ul style="list-style-type: none"> Improve products based on problems and complaints Increase customer satisfaction 	<ul style="list-style-type: none"> Manage the complaint handling system Analyze data for improvement
7	Recycling and Repurposing of Expired or Underperforming Products.	<ul style="list-style-type: none"> Communities Recycling partners 	<ul style="list-style-type: none"> Reduce landfill waste Promote the circular economy 	<ul style="list-style-type: none"> Establish a product take-back system Collaborate with recycling partners
8	Integration Across the Entire Value Chain	<ul style="list-style-type: none"> All relevant internal parties and suppliers 	<ul style="list-style-type: none"> Increase overall efficiency Reduce operational gaps 	<ul style="list-style-type: none"> Build a sustainable organizational culture Assess impacts in all activities

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TOGETHER

TOGETHER, WE CARE

- Together, We Safeguard Society
- Together, We Preserve Communities
- Together, We Protect Our Employees

Vanachai Group places great importance on the well-being of its employees, customers, and communities through equity, development, and sustainable growth. We create lasting positive impacts on society.

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STRENGTHENING SOCIETY THROUGH WELL-BEING AND SUSTAINABLE GROWTH



Key Performance Indicators:

98%

Customer Satisfaction Score

98%

Community Satisfaction Score

97%

Employee Engagement Score

Vanachai Group is committed to driving the organization with social responsibility across all areas. We prioritize customer satisfaction, adapt to evolving consumer behaviors, support community development, and create lasting shared value. Internally, we uphold equity, diversity, and human rights by ensuring a safe workplace, promoting well-being, and continuously developing employee potential. Our goal is sustainable growth for all, rooted in the belief that “true growth begins with people.”



Together, We Safeguard Society:

Strengthening society by focusing on customers and consumers through safe, high-quality, eco-friendly products that meet modern lifestyle needs.



Together, We Preserve Communities:

Strengthening communities by supporting local growth, promoting education, well-being, and environmental care through collaboration, volunteerism, and lasting partnership



Together, We Protect Our Employees:

Strengthening employees through a safe, fair workplace, promoting well-being, and building skills for long-term success.

The company creates social value through customer care, employee growth, and community support, fostering trust, equity, and a shared path to sustainable development.



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**TOGETHER,
WE SAFEGUARD
SOCIETY**

Strengthening Society through Sustainable Choices

At Vanachai Group, we believe that strengthening society begins with enhancing customer satisfaction and driving positive behavioral change toward sustainability. As global awareness of environmental responsibility grows, the demand for green products and services continues to rise, particularly among the new generation of consumers who prioritize sustainability in their purchasing decisions. By prioritizing eco-friendly innovation and responsible business practices, we can quickly adapt to changing customer expectations while encouraging more sustainable consumption patterns. We actively engage with consumers to promote awareness, inspire responsible decision-making, and offer greener alternatives that align with worldwide sustainability trends.

Through education, collaboration, and innovation, Vanachai empowers consumers to make informed choices that help build a stronger, more resilient society. Together, we drive a future where sustainability is not merely an option, but a way of life.

Key Related Material Topics:



Customer Satisfaction



Consumer Insights and Emerging Expectations



Customer Satisfaction

Why this matters for Vanachai Group

Customer satisfaction is a critical factor that reflects Vanachai Group’s business success in terms of product quality, services, and the ability to build long-term customer trust. This is especially true in the wood-substitute product industry, where today’s consumers place high importance on choosing sustainable, environmentally friendly, and long-lasting materials. Customers increasingly research and compare options before making purchasing decisions. Therefore, satisfaction has become a key indicator of competitiveness and brand credibility for the company.

Maintaining existing customer relationships and building connections with new customers are at the heart of sustainable growth. Customer feedback not only helps improve products and services but also drives innovation, more responsive communication, and closer alignment of ESG initiatives with stakeholder expectations.

For these reasons, customer satisfaction remains a critical focus area for Vanachai Group and is a central pillar for achieving long-term business advantage.

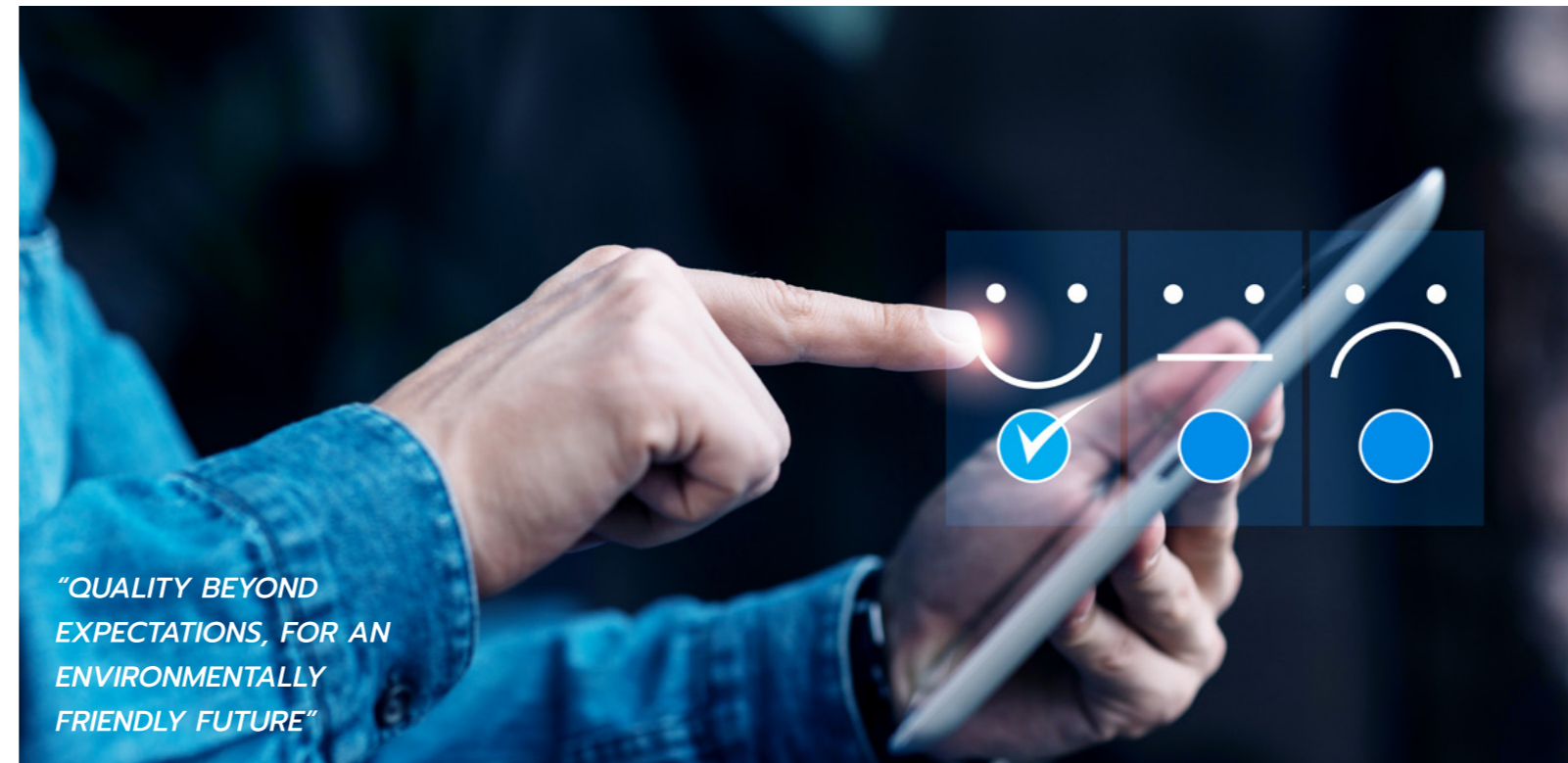
Targets for 2024

97.5%

Evaluation of customer satisfaction improvement

1 Project

Applying customer expectation assessment results to develop and improve products and services



Our Approach

In today's world, where the climate crisis continues to intensify, environmental conservation and sustainable business practices have become a mainstream trend, drawing increasing global consumer attention. As a result, consumer behavior has shifted significantly, especially among newer generations who are more aware of the impacts of climate change and actively choose to support environmentally responsible brands.

This trend directly impacts Vanachai Group, whose business focuses on wood-substitute products and eco-friendly decorative materials. The market for these products is showing steady growth, attracting numerous producers and distributors both domestically and internationally, with varying differences in quality, price, and material sustainability.

Amid this intense competition, systematic management of customer satisfaction has become crucial in helping the company maintain trust, loyalty, and consistent customer satisfaction. At the same time, customer feedback and insights are used to develop products and services that meet expectations for both quality and sustainability.

Responding to changing consumer behaviors is therefore not merely a marketing strategy, but a key driver to grow the business in a way that is valuable and genuinely responsible toward the planet.

The company's operational approach is as follows:



Customer Voice Monitoring

collect, analyze, and apply customer feedback, complaints, and expectations to improve products and services in a targeted and meaningful way.



Eco-conscious Product Innovation

develop products that meet both quality and environmental standards, delivering innovations that satisfy functional needs while supporting sustainability, giving customers better choices for themselves and the planet.



ESG-focused Branding & Communication

transparently communicate the company's sustainable development commitments and build shared understanding with customers.



Customer-centric Culture

train and build an organizational culture that prioritizes attentive service, with the customer at the center of every process.



Satisfaction Survey & Monitoring

regularly conduct both quantitative and qualitative customer satisfaction surveys to evaluate results and continuously refine strategies.



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Direct customer engagement through Woodsmith stores and building understanding of the value of sustainable products

development and expansion of its B2C distribution channels through Woodsmith retail centers, which the company established to communicate directly with customers, consumers, designers, and end-users nationwide. This approach allows the company to gain a deeper understanding of customer needs – including functionality, aesthetics, and expectations for health and environmental impacts.

Woodsmith Depot are not merely retail outlets for wood-substitute products, but also serve as learning centers that communicate the sustainable values of Vanachai’s products, distinguishing them from other wood substitutes on the market. In particular, some lower-cost materials may contain carcinogenic substances or compounds that can cause respiratory illnesses in humans, which may later be released if the material’s bonding capacity degrades, posing long-term health risks to users.

Vanachai takes this opportunity to continuously educate consumers that choosing the company’s products means gaining not only durability and beauty but also long-term safety for people and the environment. Providing technical information alongside opportunities for customers to touch, experience, and test products through Woodsmith centers is a key strategy to build trust and reinforce Vanachai Group’s position as a leader in environmentally responsible wood-substitute products, caring for the planet and future generations.



PERFORMANCE RESULTS

98%

Customer Satisfaction Score: CSAT

From post-purchase and service satisfaction surveys

2

Complaints

No. of Customer Complaint:
Continuously decreasing year over year

**100%
Complaint Resolution**

Complaint response rate within the specified timeframe (Response Time Service Level Agreement: SLA) Average response time within 3 business days

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Customer Satisfaction Survey

Vanachai Group sincerely values the voice of the customer and conducts annual customer satisfaction surveys, both domestically and internationally, to gather feedback and expectations from key stakeholders, including consumers, designers, and contractors. This information is then forwarded to relevant departments within the organization to consider effective improvements and solutions.

The survey is administered through Woodsmith retail centers, via email, and covers four key areas: product quality, sales staff service, technical support, and delivery services – ensuring every dimension of the customer experience is captured.

Between 2021 and 2023, the company achieved an average customer satisfaction score of 97.5%. In 2024, Vanachai set an ambitious target of exceeding 97.5%, which was successfully achieved with an overall satisfaction score of 98.0%. This reflects the company’s ongoing commitment to listening to customers and continuously improving its products and services to meet their needs accurately and sustainably in the long term.

Customer satisfaction evaluation (unit: % CS Score)	2021	2022	2023	2024
Overall customer satisfaction evaluation	97.3%	97.3%	97.8%	98.0%
• Product	97.5%	97.1%	98.1%	98.1%
• Sales staff	97.4%	97.3%	97.7%	97.9%
• Technical service	97.4%	97.3%	97.7%	97.2%
• Product delivery	97.4%	97.3%	97.7%	97.9%

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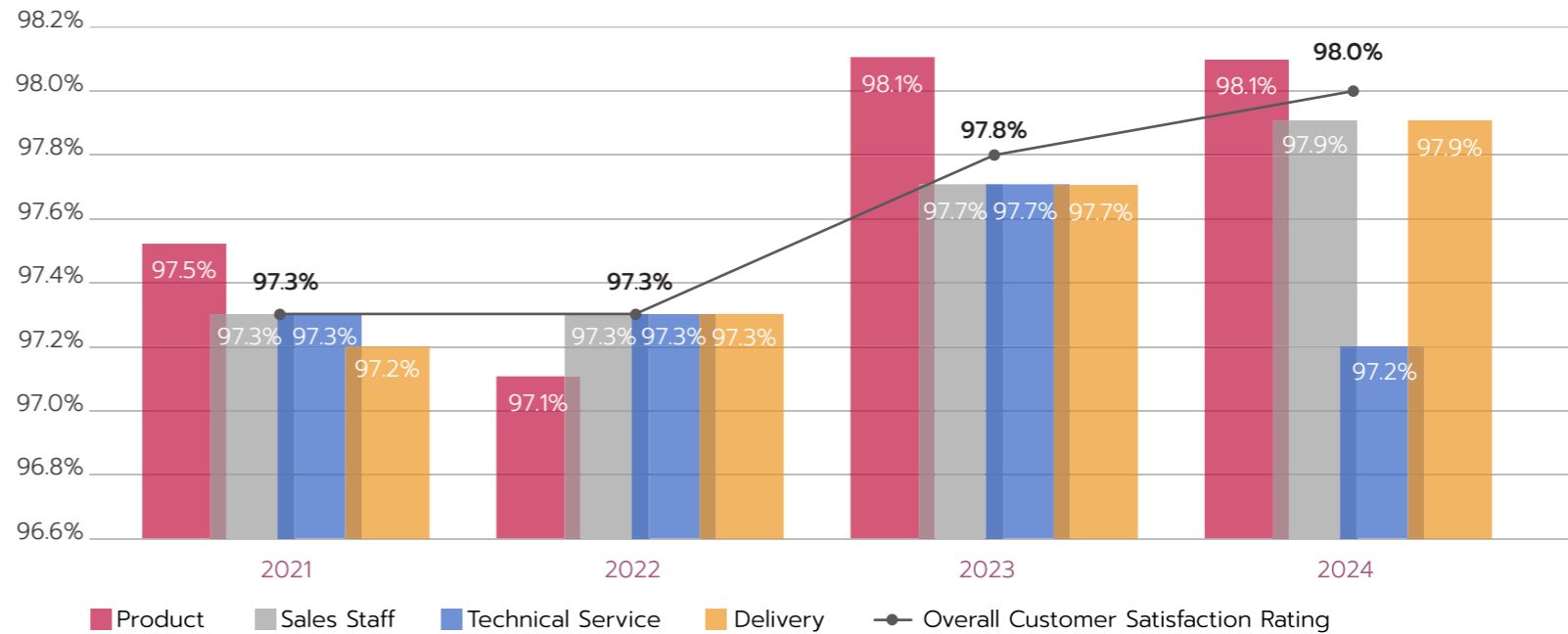
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CUSTOMER SATISFACTION ASSESSMENT RESULTS, 2021–2024



Customer Feedback on Products in the 2023 Assessment

From the 2023 customer satisfaction assessment, Vanachai received numerous valuable suggestions. Approximately 15% of the feedback indicated a desire for the company to develop wood flooring products with higher moisture resistance to better suit actual consumer usage patterns in Thailand and ASEAN countries, where cleaning floors with damp cloths or mopping with moisture and allowing them to air dry is common. Some customers noted that current wood flooring materials available on the market, when used during the rainy season or in humid areas, may dry slowly, develop white stains, or fade in color. There were also concerns about mold forming on the surface in some cases, which could pose health risks for users, especially households with children or pets, as well as reduce ease of maintenance.

As a result, customers recommended that the company develop wood flooring with the natural beauty of real wood but with enhanced moisture resistance, water repellency, mold prevention, and easy maintenance to meet practical usage needs and align with consumer behaviors in tropical climates.

Vanachai has prioritized this feedback and developed a new product, “**Hybrid Ultra Laminate Flooring,**” which was launched in Q4 2024. This product is designed with high moisture resistance, reduced water absorption, mold prevention, and retains the aesthetic appeal of natural wood, while being easier to care for.

The launch of this product demonstrates the company’s commitment to listening to customers and developing solutions that truly meet market needs and regional usage trends.



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Consumer Insights and Emerging Expectations

Why this matters for Vanachai Group

Consumer behavior is changing rapidly, especially among younger generations who place greater emphasis on environmental responsibility. This is particularly true in-home decoration and furniture products, which have long life cycles. Today's consumers tend to research and seek recommendations before making purchasing decisions, placing importance on transparency, environmental friendliness, and product credibility. This shift presents a significant opportunity for Vanachai Group, which already offers environmentally friendly products, sustainable production processes, and services aligned with modern

consumer needs. This enables the company to strengthen its competitive advantage in an increasingly eco-conscious market. Vanachai views adapting to changing consumer behaviors as a key strategy for sustainable growth. The company therefore prioritizes communicating its product strengths such as durability, the use of natural wood substitutes, and health and safety features while also developing accessible marketing tools and information channels to build consumer trust and maintain long-term customer loyalty.

Targets for 2024

70%

On Brand Awareness & Perception

1 Product

New products developed from consumer insights driven by ESG



Our Approach

Vanachai Group recognizes the trend of changing consumer behavior that emphasizes sustainability, safety, and transparency in product selection particularly in home decoration products, which have long life cycles and reflect consumers' personal values. In response, the company has developed multi-dimensional management strategies to meet the needs of modern customers and build long-term competitive advantages.



Continuously study and analyze consumer behavior by collecting data from online channels, satisfaction surveys, and customer feedback to inform product and service improvements.



Promote communication of product strengths related to environmental and health benefits through modern marketing channels, such as social media, websites, and digital media.



Develop products that meet new consumer behaviors, such as natural wood substitutes or products with anti-fungal and formaldehyde-free properties.



Build partnerships with business allies, including home decoration retailers, e-commerce platforms, and influencers, to expand awareness and understanding of the company's sustainable products.



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**Participation in ASA EXPO 2024:
"Collective Language – Sensing Architecture"**

To reinforce its sustainability commitment and build brand awareness among key stakeholders, Vanachai Group participated in Architect'67 under the concept **"Collective Language: Sensing Architecture"** from April 30 to May 5, 2024, at Impact Muang Thong Thani, Bangkok which attracted over 325,000 visitors. The company presented an interactive exhibition booth showcasing its strengths in wood-substitute product innovation, while communicating ESG efforts such as carbon emissions reduction, responsible raw material sourcing, and progress toward carbon neutrality.

This participation not only strengthened the brand's image, but also aligned with rising demand for environmentally friendly materials that truly address the needs of the future.



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PERFORMANCE RESULTS

65.7%

Brand Awareness and Recall: Conducted a survey during the ASA EXPO 2024

5 Products

Proportion of new products developed in line with consumer behavior data or sustainability (ESG) trends

1 Activity

Number of activities or campaigns focused on education and promoting understanding of sustainable products and responsible choices

100%

Proportion of products with environmental information communication, such as formaldehyde-free, recycled materials, or reduced carbon emissions



**TOGETHER,
WE PRESERVE
COMMUNITIES**



Strengthening Communities through Sustainable Development

Vanachai Group is committed to strengthening local communities by creating economic value and promoting sustainable development. Through its program to purchase tree roots in addition to branches and stumps, the company provides opportunities for local communities to generate extra income. What was once viewed as worthless or unsellable is now transformed into a valuable resource, benefiting both people and the environment. This initiative not only improves the quality of life for local residents but also supports the circular economy by reducing wood industry waste.

Beyond financial opportunities, Vanachai invests in environmental education and sustainable living practices to help communities coexist harmoniously with nature. By raising awareness and promoting responsible resource management, we empower communities to reduce their environmental footprint while improving their well-being.

Through collaboration and shared growth, Vanachai strives to build stronger and more resilient communities that thrive alongside a greener and more sustainable planet.

Key Related Material Topics:



Local Development and Shared Value Creation



Local Development and Shared Value Creation

Why this matters for Vanachai Group

Local development and value creation form the foundation for building strong and sustainable communities. Investing in local projects and activities helps circulate resources within communities, stimulate the local economy, create jobs, and improve the quality of life in areas where Vanachai operates. Close and smooth collaboration between the company and communities ensures that local residents are not merely stakeholders but are like family members who actively participate in decision-making. Vanachai places great importance on community perspectives to ensure projects are well accepted and deliver benefits to all parties.

This process allows communities to raise issues or concerns for discussion quickly before they escalate into larger problems requiring intervention by regulators. Continuous dialogue and participation help build trust between the company and communities, strengthen local identities, create unity, and support long-term community stability. By prioritizing local development and mutual trust, Vanachai empowers individuals to drive change from within their communities, fostering inclusive and sustainable growth for future generations.

Targets for 2024

1,500
Million Baht

Generating household income in communities through the sale of wood scraps to the company

▲ 85%

Satisfaction with Vanachai Group's overall social responsibility projects



Our Approach

Vanachai Group is committed to sustainable community development and creating shared value with local communities by prioritizing close collaboration and genuine stakeholder engagement. The approach focuses on conducting business in a way that aligns with community well-being, supports the local economy, advances education, preserves the environment, and encourages meaningful community participation. This commitment helps build strong and sustainable communities in the long term.



Community and stakeholder engagement:

Establish transparent communication channels to listen and respond to community concerns while encouraging stakeholder participation in decision-making to create shared benefits.



Community economic development:

Support the local economy by sourcing materials directly from communities, helping to generate income and strengthen local economic resilience.



Education and capacity building:

Collaborate with local educational institutions through partnership programs, internships, and training to build skills and prepare youth for careers after graduation.



Environmental protection and forest conservation:

Carry out activities to promote environmental stewardship, such as tree planting projects and biodiversity research, aimed at reducing carbon emissions and sustainably managing natural resources in cooperation with employees and local communities.



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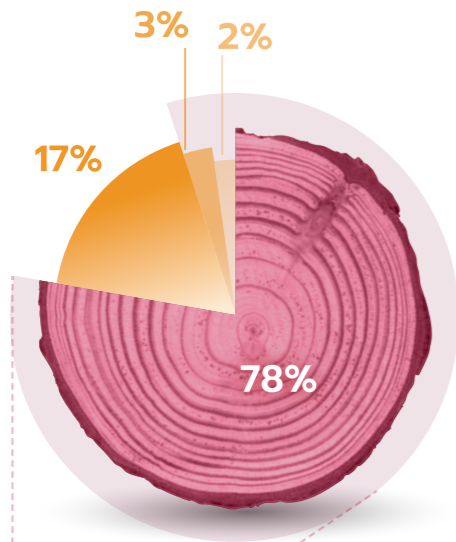
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(Unit: Baht)

Social activities	Expenses
Donations expenses	1,213,300
Expenses for implementing social responsibility projects	5,540,000
Expenses calculated from the value of donated products	103,800
Expenses for employee volunteer hours during paid working time	204,456
Total expenses for 88 social projects in 2024	7,061,556



Creating Shared Value



PERFORMANCE RESULTS

1,590 Million Baht

Generating household income by selling aged rubber trees over 10 years old, along with branches and roots that would otherwise be burned, through the "Waste to Value" project

85%

Community satisfaction with Vanachai Group's overall social responsibility projects hours per person per year

4.5 Hour/Person/Year

Average number of volunteer hours contributed by employees to social activities, reflecting dedication to creating social value

1,232 People

Number of stakeholders participating in volunteer and social responsibility programs

10 People

Interns in the academic collaboration project with King Mongkut's University of Technology North Bangkok

1,322 Trees

Support for forest conservation development through tree-planting activities with communities in Vanachai Group's operating areas

Academic collaboration with King Mongkut's University of Technology North Bangkok



Furniture Design Contest 2024 with King Mongkut's University of Technology North Bangkok

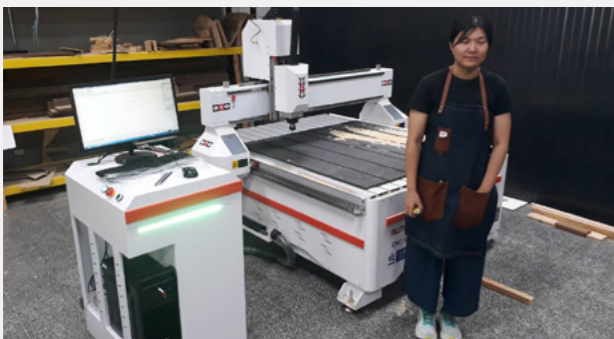
The Woodworking Competition Project 2024 is a collaboration between Vanachai Group and King Mongkut's University of Technology North Bangkok. This initiative is part of the company's CSV (Creating Shared Value) efforts, aiming to build shared value between industry and education. The company supports this project by providing expert knowledge on materials, supplying materials for prototype production, and installing CNC machinery for woodworking.

You can view the contest details at the following link: <https://www.facebook.com/share/p/14FyqWt6GoN/?mibex-tid=wwXlfr>

Quantitative Return Analysis from the Project

Item	Details	Quantitative Indicators
Social benefits		
• Student skill development	Students gained hands-on experience in woodworking, CNC machine use, and professional practices	<ul style="list-style-type: none"> • Number of participating students 109 • Number of developed prototypes 18 • Total training hours more than 112 Hours
• Creation of a quality work force entering the market	Students participating in the program have opportunities to work in the furniture, building materials, and design industries	<ul style="list-style-type: none"> • Estimated private-sector employment interest rate more than 30 percent • Potential to become freelancers or entrepreneurs
• Community development through employee engagement	Vanachai employees served as mentors and advisors, strengthening relationships between the organization and society	<ul style="list-style-type: none"> • Number of participating employees 10 • Guidance activities • Number of training sessions more than 10
Economic benefits for the company		
• Reduction in recruitment and training costs for new employees	The company directly recruited high-potential students from the program	<ul style="list-style-type: none"> • Estimated reduction in recruitment and training costs approximately 50,000 to 100,000 Baht
• Creation of opportunities for product innovation	Student ideas were applied to develop wood products that reduce material waste	<ul style="list-style-type: none"> • Estimated number of new prototype products 2 to 3 with an initial design value of approximately 20,000 to 50,000 Baht
• Brand image building and ESG risk mitigation	Enhancing credibility in social and environmental responsibility	<ul style="list-style-type: none"> • Estimated marketing image value earned media more than 300,000 Baht
• Building connections with academic institutions to establish long-term collaboration	Creating academic and research networks for future cooperation	<ul style="list-style-type: none"> • Number of ongoing long-term joint projects more than 2

Furniture Contest 2024 (Continued)



Academic collaboration with vocational colleges in Surat Thani through a Dual Vocational Training program



Vanachai Group has consistently supported vocational education, recognizing it as a crucial pathway to developing skilled workers who are job-ready immediately after graduation. Vocational Training Program focuses on combining classroom learning with practical, hands-on experience, requires a shorter study period, and meets the specific needs of industry. Vanachai Panel Industries Co., Ltd. Surat Thani plant, part of the Vanachai Group, signed a Memoranda of Understanding with Wiang Sa Vocational College in 2012 and Thung Song Technical College in 2017. The company has welcomed interns in various fields, such as industrial mechanics, electrical engineering, and electronics, allowing students to learn directly in a professional environment with modern tools and technology, supported by company employees who serve as mentors and share their expertise closely.

The company also provides daily allowances to interns to help them recognize the value of both learning and working. This collaboration has played an important role in developing vocational graduates whose skills match labor market needs and who are confident and prepared for sustainable careers.

ESG highlights and economic returns

Social benefits for the community and society

- A total of 149 students have participated and gained real-world industry experience.
- 14 students have been offered permanent employment after their internships representing 9.4 percent.
- The company has provided total allowances exceeding 1.76 Million Baht to support both education and living expenses.

Economic benefits for the company

- Establishing a pipeline of high-potential talent from internship programs helps reduce recruitment and training costs.
- Supporting business operations through the participation of interns in real production processes.
- Enhancing the corporate image and ESG profile through continuous partnerships with vocational institutions, strengthening long-term human resource sustainability.

Activity	2021	2022	2023	2024	Total
• Number of interns (People)	23	32	44	50	149
• Total compensation paid (Baht)	252,624	417,010	498,896	596,075	1,764,605
• Number of interns hired as employees (People)	7	3	1	3	14

Academic collaboration with King Mongkut's Institute of Technology Ladkrabang



Vanachai Group signed an academic collaboration agreement with the Faculty of Engineering at King Mongkut's Institute of Technology Ladkrabang (KMUTL) in November 2023 to launch a **Work-integrated Learning (WiL) program**. The program aims to integrate classroom learning with real-world industrial experience through a combination of sandwich courses, cooperative education subjects, and post-course internships.

This initiative helps enhance students' readiness for future careers by giving them opportunities to join Vanachai Group companies immediately after graduation. At the same time, the company can

access a new generation of skilled personnel who match its workforce needs, reducing both recruitment time and costs. The first cohort of third-year students began participating in the program in 2024.

Vanachai Group companies participating in the WiL program include:

- Vanachai Group Public Company Limited
- Vanachai Panel Industries Company Limited
- Vanachai Energy Industries Company Limited
- Vanachai Chemical Industries Company Limited

In addition, Vanachai Group Public Company Limited has supported a budget of 500,000 Baht for the construction of an Industrial Co-working Space within the Engineering Prototype Arena of the Faculty of Engineering. This space is designed to foster creativity, research, and innovation among young people, with flexible functions to suit various uses. It will serve as a hub for connecting people, building knowledge networks, and encouraging exchange and interaction that lead to the development of a future research and innovation ecosystem.

Collaboration on Forest Restoration and Protection “Forest Conservation Promotion and Development” Project In 2024, a total of 1,322 trees were planted



Vanachai Group places great importance on forest conservation as part of its sustainability vision. Although rubberwood is the company’s primary raw material, Vanachai remains committed to expanding green spaces through ongoing tree planting activities, even with tree species that are not used in production. This reflects a broader goal beyond business objectives, positioning the company as a leader in forest conservation and biodiversity promotion by encouraging employee and community participation in reforestation.

The company fosters environmental awareness throughout all levels of its operations. These tree planting activities not only raise awareness among stakeholders but also help communities recognize the importance of forests for the future, which play a vital role in carbon absorption, maintaining ecological balance, and creating a clean and sustainable environment for future generations.

Activity	Performance Results
Annual Tree Planting Day activity with the Thung Luang Municipality community, Thung Luang Subdistrict, Wiang Sa District, Surat Thani Province.	
• Number of community participants (People)	50
• Number of employee participants (People)	30
• Employee volunteer hours (Hours)	150
• Project implementation costs (Baht)	20,000
Annual Tree Planting Day activity with the Ban Lan Khao community, Village 3, Thung Luang Subdistrict, Wiang Sa District, Surat Thani Province.	
• Number of community participants (People)	20
• Number of employee participants (People)	20
• Employee volunteer hours (Hours)	100
• Project implementation costs (Baht)	10,000



Participation in Other Community Support Initiatives

Vanachai Group believes that building strong communities is not only about creating economic opportunities but also about sharing value through education, health, culture, and social welfare. With this in mind, the company has continuously promoted and participated in various community initiatives, providing both financial support and employee volunteer engagement in education, public health, local cultural preservation, and community infrastructure development.

The company has supported projects that create value and improve the quality of life for local people, such as providing educational supplies, supporting health activities, preserving traditional culture, and contributing to public utilities development. These commitments reflect the company's genuine intention to grow together with communities, fostering strong relationships, shared pride, and long-term community resilience and sustainability.

	Year	Education	Health	Culture	Public Benefits	Total
Number of employees participating (People)	2024	115	278	483	356	1,232
	2023	82	129	350	211	772
	2022	53	124	374	117	668
	2021	40	52	305	232	629
Number of volunteer hours (Hours)	2024	518	1,251	2,173	1,602	5,544
	2023	313	516	1,400	504	2,733
	2022	212	481	1,496	423	2,612
	2021	160	178	1,205	568	2,111
Operating Expenses (Baht)	2024	162,237	3,634,960	538,890	462,510	4,798,597
	2023	121,600	239,500	320,000	532,200	1,213,300
	2022	100,000	245,400	410,750	342,800	1,098,950
	2021	55,000	77,600	353,600	1,521,075	2,007,275



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**TOGETHER,
WE PROTECT
OUR EMPLOYEES**



Strengthening Employees to Build a Sustainable Organization

At Vanachai Group, employees are the heart of our success. We are committed to providing a safe and healthy working environment, promoting well-being, and fostering skill development for long-term career growth. By ensuring equal opportunities and embracing diversity, we create an inclusive workplace where everyone can thrive. We value our people and invest in their potential, encouraging long-term commitment and professional advancement. By cultivating an innovation-driven culture, our management actively engages with employees to promote openness, collaboration, and new ideas that strengthen organizational progress.

Beyond career development, Vanachai prioritizes both the physical and mental well-being of employees through comprehensive workplace safety measures, wellness programs, and work-life balance initiatives. By nurturing a supportive, forward-looking environment, we empower employees to contribute meaningfully, take bold initiatives, and grow sustainably alongside our business.

Key Related Material Topics:



Diversity, Equity, and Inclusion (DEI)



Occupational Health, Safety, and Wellbeing



Employee Wellbeing and Skills Development



Diversity, Equity, and Inclusion (DEI)

Targets for 2024

13%

Maintaining workforce readiness through the employee turnover rate

25 People

Employees or workers with disabilities

96.6%

Assessment of employee engagement with the organization

Why this matters for Vanachai Group

Vanachai Group continuously advances its practices in equity and diversity by promoting an open and inclusive organizational culture, encouraging participation from employees at all levels, and fostering a work environment that supports creativity and innovation. These efforts are essential for creating a fair, inclusive, and sustainable workplace. As an organization committed to good governance and ethical business practices, Vanachai strives to ensure that every employee has equal opportunities regardless of gender, age, race, or background, enabling fair and equitable career growth and development.

Through these approaches, Vanachai can maintain business continuity, enhance sustainability, and reinforce its leadership in the transition toward a circular and low-carbon economy. Vanachai Group also conducts human rights due diligence to assess and manage risks related to discrimination, bias, and unequal opportunities in the workplace. This process helps identify areas for improvement and ensures that the company's policies and practices align with international labor standards and human rights frameworks.



"DIVERSITY, FAIR OPPORTUNITY,
INCLUSIVE GROWTH FOR
A SUSTAINABLE FUTURE"

Our Approach

Vanachai Group is committed to creating a diverse, equitable, and inclusive workplace that offers all employees, regardless of gender, age, race, or background, the opportunity to grow and participate on an equal footing. Through clear policies and ongoing engagement, the company focuses on eliminating bias, ensuring fairness, and fostering a culture where everyone feels a sense of belonging.

In addition, Vanachai conducts ongoing human rights due diligence to assess and manage risks related to discrimination and inequality in the workplace, while adhering to international labor standards to ensure that employment and personnel management are fair at all levels.

By 2030, Vanachai aims to build a truly inclusive workplace by promoting diverse representation at the senior management level and supporting equal opportunities for career advancement. These efforts are designed to drive the company's commitment to equity, opportunity, and diversity through the following actions:



Maintain a voluntary employee turnover rate not exceeding 15 percent, reflecting a stable, supportive work environment that values long-term career development.



Promote inclusive employment by providing equal opportunities for vulnerable groups, with an appropriate hiring rate.



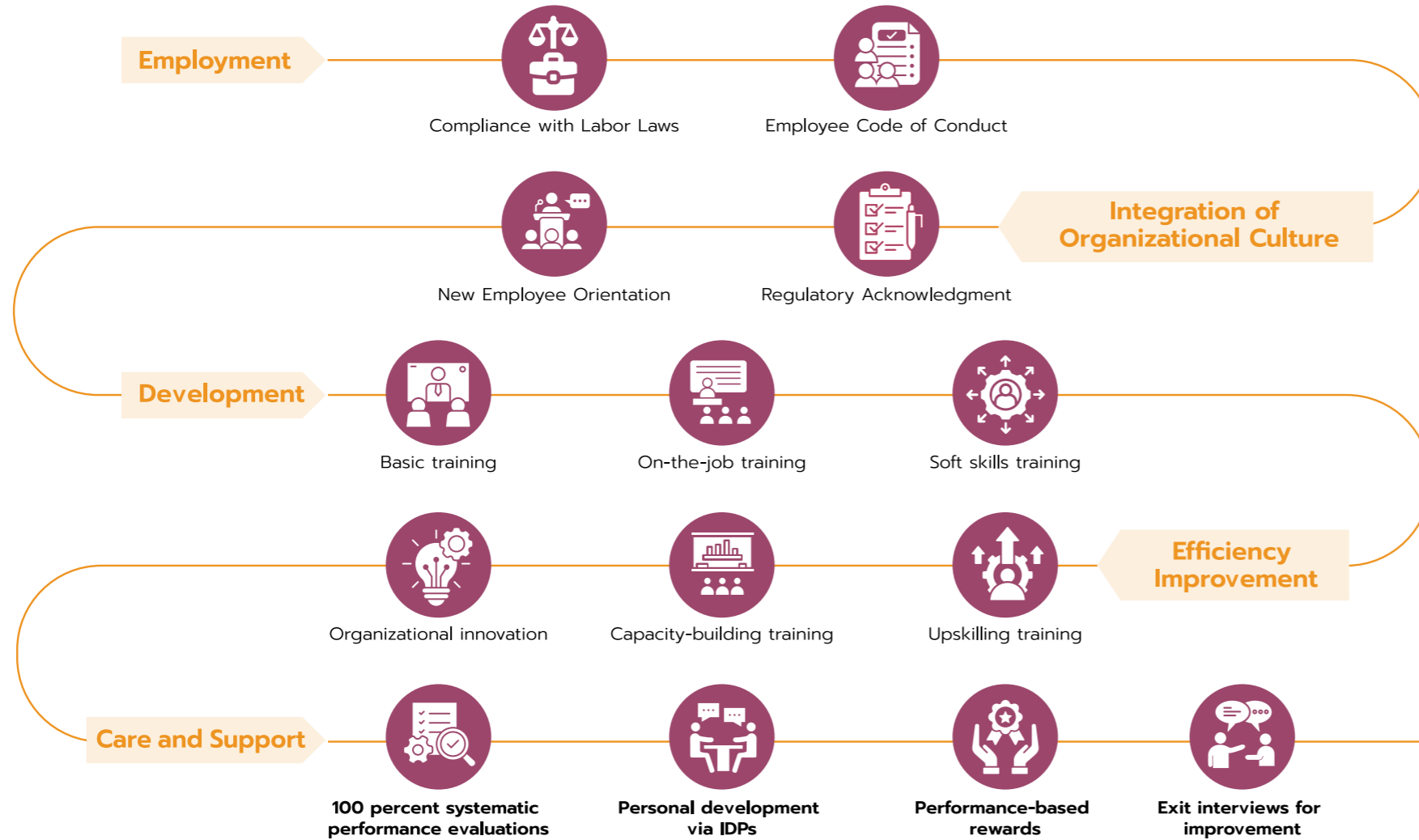
Apply the results of employee engagement assessments to improve employee care, address needs, and build a culture where everyone feels involved and a sense of shared ownership.



Conduct human rights due diligence covering 100 percent of the value chain to proactively identify and manage risks related to discrimination, inequality, and unfair employment practices.



Employee Experience Map within the Organization



PERFORMANCE RESULTS

12.4%

Voluntary employee turnover rate

23 People
131%

Employment of vulnerable groups with equal opportunities, in compliance with legally required employment ratios

97.01%

Employee engagement assessment results, to be used for improving employee care and support

ZERO

Zero human rights violation incidents recorded in 2024

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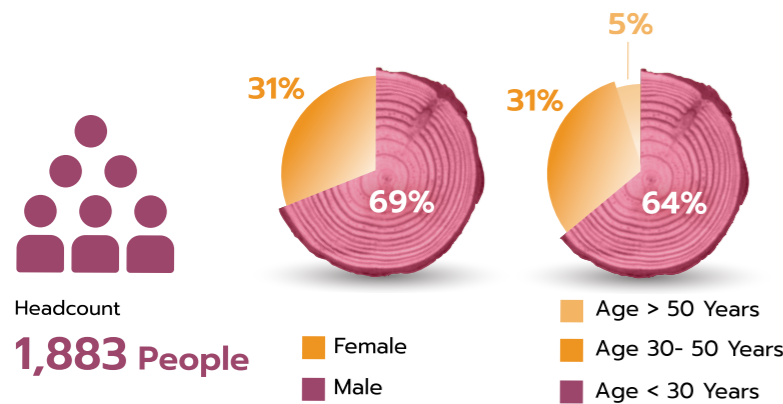
Fair Labor Practices Based on Human Rights Principles

Personnel Management and Commitment to Equal Opportunities

Vanachai Group prioritizes fair, inclusive, and responsible personnel management by strictly adhering to labor laws and implementing policies that ensure equal employment opportunities for all. This commitment spans the entire employee lifecycle, including recruitment, hiring, appointments, training and skill development, transfers, promotions, compensation, and benefits.

The company is dedicated to building an organizational culture that respects diverse perspectives, encourages mutual respect and dignity, and provides opportunities for every employee regardless of gender, age, race, religion, or background to grow, participate, and succeed equally on a foundation of shared sustainability.

Workforce diversity by gender and age



Average female-to-male pay ratio in 2024 at 1 to 1.03, with a breakdown by job level as follows



Employment of Vulnerable Groups

Vanachai Group places strong importance on creating equal opportunities for vulnerable groups, especially People with disabilities, through appropriate employment that aligns with the context of local communities. The company believes that everyone should have the opportunity to work and meaningfully contribute to the organization.

In 2024, Vanachai continued to employ People with disabilities at levels exceeding legal requirements, reflecting its commitment to promoting an equitable and sustainable society.



Employee Retention

Vanachai Group places great importance on retaining skilled and high-potential employees to support the company's continuous growth. In 2024, the employee voluntary turnover rate was 12.4 percent, while more than 90 percent of new hires showed a tendency to stay with the organization long term. This reflects a stable and supportive work environment that fosters professional development.

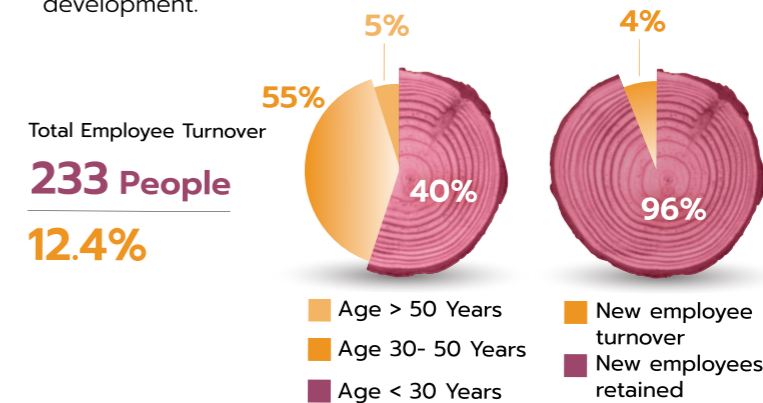


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Freedom of Association and the Right to Collective Bargaining

Vanachai Group is committed to respecting human rights, promoting lawful rights for employees and stakeholders in accordance with internal policies and applicable agreements. The company strives to create a fair, inclusive, and respectful work environment where employees can freely organize or voice their opinions without fear or discrimination. To support these rights, Vanachai encourages employee participation in internal committees such as the Employee Welfare Committee and the Occupational Safety, Health, and Environment Committee, which provide opportunities for employee representatives to share feedback, raise issues, and engage in constructive dialogue with management.

The company also supports the right to collective bargaining, allowing employee representatives to participate in discussions and negotiations on employment conditions, benefits, and other issues affecting workers. Vanachai believes that enabling open participation and free expression helps build a sustainable organizational culture and forms the foundation for long-term shared development.

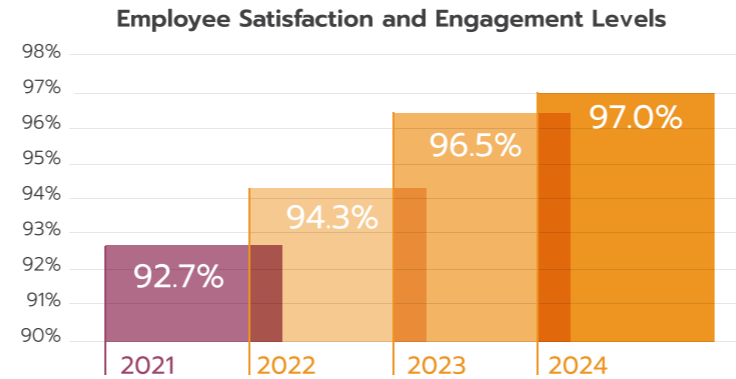
Employee Welfare Committee

The committee members are elected for a two-year term, with the following responsibilities:

- 1) Consult with the employer on providing welfare benefits for employees.
- 2) Advise and make recommendations to the employer on welfare arrangements.
- 3) Monitor, oversee, and ensure the proper delivery of employee welfare.
- 4) Provide opinions and recommendations to the Labor Welfare Committee on beneficial welfare improvements.
- 5) Organize recreational activities within the company.

Employee Satisfaction and Engagement Assessment

Vanachai Group places great importance on continuously listening to employees. The company regularly assesses employee satisfaction and engagement levels. This year, the satisfaction score reached 97.0 percent, considered very high and consistent with the low turnover rate among long-tenured employees. This reflects the confidence, happiness, and sense of stability that employees feel toward the organization.



However, the key issues most frequently raised by employees were:

- 1) **Career growth opportunities** – including clarity of advancement pathways, assignment of challenging tasks, and access to training to develop additional skills. These factors are crucial for strengthening long-term employee engagement.
- 2) **Internal communication** – communication between departments or between management and employees was seen as insufficient or unclear, leading to misunderstandings or employees not receiving essential work-related information in a timely manner.

The company has taken these important and actionable concerns into account and is implementing the following measures:

1. Promoting Career Growth Opportunities

Establishing a clear career pathway

- **Define clear growth pathways** for each role, from entry to senior levels, with transparent skills and responsibilities.
- **Communicate these pathways widely** through internal channels and accessible handbooks.
- **Set up annual or semiannual Individual Development Plans (IDPs)** jointly between managers and employees.

Assign challenging and cross-functional projects

- **Encourage challenging and cross-functional assignments** through talent mobility opportunities.

Invest in continuous learning

- **Mentorship**, pairing employees with experienced colleagues for guidance.
- **External training support**, with an annual budget for courses based on employee interests.

2. Improve internal communication

Establish clear channels and formats

- **Monthly town hall meetings** where management shares company updates, celebrates successes, and encourages open Q&A.
- **Weekly or monthly team meetings** to align understanding, resolve issues, and set shared priorities.

Promote transparent two-way communication

- **Create feedback channels** using online surveys or platforms such as Officevibe or Google Forms to regularly collect suggestions.
- **Launch the “Powered by You” initiative** to demonstrate that the company listens to and acts on employee feedback.

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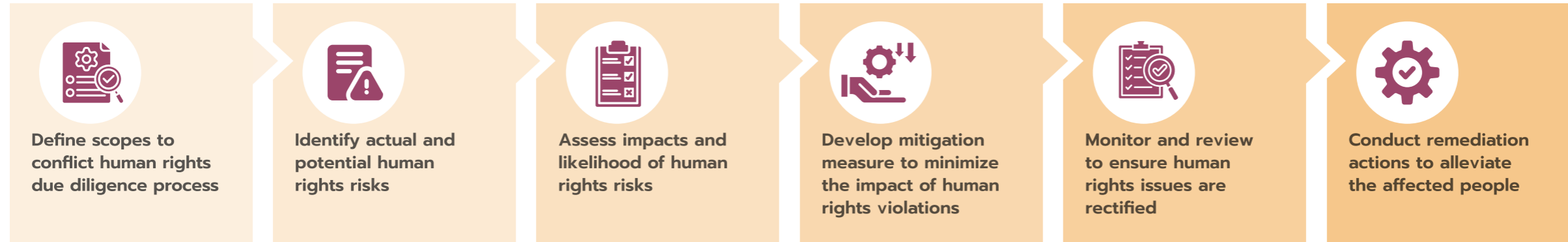
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Human Rights Risk Assessment Criteria

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Human Rights Risk Assessment Criteria					
Severity Level	Description				
	Scale	အရေအတွက်	Urgency of resolution	Likelihood	
	Seriousness of Impact	How many people are/ will be affected	Urgent efforts to restore affected people to their original situation	Level	Occurrence and Frequency
Critical (4)	Causes severe harm, leading to long-term disability or death	Affecting all stakeholders in the group, such as the entire community or all employees	Requires immediate action to prevent lasting impact	Highly likely (76–100%) due to flawed steps or processes	Frequent events or last occurred within 3 months
High (3)	Causes serious injury or mental harm, requiring recovery and over 3 days off work	Impact on most stakeholders, especially stakeholder groups	Takes over 3 years to fully restore affected individuals	Moderate likelihood (51–75%) due to inappropriate processes	Abnormalities occur once every 1–3 years
Medium (2)	Causes moderate harm with some daily life impact, no work time lost	Impact on certain stakeholders in any stakeholder group	Must be resolved within 1–3 years to restore affected individuals	Moderate chance (26–50%) due to procedures in place but weak control or monitoring	Occasional issues, happening once every 3–5 years
Low (1)	Causes minor harm, no health risk, treatable with first aid	Impact on a few stakeholders	Provide relief within 1 year to restore individuals	Very low chance (0–25%) due to strong control and supervision	Rare events, none in over 5 years

Human Rights Risk Criteria

Likelihood	4, 1	4, 2	4, 3	4, 4
	3, 1	3, 2	3, 3	3, 4
	2, 1	2, 2	2, 3	2, 4
	1, 1	1, 2	1, 3	1, 4
	Severity			

Photo from a human rights risk assessment workshop: Senior executives and 30 employees jointly assessed, analyzed, and summarized risks to present to the Risk Management and Corporate Governance Committee, with the goal of establishing concrete prevention guidelines, action plans, and remediation measures.



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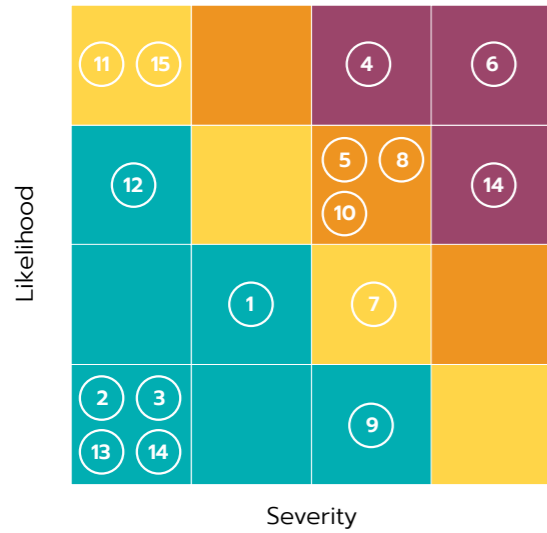
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Scope of Human Rights Risk Assessment

Employee	Supplier	Local Community	Customer
<ul style="list-style-type: none"> • Working Conditions • Health and Working Environment • Discrimination and Harassment • Unlawful Forms of Labor • Freedom of Association and the Right to Collective Bargaining 	<ul style="list-style-type: none"> • Working Conditions • Health and Safety • Discrimination Against Business Partners • Unlawful Forms of Labor 	<ul style="list-style-type: none"> • Health and Safety • Well-being and Quality of Life • Water Security • Impacts from Pollution and Hazardous Waste 	<ul style="list-style-type: none"> • Health and Safety • Data Privacy • Discrimination

Human Rights Assessment Findings



Scoring Criteria



Human Rights Topic	Severity	Likelihood
1) Overtime work (in cases of urgent product delivery).	2	2
2) Issues related to the renewal of legal work permits, e.g., for migrant workers.	1	1
3) Job rotation or reassignment from original duties.	1	1
4) Employment of workers under the age of 18 by contractors/subcontractors.	4	3
5) Annual mental health check-ups and special examinations for specific departments/ additional tests based on risk factors (e.g., formic acid exposure).	3	3
6) Workplace accidents due to employees not wearing PPE or lacking knowledge in tool usage.	4	4
7) Improper disposal of waste in the workplace (e.g., chemicals in lab areas) by subcontractors.	2	3
8) Excessive water usage in the production process that affects the community (e.g., water shortage during the dry season).	3	3
9) Pollution affecting surrounding communities, such as dust dispersion from production or noise during PM hours.	1	3
10) Community safety risks from direct and indirect work processes, (e.g., unsafe driving by transport vehicles.)	3	3
11) Leakage of customer data and disclosure of personal information without consent.	4	1
12) Gender-based discrimination, especially related to gender identity.	3	1
13) Health impacts on product/material testers due to exposure to hazardous chemicals.	1	1
14) Discrimination against customers.	3	4
15) Employee expression and organizational responsiveness.	4	1

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Human Rights Risk Management Guidelines

From Vanachai Group’s human rights risk assessment, several issues were identified as potentially causing “Critical” crises requiring urgent and systematic management. These include the employment of workers under 18 years of age by contractors or subcontractors,

since many partners are small local or family-run businesses that may involve relatives in the work, workplace accidents resulting from failure to wear personal protective equipment (PPE) or lack of knowledge in using tools, and cases of discrimination against customers by frontline staff with high turnover rates.

These issues could have serious consequences at the individual, community, and organizational image levels. Without proper controls

or preventive measures, they may lead to harm affecting physical and mental well-being, as well as undermine stakeholder trust.

The following section explains each issue in detail together with risk prevention approaches, corrective actions in case of incidents, and fair and effective remedies to help those affected return to their normal state.

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Severity	Human Rights Topic	Guidelines for Mitigating Impact Risks	Guidelines for Redress in the Event of Violations
 Critical (4)	Discrimination against customers	<ol style="list-style-type: none"> 1) Require all contractors and subcontractors to sign and comply with a clearly defined Supplier Code of Conduct, which strictly prohibits child labor and sets a minimum working age in line with national laws and ILO conventions. 2) Include specific clauses in all supplier contracts prohibiting employment of individuals under 18, and allow for audits and termination if violations occur. 3) Conduct regular and unannounced audits of contractor and subcontractor facilities, especially in high-risk areas, to verify compliance. 4) Implement a mandatory worker age verification process, requiring official ID documentation before hiring across the supply chain. 5) Engage independent auditors for third-party verification of labor practices, especially in regions or industries with elevated risks. 6) Establish a whistleblowing system that includes human rights concerns and ensures a safe, confidential channel for whistleblowers. 	<ol style="list-style-type: none"> 1) Remove the underage worker from the work environment immediately, ensuring no further harm or punishment is inflicted. 2) Collaborate with local child protection services to provide the minor with education support, counseling, and livelihood alternatives. 3) Issue formal warnings, require corrective action plans, and suspend or terminate contracts for non-compliant contractors. 4) Require the offending supplier to develop and implement a Corrective Action Plan (CAP) within a specified time frame, subject to follow-up audits. 5) Following any incident, conduct a root cause analysis and update policies or monitoring systems to prevent recurrence.
 Critical (4)	Workplace accidents due to employees not wearing PPE or lacking knowledge in tool usage	<ol style="list-style-type: none"> 1) Conduct regular training on proper use of tools and personal protective equipment (PPE), especially for high-risk roles and subcontracted workers. 2) Embed clear safety procedures, including PPE requirements, into all Standard Operating Procedures (SOPs), and post visible reminders at workstations. 3) Regularly inspect and maintain PPE to ensure it is available, functional, and suitable for each type of work. 4) Implement monitoring systems such as safety checklists or mobile applications to track compliance with safety protocols. 	<ol style="list-style-type: none"> 1) Ensure injured employees receive prompt and appropriate medical treatment, with all related costs covered, and follow up closely on recovery. 2) Conduct a formal Incident Investigation Report to identify root causes and prevent recurrence. 3) Implement corrective measures such as upgrading tools, providing targeted re-training, or improving the work environment where needed. 4) Ensure the affected employee receives full compensation according to labor laws, social security, or internal welfare policies.

Human Rights Risk Management Guidelines (Continued)

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Severity	Human Rights Topic	Guidelines for Mitigating Impact Risks	Guidelines for Redress in the Event of Violations
	Workplace accidents due to employees not wearing PPE or lacking knowledge in tool usage	<ul style="list-style-type: none"> 5) Establish clear disciplinary actions for non-compliance and offer incentives like Safety Awards or point systems for accident-free departments. 6) Promote a safety-first mindset through employee participation in initiatives like safety suggestion platforms and Safety Week campaigns. 7) Promote a near miss reporting system to encourage the reporting of potential accident risks for analysis and proactive safety improvement. 	<ul style="list-style-type: none"> 5) Provide support for both physical and psychological recovery, especially if the incident impacts the employee's long-term quality of life or ability to return to work. 6) Conduct targeted job hazard analysis before starting high-risk work or activities including task-specific risk assessments to design appropriate preventive measures.
 Critical (4)	Discrimination against customers	<ul style="list-style-type: none"> 1) Provide training for all customer-facing staff both at onboarding and during employment focusing on human rights, non-discrimination, and fair respectful service for all customers regardless of gender, race, language, or background. 2) Develop simple product guides and online learning materials to build staff confidence in delivering accurate information and quality service. 3) Create motivation and a positive work environment including benefits, career advancement opportunities, and mentoring systems to retain skilled staff and reduce turnover impacts. 4) Maintain accessible multilingual complaint and feedback channels both online and offline to enable quick and effective responses. 	<ul style="list-style-type: none"> 1) If a customer experiences inappropriate treatment, issue a formal apology and offer immediate remedies or within 24 hours, such as product replacement, discount coupons, or additional follow-up service. 2) Conduct a fair fact-based investigation and if wrongdoing is confirmed, provide further training or apply disciplinary action as appropriate. 3) Communicate directly with affected customers to restore trust, listen to feedback, and reinforce confidence in the organization's corrective measures. 4) Use anonymized case studies from real incidents in staff training to continuously instill a sustainable "non-discrimination" mindset.

Human Rights Risk Management Guidelines

Key “**High Severity**” risk issues that Vanachai Group prioritizes with preventive, corrective, and remedial measures to avoid escalation into critical crises include annual mental health and specialized health check-ups based on risk, such as formic acid



exposure, and the use of large volumes of water in production processes, which may impact surrounding communities during the dry season.

Community safety from both direct and indirect work processes, such as unsafe transportation practices. The company focuses on continuous proactive measures and building collaboration with relevant agencies and local communities to manage these risks comprehensively and sustainably.

Severity	Human Rights Topic	Guidelines for Mitigating Impact Risks	Guidelines for Redress in the Event of Violations
 <p>High Severity (3)</p>	<p>Annual mental health and targeted health checks based on risk</p>	<ol style="list-style-type: none"> 1) Ensure that all employees, especially those in high-risk departments, receive annual physical and mental health screenings, as part of a comprehensive occupational health program. 2) Identify departments or job roles with exposure to specific health risks (e.g., chemicals like formic acid) and implement targeted medical tests accordingly. 3) Develop occupational health risk profiles to track long-term exposure trends and proactively address potential health threats. 4) Collaborate with licensed occupational health service providers to deliver on-site medical services, conduct assessments, and provide expert consultations for high-risk groups. 5) Conduct regular health awareness campaigns focusing on stress management, chemical safety, and mental well-being, tailored to employee roles and risks. 	<ol style="list-style-type: none"> 1) If any health risk is found to have been neglected, promptly offer medical treatment or specialist examinations to affected employees at the company’s expense. 2) Organize retrospective or mass health screenings for groups that missed essential check-ups or were exposed to occupational hazards. 3) If medical evaluations reveal health impacts, adjust working hours, tools, PPE use, or job responsibilities to reduce further exposure or stress. 4) Provide compensation and recovery support for health issues directly linked to occupational exposure or the company’s failure to conduct proper health screenings. 5) Protect affected employees from retaliation and ensure confidential handling of medical data and complaints, respecting privacy and dignity.



Human Rights Risk Management Guidelines (Continued)

Severity	Human Rights Topic	Guidelines for Mitigating Impact Risks	Guidelines for Redress in the Event of Violations
 <p>High Severity (3)</p>	<p>High water use in production affecting community supply during dry season</p>	<ol style="list-style-type: none"> 1) Assess each factory’s water usage and readiness, especially in high-risk areas, to plan for community impact prevention. 2) Invest in water-saving technologies and optimize production processes. 3) Install water recycling systems for non-potable uses such as cooling or equipment cleaning. 4) Set site-specific water reduction targets, monitor progress, and report regularly. 5) Collaborate with local communities and authorities to build shared water management plans, prioritizing community water access. 	<ol style="list-style-type: none"> 1) If company operations cause water shortages, urgently provide clean water or alternative sources (e.g. water tanks, bottled water, water delivery) to affected communities. 2) Hold meetings or dialogue forums with communities to explain the situation, listen, and find fair, respectful solutions together. 3) Invite external experts, such as environmental specialists, to assess actual impacts and recommend sustainable water management. 4) Tighten internal water use policies, especially during dry seasons, to prevent future recurrence.
 <p>High Severity (3)</p>	<p>Community safety risks from unsafe transport operations</p>	<ol style="list-style-type: none"> 1) Establish clear transport safety standards covering appropriate speed, delivery times, and secure loading methods. 2) Provide training and certification for all drivers (employees and contractors) on road safety, defensive driving, fatigue management, and emergency response. 3) Conduct regular vehicle inspections and maintenance, with GPS and tracking systems to monitor driving behavior and route safety. 4) Assess and map risk areas in communities (e.g. schools, residential zones, hospitals) and plan routes to minimize impacts. 5) Include transport safety requirements in all contracts, with ongoing audits of transport/distribution providers. 6) Share advance transport route and timing information, and set up community feedback channels. 7) Invite communities to help design safety measures (Participatory Safety Design) such as route avoidance. 8) Set performance indicators (KPIs) for staff involved in minimizing transport-related accidents affecting communities, and disclose results in the sustainability report. 	<ol style="list-style-type: none"> 1) Provide an emergency response team to offer immediate medical assistance to affected community members in case of accidents. 2) Conduct a thorough investigation to identify root causes and assign accountability, involving external experts if needed. 3) Communicate transparently with the community about the incident, corrective actions, and future prevention measures to rebuild trust. 4) Offer fair compensation for damages, injuries, or losses, coordinating with local authorities to support affected individuals. 5) Review and improve transport safety policies and community risk management measures to ensure continuous improvement and reduce future incidents.

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Workshop Photo on Human Rights Risk Assessment

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Occupational Health, Safety, and Wellbeing

Targets for 2024

0 Case

Loss-Time Injury Frequency Rate (LTIFR) per million working hours

0 Case

Lost-Time Occupational Illness Frequency Rate (OIFR) per million working hours

500 People

Number of employees trained in occupational health and safety

Why this matters for Vanachai Group

A safe and healthy working environment is of critical importance to Vanachai Group – not only as a legal obligation under labor and occupational safety laws, but also because it directly impacts employee well-being, operational performance, and business continuity.

As a manufacturing company, Vanachai recognizes that employees operate in environments with inherent risks, which require systematic assessment and control. Neglecting safety standards can result in accidents, legal liabilities, reputational damage, and

a loss of employee morale. Conversely, when employees feel safe and well cared for, their productivity improves, absenteeism decreases, and employee retention strengthens. This aligns with the Group’s mission to conduct business responsibly and sustainably.

A proactive safety culture is therefore not merely a legal requirement but a fundamental part of valuing people and securing the future of the organization.

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*"CARE FOR PEOPLE,
COMMIT TO SAFETY,
SUSTAIN SUCCESS"*

Our Approach

Vanachai Group takes a proactive and systematic approach to creating a safe and healthy working environment, strictly adhering to legal requirements while fostering a culture of safety at all organizational levels. The company prioritizes prevention, continuous improvement, and employee engagement to build safety awareness and reduce risks throughout its production processes. Advanced technologies and innovations are employed to monitor, inspect, and assess risks efficiently. This underscores the Group’s mission to care comprehensively for its people and ensure long-term business sustainability. In addition, the company emphasizes the physical and mental well-being of employees by providing relaxation areas, emergency alert systems, and adequate medical care, creating a truly efficient and safe working environment.



Provide standard-compliant safety equipment and protective systems, ensuring that PPE and safety facilities are available and in good condition to protect employees in all situations.



Encourage employee participation in reporting and preventing accidents, with accessible channels for raising concerns and proposing solutions, to strengthen a shared safety culture within the organization.



Deliver regular occupational health and safety training to employees at all levels to build knowledge, understanding, and skills for safe working practices, minimizing accident and emergency risks.



Promote annual health check-ups, including specialized tests such as hearing and lung function assessments.



Conduct systematic risk assessments and hazard controls, with continuous monitoring of work areas and processes, supported by effective prevention and mitigation measures.

Safety and Health Training Course Topics	Number of trainees (People)
Environmental pollution prevention operator (water pollution) in collaboration with external institutes	6
Environmental pollution prevention operator (industrial waste pollution) in collaboration with external institutes	6
Basic life support (CPR) and automated external defibrillator (AED) use (In-house)	121
Electrical work safety (In-house)	193
Radiation safety for workers handling radiation (In-house)	26
Working at heights safety (In-house)	60
Confined space safety (In-house)	36
Proper crane and hoist operation (In-house)	55
Behavior-based safety (BBS) program (In-house)	43
Safe truck operation and maintenance (In-house)	80
Defensive driving safety (In-house)	30
Safe driving (In-house)	103

Safety and Emergency Preparedness for a Safer Workplace

Vanachai Group is committed to building a safe and healthy work environment through comprehensive safety measures and emergency preparedness. The company takes proactive steps alongside health support initiatives to reduce risks and enhance employee and contractor well-being.

- 1) **Occupational health and safety risk assessments** across all work processes, with systematic evaluation to control and minimize potential hazards:
 - Implementation of WI VPI OES110 safety practices.
 - Conducting Job Safety Analyses (JSA) in all departments.
 - Requiring each unit to carry out safety analyses tailored to its specific work.

- 2) **Occupational health, safety, and environmental practices** extended to business partners, ensuring contractors and transport service providers meet the same safety standards as Vanachai:
 - Driving requirements aligned with ISO 45001.
 - Specific wheel chocking rules for non-dump trucks.
 - Use of WP VPI EMS005 guidelines to manage contractor safety for external activities.

- 3) **Workplace health services and emergency response systems**
 - On-site medical rooms equipped with medicines, supplies, and beds.
 - On-site nurses available 24 hours a day.
 - Partner hospitals on standby for immediate emergency care to ensure timely and effective support.

Activities to promote occupational health and safety

Participation and consultation in occupational health and safety matters



- Occupational Safety and Labor Standards Committee meetings.
- Employee satisfaction surveys on safety management conducted twice per year, encouraging employee feedback and suggestions.
- Safety-promotion initiatives to reduce workplace accidents, such as the Zero Accident Program, Morning Talks, behavior-based safety observation programs, safety inspections by frontline safety officers and professional safety officers, along with root-cause analysis and collaborative preventive measures with relevant departments.

Occupational Health and Safety Prevention and Mitigation Measures for Contractors



- Posting signs on "Factory Visitor Regulations".
- Installing vinyl signs warning about "Risk of Falling While Covering Tarpaulins".
- Distributing leaflets on safe tarpaulin covering for truck drivers.

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Employee health promotion



Occupational health and safety training for employees and contractors



- Pre-employment and job transfer health checkups (if risk factors change)
- Annual health checkups and checks based on risk factors (aligned with human rights risk assessments, including formic acid screening)
- Screening for hepatitis B and C infections

- New employee orientation
- New contractor orientation
- Basic fire extinguisher training
- Fire evacuation drills
- Chemical spill emergency response drills

PERFORMANCE RESULTS

0 Employee Case

0 Contractor Case

Lost-time Injury Frequency Rate (LTIFR) per million working hours

0 Employee Case

0 Contractor Case

Lost-time Occupational Illness Frequency Rate (OIFR) per million working hours

0 Employee Case

0 Contractor Case

Fatal Accident Rate (FAR) per million working hours

0 Complaint

Number of health and safety-related complaints

947 People

Number of employees trained in occupational health and safety

100%

Employees covered by the occupational health and safety management system

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Employee Wellbeing and Skills Development

Why this matters for Vanachai Group

Employees are the heart of Vanachai Group, driving success in business operations, innovation, and sustainability. Vanachai prioritizes continuous employee capability development, not only enhancing technical skills but also promoting ESG-related knowledge. This empowers employees to actively contribute to achieving environmental and social goals. The company fosters a corporate culture of continuous learning and an adaptive mindset, enabling employees to thrive alongside constantly changing business contexts. Vanachai supports an environment that encourages both working and learning, offering training to build

professional skills as well as foundational ESG knowledge for all employees. This helps prepare the workforce for future challenges while strengthening the organization’s overall capacity.

Employee development is integrated with performance management systems, ensuring a tangible link between individual goals and organizational objectives. This approach supports long-term, sustainable career growth while encouraging employees to find fulfillment in their work.

Targets for 2024

4.0 Hours/Person/Year

ESG Training (covering risk management, corporate governance, and human rights)

60%

Percentage of employees reporting that they applied new skills from training within three months of course completion



“EMPOWERING PEOPLE, DEVELOPING POTENTIAL, DRIVING A SUSTAINABLE FUTURE”

Our Approach

Vanachai Group's People Division follows a "people-centric" approach, creating an environment that supports work, learning, and career advancement holistically. The Group designs training programs covering general skills, specialized expertise, and ESG knowledge, preparing employees to effectively navigate changes in the business landscape.

In addition, the outcomes of employee capability development are integrated into the annual performance evaluation system to assess potential and set continuous development plans aligned with the company's long-term goals. Vanachai is committed to fair work standards, promoting professionalism, and empowering the next generation of employees to become future leaders.



Develop training programs

covering foundational, collaborative, and technical skills, as well as ESG knowledge, to enable employees to adapt and apply their skills effectively.



Integrate capability development with ongoing performance evaluations

and tracking, aligning learning and development goals with career growth objectives.



Promote a culture of continuous learning

and openness to change, fostering self-development and providing platforms for knowledge sharing and inclusive growth.



Create an environment that supports well-being and flexible work structures,

encourages work-life balance, and provides channels for employee feedback on training and development.



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Sample ESG courses	Benefits of the program	
	For employees	For Vanachai Group
<ul style="list-style-type: none"> • Anti-corruption and anti-bribery (Introduction to CAC) with training available through seminars and online platforms to ensure all employees can access and strictly apply this knowledge. 	<ul style="list-style-type: none"> • Gain understanding of business ethics principles and anti-corruption laws. • Build confidence in performing duties and contribute to a transparent corporate culture. 	<ul style="list-style-type: none"> • Raise business practice standards to align with CAC (Collective Action Coalition) guidelines. • Foster a corporate culture based on transparency, accountability, and social responsibility.
<ul style="list-style-type: none"> • Human Rights Due Diligence (HRDD) includes workshop-based training to build in-depth understanding and hands-on application. 	<ul style="list-style-type: none"> • Understand fundamental human rights concepts in the workplace context and potential impacts on individuals or vulnerable groups. • Identify human rights risks relevant to their job or department. 	<ul style="list-style-type: none"> • Build a management system to systematically prevent and address human rights risks in line with international standards. • Reduce the chance of complaints, disputes, or legal impacts from human rights violations across the value chain.
<ul style="list-style-type: none"> • ESG awareness session delivered by expert board members from the Capital Market Supervisory Board to build policy-level understanding and leadership perspectives. 	<ul style="list-style-type: none"> • Understand the importance of ESG and one's role in advancing organizational sustainability. • Strengthen attitudes aligned with the company's environmental, social, and governance goals. 	<ul style="list-style-type: none"> • Foster an organizational culture with a sustainability mindset at every level. • Increase readiness to operate in accordance with ESG approaches recognized by capital markets and investors.
<ul style="list-style-type: none"> • Basic knowledge-building workshop on Corporate Risk Management to strengthen risk awareness and support thoughtful application in work processes and decision-making. 	<ul style="list-style-type: none"> • Understand risk management principles and systematically assess risks in one's own role. • Enhance decision-making prudence and reduce operational errors. 	<ul style="list-style-type: none"> • Promote a concrete risk management culture at the operational level. • Reduce the chance of unexpected damage and improve sustainable organizational performance.

Other Training Courses in 2024



Standards and Quality Training Courses

- Effective work planning and monitoring
- Quality awareness for management-level employees
- Quality awareness for operational-level employees
- Production process safety and methods to identify and assess tasks under ISO 9001 / ISO 14001 / ISO 45001
- Document control and energy management in line with ISO 50001



Training Courses on Employee Competency Development and Others

- Training and certification for Building Electrician Level 1 (to meet legal standards for skilled labor development)
- 2024 Accounting Standards: Reviewing accounting entries and identifying anomalies in financial statements (knowledge enhancement per requirements of the Federation of Accounting Professions)
- Updates on Accounting and Tax for Accountants in 2024 and strategies for accounting systems and internal controls for finance and disbursements (in line with the Federation of Accounting Professions requirements)



Environmental Training Courses

- Operator training for hazardous environmental systems focusing on water pollution
- Operator training for hazardous environmental systems focusing on industrial waste pollution



Occupational Health and Safety Training Courses

- Basic CPR, AED use, and injured person transport
- Safe forklift driving practices
- Electrical safety at work
- Radiation safety for employees working with radioactive materials
- Working at heights safety
- Confined space safety
- Proper crane and hoist operation
- Building safe behavior culture (BBS)

Employee Performance Evaluation

Employee performance evaluation is a vital mechanism for effective human resource management. It reflects employee achievements, competencies, and potential at each stage, serving not only as a basis for compensation and rewards but also for developing an Individual Development Plan (IDP) aligned with the company's long-term goals.

Our Approach

Vanachai has a clear and systematic performance appraisal framework for all employee levels, using transparent, verifiable criteria. Evaluations consider both **"work quality"** and **"on-time delivery"** to fairly reflect responsibility and effectiveness. Results are used in two key areas:



Annual compensation and rewards



Jointly creating an IDP with employees to build skills and career growth

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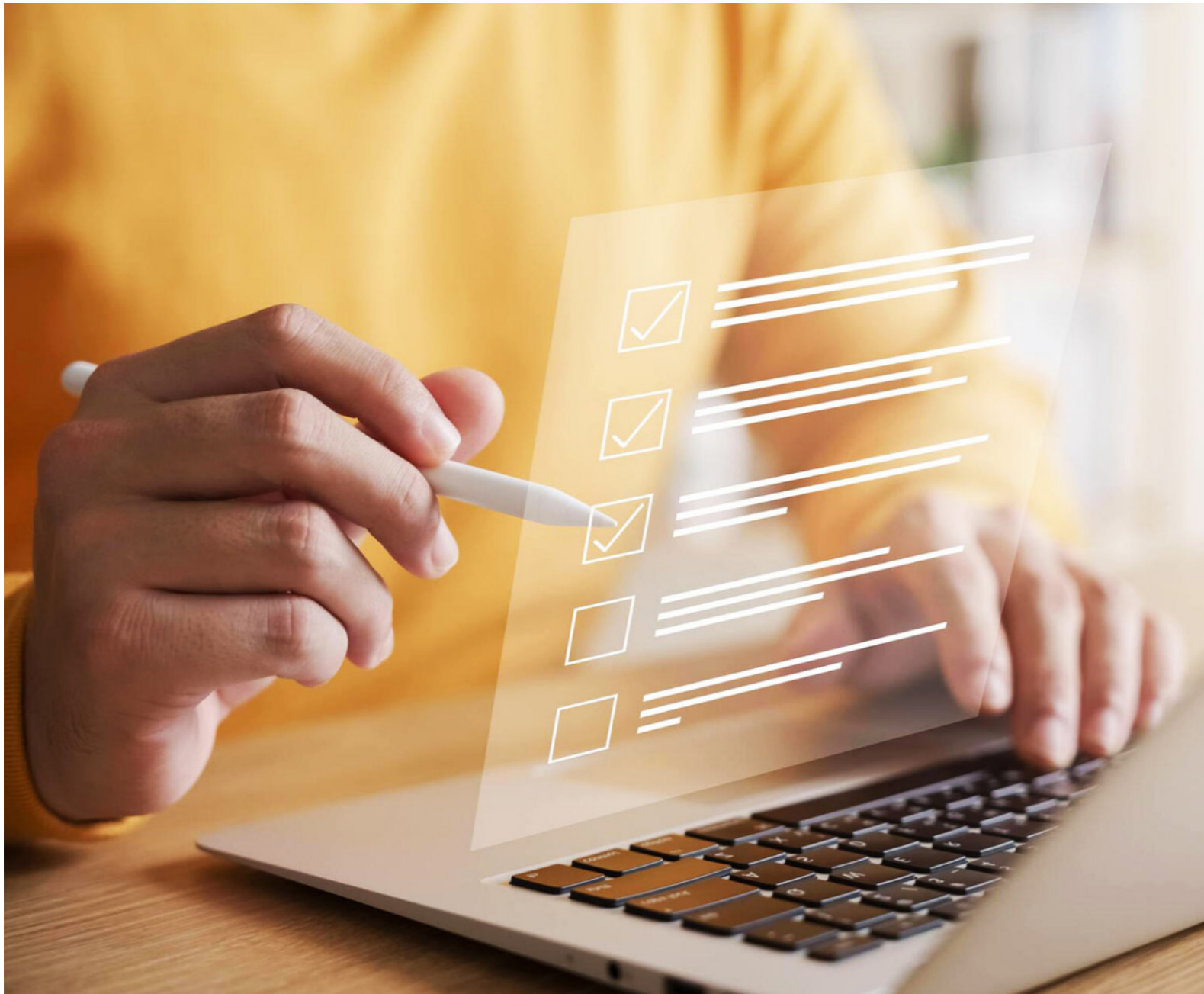
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PERFORMANCE RESULTS

Vanachai Group has conducted systematic and comprehensive performance evaluations for all employees, using clear and transparent criteria. The results are applied to annual salary adjustments and bonus considerations, as well as to assess training participation and skills development, helping link learning with career advancement and employee motivation.

100%

Proportion of employees evaluated

59.4

Million Baht

Training and knowledge development budget

57.6%

Proportion of employees promoted or receiving pay adjustments

6.0

Hours/Person/Year

ESG training (risk, governance, human rights)

10.23

Hours/Person/Year

Average training hours per employee

68%

Percentage of employees applying new skills within 3 months of training



APPENDIX

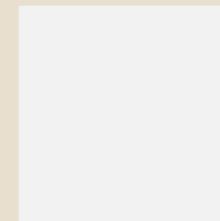
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**SUSTAINABILITY
PERFORMANCE**



GRI CONTENT INDEX



**EXTERNAL
VERIFICATION RESULTS**

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Vanachai Group Public Company Limited

2/1 Wongsawang Road, Bangsue, Bangkok 10800

 (+662) 913-2180-9  (+662) 587-9556, (+662) 587-0516  vanachai@vanachai.com